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## Development of the commodity strategy: the case of sidel

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## **ABSTRACT**

### **DEVELOPMENT OF THE COMMODITY STRATEGY: THE CASE OF SIDEL**

**by  
Giuseppe Celiberti**

The thesis will address the development of the sourcing strategy in Sidel, a manufacturing company that provides packaging equipment for liquids such as water, carbonated and non-carbonated soft drinks, sensitive beverages like milk, and liquid dairy products.

It is developed the sourcing strategy structure that characterizes every commodity, with a particular focus on the commodity execution process. Then, it is discussed a concrete case: the one of Nitro Dozers. In order to achieve the goal, it is used a systematic approach that focuses on different steps, from the Product overview and Spend analysis to the supplier assessment and benchmarking.

After defining the commodity strategy, it be deepened the new supplier qualification process: it is required when the company decided to purchase from a new supplier.

The ultimate goal of this dissertation is the definition of the purchasing strategy that meets the targets and mitigates the supply risk for the Company.

**DEVELOPMENT OF THE COMMODITY STRATEGY:  
THE CASE OF SIDEL**

**by  
Giuseppe Celiberti**

**A Dissertation  
Submitted to the Faculty of  
New Jersey Institute of Technology  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Engineering Management**

**Department of Mechanical and Industrial Engineering**

**May 2018**

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**APPROVAL PAGE**

**DEVELOPMENT OF THE COMMODITY STRATEGY:  
THE CASE OF SIDEL**

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Background Information**

Supply base sourcing and practices have evolved significantly in the last 20 years. Prior to the 1980s, the purchasing function was typically viewed as being primarily clerical. It was essentially a tactical activity and had little or no impact on how the firm competed in the marketplace. The purchasing manager affected the cost of materials but little else. Recently, that view has changed significantly. Research has shown that suppliers are becoming increasingly critical for the competitive success of the Companies (e.g., Handfield and Pannesi, 1995; Monczka et al., 1993; Richardson, 1993). As such, purchasing managers are now major contributors to the ability of the Company to offer better products, faster, at lower costs and with greater flexibility. This strategic view of the purchasing function underlies the concept of strategic sourcing (Monczka et al., 1997).

### **1.2 Objective**

The objective of this dissertation is to present the sourcing strategy that meets the targets and mitigates the supply risk for the Company, and to offer a complete picture of the sourcing strategy process in Sidel. The Sourcing department, particularly the Third-Party Equipment team, looks after the management of the sourcing strategy and the relationships with the suppliers for equipment purchases. The goal of Sourcing is to define and implement Sidel's sourcing strategy over the short, medium and long term, to improve cost, quality, delivery, and assets management. The function's overall objective is to ensure

economical and timely quality sourcing of raw materials, components, parts, modules, equipment and services that the Company requires globally.

### **1.3 Problem Statement**

The dissertation is divided in four phases: in the first one the company is introduced.

In the second phase it is analyzed what is a commodity strategy, how Sidel structures its commodity strategies and what are the parameters evaluated in a commodity strategy, from the product overview and the various assessment, to the definition of the sourcing strategy.

In the second phase it is illustrated a concrete case of commodity strategy: the one of Nitro Dozers, an equipment used to pressurize or inert cans and PET bottles.

In the third phase the focus is on the supplier qualification process: it is required when the global commodity manager decides to assess and potentially purchase from a new supplier after defining the commodity strategy.

## CHAPTER 2 ORGANIZATION WITHIN SIDEL

### 2.1 Sidel Introduction

Sidel is a manufacturing company providing packaging equipment for liquids such as water, carbonated and non-carbonated soft drinks, sensitive beverages like milk, liquid dairy products, juices, nectars, tea, coffee, isotonic and beer. Sidel manufactures and services equipment that enables other companies to package such liquids using PET, can, glass, and other packaging material solutions. It is specialized in blowing, filling and labelling solutions for multiple applications. Headquartered in Parma, Italy, the company has 50 offices and 5,321 employees across five continents, eight research and training centers and 37,000 machines installed in more than 190 countries, 1.4 billion Euro net sales (data are referred to 2016).



**Figure 2.1** Sidel Headquarter in Parma

In 2003, Sidel joined Tetra Laval Group, a multinational corporation of Swedish origin, which is active in liquid food packages and packaging. The Tetra Laval group is divided into three divisions: DeLaval, Tetra Pak and Sidel. De Laval sells complete systems for milk production; Tetra Pak, the most famous of the group, sells liquid food processing and carton packaging, while Sidel sells liquid food packaging for PET, can and glass.

Over the years, Sidel has gained a high level of engineering and plant engineering expertise in filling technologies in PET containers, cans or glass bottles, such as aluminum and stainless steel; for most of these materials the Company is able to provide its customers with complete technological solutions that include machines for the production of the containers themselves (such as blowers for PET bottles of different sizes), or capping machines, labelling machines, handling systems and packaging systems.



**Figure 2.2** Tetra Laval Group: Some Numbers

## 2.2 Sidel Group Strategy

The Sidel Group strategy can be summarized in three words: Performance through Understanding. Sidel wants to deliver long-term superior performance for the customers and profitable growth for itself. The company wants to do this through greater understanding of the customers, as well as itself.

“Performance” is about Sidel’s long-term ambition to offer customers guaranteed performance. This means giving them a tailored combination of equipment, services and expertise that is guaranteed to achieve a defined value level over an extended period. Customers want the ability to produce their end products as reliably and consistently as possible, with the lowest overall total cost and highest product quality. Guaranteeing performance is of tremendous value to the Company and is something that can differentiate Sidel from the other competitors and is something that the company can sell. Sidel can do this by using the data received through the smart technology, combined with the customer’s input, to tailor a solution (equipment, services and expertise) that guarantees performance throughout the equipment lifetime. This is an ongoing goal that the Company must constantly strive for – to constantly try to increase the performance level that Sidel can guarantee to its customers. It is a new way of using the capabilities to deliver lifetime solutions to the customers and will require the company to challenge and stretch itself, to develop and deepen further the understanding and skills to achieve the necessary high standards consistently over time. It requires to think more long-term. By delivering guaranteed performance, Sidel provide its customers with a different experience.

“Understanding” refers to the ability to understand the customers, their business and their expectations, and to manage them and tailor the solutions accordingly based on

their needs. It also refers to the ability to understand each other internally, to use the best of the group's resources to better serve the customers. One of the ways to do this is by taking a market category approach. This means adapting the solutions for the specific needs of customers in each market category (such as water, liquid dairy products or beer). If Sidel is successful with this, it should be able to monitor customer needs in each category, as well as those of the large global key accounts. With this knowledge, the Company can better shape the development, the supply and service solutions for customers in those categories. Sidel wants to achieve this via three strategic pillars:

- Create customer success: Customers have always been at the heart of the business. With the first pillar of the group strategy "Create Customer Success", Sidel is now going to increase the focus on how to meet the customers' needs. This is about more than just supplying equipment and services. It's about supporting them to grow their business. Create Customer Success refers to the ability to better understand the customers. One of the ways Sidel do that by taking a 'category approach' to the market segments such as water, carbonated soft drinks or beer. This means better capturing and analyzing the feedback from customers in different categories and allowing that to better influence the development of new equipment and services. It also refers to how Sidel wants to use that understanding to better manage the customer and propose the right solutions for them, ensuring the Company is easy to do business with. Sidel will achieve this is with the new go-to-market approach, with the Company focused on water and soft drinks, beer, wines and spirits customers. In this strategic pillar of Create Customer Success, the Company wants to focus on three areas:

1. Develop and apply a category approach
  2. Understand the customer and propose the right solution
  3. Be easy to do business with, and drive customer satisfaction
- Deliver lifetime solutions: With the second pillar of the strategy, Sidel wants to make sure that customers remain delighted with their Sidel Group solutions over time. Deliver Lifetime Solutions refers to the goal to be able to offer guaranteed performance to customers over the lifetime of their production lines. To do this the Company needs to take various actions. In particular, it is required to:
    1. Provide innovative, reliable, smart and affordable solutions
    2. Deliver superior complete lines and standalone equipment
    3. Maintain and improve line performance with a complete service offering driven by packaging and line expertise
    4. Achieve the highest quality at the right cost
  - Grow together: Grow Together refers to the ability to drive growth for the customers and for the Sidel. The focus is on three areas:
    1. Drive growth for the customers and for Sidel, by combining diverse competencies and resources
    2. Develop world-class people and expert teams
    3. Be a great place to work

## **2.3 Sidel Organization**

Sidel is divided in five main business functions that are:

- Product Management and Development
- Sourcing
- Sales and Marketing
- Supply Chain
- Services.

In addition, there are four corporate functions:

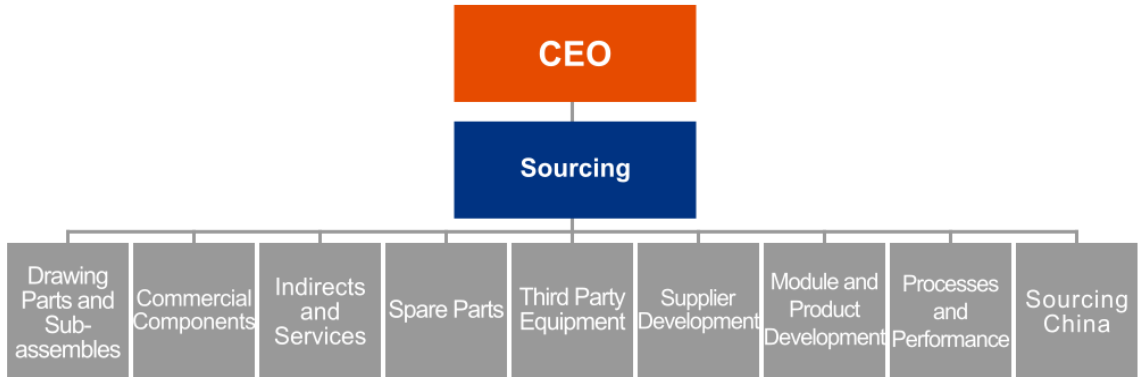
- Finance, IT and Strategic Planning
- Human Resources
- Communications
- Legal Affairs.

The business function that will be deepened is Sourcing, with a particular focus on the Third-Party Equipment, the team in which I worked as intern for six months. This team defines the global commodity strategies, the main topic of this thesis.

### **2.3.1 Sourcing Organization**

The goal of Sourcing is to define and implement Sidel's sourcing strategy over the short, medium and long term, to improve quality, delivery, cost and asset management. The function's overall objective is to ensure economical and timely quality sourcing of raw materials, components, parts, modules, equipment and services that the Company requires globally. Sidel is committed to fully making use of its collective buying power on a global basis, by moving the internal sourcing approach from components to modules.





**Figure 2.3** Sourcing Organizational Chart

The Sourcing is constituted by several teams:

- Drawing Parts and Sub-Assemblies, Commercial Components, Spare Parts and Third-Party Equipment: These category teams define and implement global sourcing strategies for their categories. In doing so, they are responsible for the selection and management of suppliers, price and contract negotiations, and continuous cost reductions
- Indirect Spend and Services: This team manages global sourcing activities to ensure that indirect spend is being purchased at the best possible conditions, through close monitoring of price
- Supplier Development: This team focuses on continuous improvement of strategic and preferred suppliers with the aim of operating best practice and improving productivity, quality and lead times
- Module and Product Development: This team's responsibility is to translate engineering specifications into a competitive offering from suppliers. This is achieved through early involvement in the product development phase and by developing an interface with suppliers for module cost and quality optimization

- **Processes and Performance:** This team handles the global sourcing process, including design implementation and supplier master data. It supports the other sourcing teams in setting savings targets and producing forecasts and cost analysis
- **Sourcing China:** This team focuses explicitly on China, working closely with the other sourcing teams, to ensure the global sourcing strategies, processes and approaches that are best adapted for the Chinese supplier network

### **2.3.2 Third Party Equipment: Organization**

The team in which I worked in my internship is the Third-Party Equipment. Firstly, it is important to introduce what is the role of the Third-Party Equipment team. It is the team that looks after the purchase of the equipment and all the things related to the equipment like the spare parts, the services, the option and upgrade that are not produced internally. Indeed, Sidel does not produce each equipment of the complete line that is sold to the final Customer. All the equipment that are not part of a make strategy, are purchased by the Third-Party Team, and then integrated into the complete line.

Regarding the structure, the team is composed by the Italian team located in Parma, and the Chinese team located in Beijing. The two teams have a similar structure. The executive vice president sourcing is at the top of the organizational chart. Aside by Third Party Equipment, he looks after at all the other sourcing team as well, like for example Commercial Components, Indirect and Services and so on. The Third-Party Equipment VP is located at the second level of the organizational chart. He/she is responsible of the team, and he/she refers to the executive vice president of sourcing. The next level is occupied by the three global commodity managers and by the Commodity Specialist, who provides a

general support to all the activities. The three global commodity managers are divided by area of relevance: one of them looks after the “Wet System I”. In this area of relevance are included these equipment:

- Process
- Cappers
- Seamer
- Nitro Dozers
- Piping

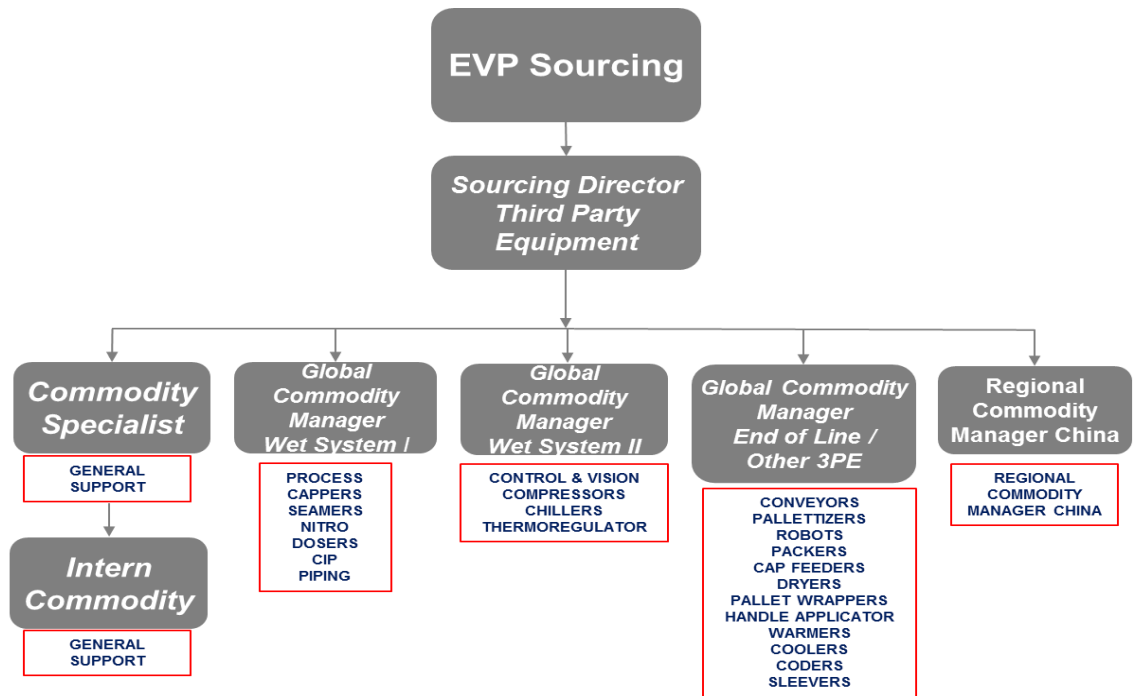
The second global commodity manager looks after the “Wet System II”. This area of relevance includes:

- Compressors
- Chillers
- Control and Vision system
- Thermoregulator

Lastly, the third global commodity manager administrates the “End of Line”. In this division are included:

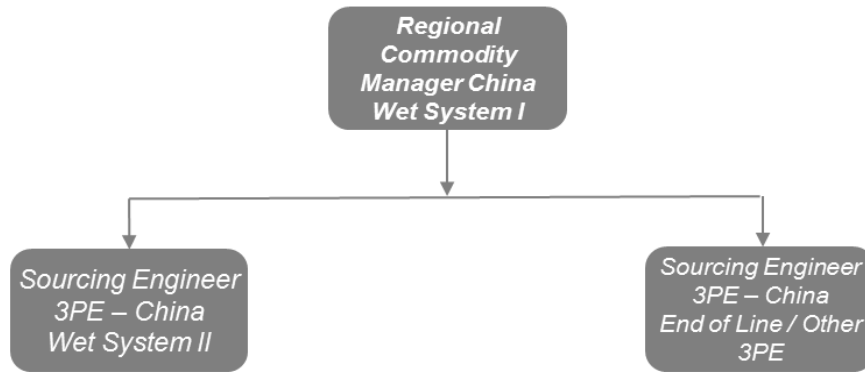
- Conveyors
- Pallettizer
- Packers
- Cap Feeders
- Dryers

- Pallet Wrappers
- Handle Applicator
- Warmers, Coolers and Coders
- Sleevers



**Figure 2.4** Third-Party Organizational Chart

The Chinese team has a similar structure: The Global commodity manager of the “Wet System I” is the one who reports to the European colleagues and to the VP Sourcing. At the same time, he/she looks after at the same equipment of the Italian Global Commodity Manager. Likewise, there are other two commodity managers that administrate the “Wet System II” and the “End of Line”.



**Figure 2.5** Third-Party “Chinese team” Organizational Chart

### 2.3.3 Third Party Equipment: Main Tasks and The Objectives

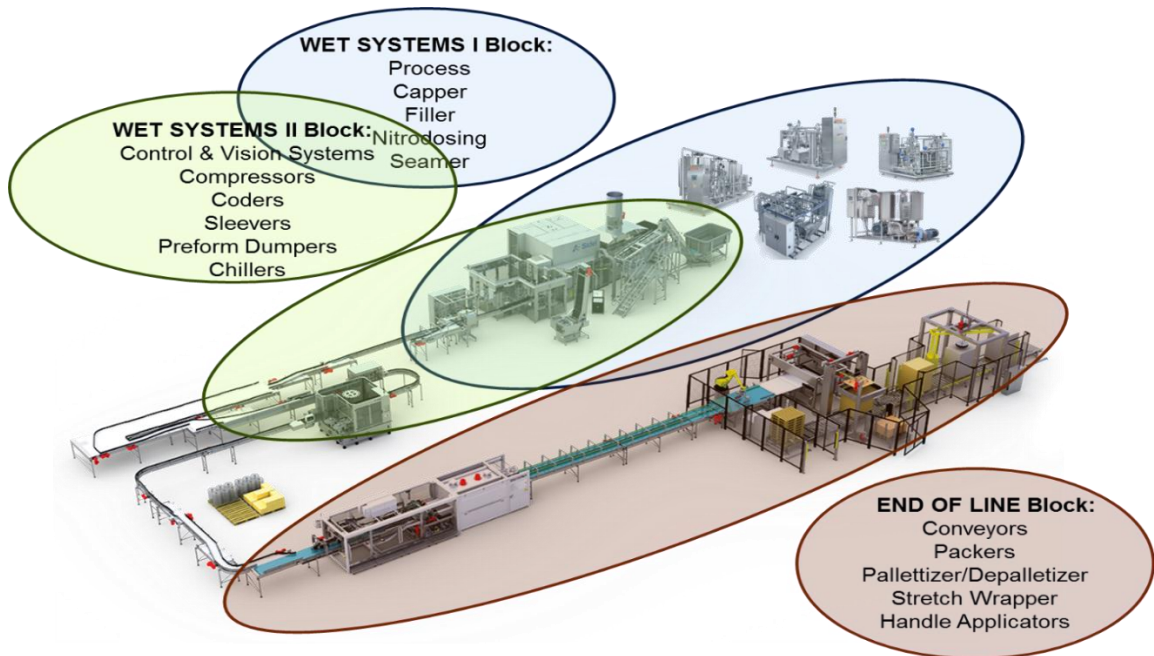
The Third-Party Equipment main tasks are:

- Select suppliers and Manage supplier relationships
- Define and establish, jointly with Product Management, category sourcing strategies at global and local level considering Sidel needs
- Establish and decide jointly with Product Management the supplier panel for each sub-commodity, reviewing it on a regular basis
- Negotiate prices, lead times and develop Commercial Agreements with key Third Party Equipment Suppliers and manage the contract’s execution
- Support Project Managers and Zones from commercial side and for main issues
- Ensure compliance with Sourcing Process and with Third Party Equipment Policy
- Promote sourcing best practices and ensure the execution the defined Commodity
- Strategies execution to improve company profitability and secure timely supply at most competitive costs
- Manage claims and disputes with the suppliers

- Foster global competition by developing new suppliers and achieve a balanced portfolio over the long term.

As underlined in the first bullet point the Product manager is a key stakeholder that collaborates proactively with the Third-Party equipment team. Every area of relevance (Wet System I, Wet System II, End of Line) has a reference Project Manager. His/her main tasks are:

- Product Manager becomes the preferred and direct (entry point) contact between Sidel and equipment suppliers for technical tasks.
- Product Manager defines together with the supplier the configuration of the standard machine once that line conditions are defined. Standard machine means: a solution represented by the basic machine plus the more common options.
- Product Manager defines rules and strategy for Third-Party Equipment suppliers, technical qualification and benchmarking.



**Figure 2.6** Area of Relevance of Each Global Commodity Manager

One of the most important goals of the Third-Party equipment team, and more in general of the sourcing, is to get cost reduction: faced with the difficult financial environment of recent years, cost reduction mandate is a top priority, and savings remain the main objective. More and more ambitious targets are assigned to Sourcing Departments, and in particular to Third Party Equipment, which remain the driving force in maintaining business competitiveness. To meet its challenges, the Company relies on the levers. These levers fall into three categories:

- Buy cheaper: it naturally represents the most emblematic cost reduction lever. It consists of influencing prices using different negotiation vectors without challenging specification or usage. Although Sourcing leverage is no longer limited to price optimization, it is still at the heart of all performance improvement initiatives. The companies in general strive for actions that generate “simple” quick wins by asserting their bargaining power.
- Spend better: even though “buy cheaper” is the first dimension, it is clear that, in most cases, the most obvious cost reduction levers have already been used. So, it is required to use more complex levers. “Spend better” consists of activating cross-functional and multidisciplinary levers. It means accepting and profiting from cross-functionality and therefore cooperating with all company departments. This close collaboration results in a more advanced approach consistent with the external environment, which is often necessary to achieve global objectives.
- Spend less: it means that all the opportunities that come with the improvement of processes and usage patterns must be studied. It is also necessary to reinvent ways of “doing it”. This process involves not only the Third-Party Equipment, but it is

characteristic of the Sourcing in general. By the way success often results from suppliers' acuteness in developing real proximity with the "field". The "use less" lever is underpinned by the following actions:

- Constraints, by the reinforcement of ordering processes and budget monitoring
- Implementation of rules governing the rights and duties of users
- Investment aimed at life cycle operating savings
- Scaling up of good practices and creation of internal emulation
- General improvement

In the next chapter it will be defined the Sidel global commodity strategy, with the guidelines applicable for all the commodities. In addition, the principle functions of the sourcing, and in particular of the Third-Party Equipment team will be deepened.



## CHAPTER 3

### GLOBAL COMMODITY STRATEGY

#### **3.1 Introduction to Procurement: Strategic vs Operational Procurement**

Procurement means a wide range of activities that includes the entire procurement process and operational management of suppliers. The macro procurement process is divided into two main processes: the sourcing process having a more strategic character, and the purchasing process of more operational nature. The sourcing process is characterized by of high strategic value because it supports the definition of future scenarios in which the company will make its purchasing decisions.

Sourcing's principal processes and activities are:

- **Define Strategy:** To define strategy, firstly is necessary to assess opportunities. Sourcing initiatives should begin by assessing the company's strategic and tactical procurement needs. Corporate priorities – such as cutting costs, increasing innovation, and enhancing flexibility – will shape how suppliers should be evaluated. Generally, a product-category analysis is needed to segment purchases into a workable number of differentiated groupings. The next step is to form cross-functional sourcing teams to manage the categories. Then it is necessary to profile internally and externally. The sourcing team must validate the mission and scope of each product category in collaboration with individual departments (e.g., manufacturing, R&D). The team gathers historical spending information to profile the organization's procurement practices in each category. They then capture business intelligence relating to the supplier's industry to provide a picture of the market environment. In the next stage is required to develop the strategy. The

mission of strategic sourcing is to minimize total cost of ownership, not just cut prices or reduce process costs. Thus, each product category needs its own TCO model, based on parameters such as price, quality, service needs, and expected lifespan. Armed with insights about the organization's strategic priorities, the industry environment and the priorities revealed by the TCO model, sourcing teams establish specific contracts for specific product categories.

- **Select Suppliers:** Screen suppliers and selection factors. During this activity, sourcing teams build out supplier information matrices that support the strategic and tactical procurement goals of each product category. Teams receive information from suppliers in response to submitted requests for information (RFIs), gather additional information from external data sources (e.g., Dun & Bradstreet, Open Ratings), and often factor in actual performance data for suppliers already doing business with the company. Based on the relative importance of each factor, the team develops a short list of prequalified suppliers to compete for a specific contract.
- **Establish Contracts:** Conduct auctions and RFPs. Depending on the characteristics of the product and the supplier industry, buyers have several sourcing options. For example, highly liquid commodities might be available through a B2B e-market, with an internal buyer serving as a liaison between the exchange and the rest of the company. Conversely, bulk commodities with relatively simple specifications may have their prices determined through reverse auctions. However, more complex materials, such as engineered products, usually require more thorough and iterative RFP activities that involve parallel negotiations or a reverse auction. Some large

classes of products, such as office supplies, are available through catalogs; in such cases, the sourcing process may involve asking distributors to compete on the basis of corporate discounts. Shape and negotiate value propositions. Companies may select one winner from the supplier competition; usually they choose to contract with a number of suppliers to mitigate supply risk and over-dependence on one company. Either way, most contracts require additional negotiations to finalize legal details and business processes (e.g., catalog versus supplier-managed inventory).

- **Manage Supplier Relationships: Implement agreements.** On an ongoing basis, procurement staff must be able to track the performance of suppliers to enforce compliance with contracts; identify and correct problems with products or delivery; and collect information for use when a contract comes up for renewal.

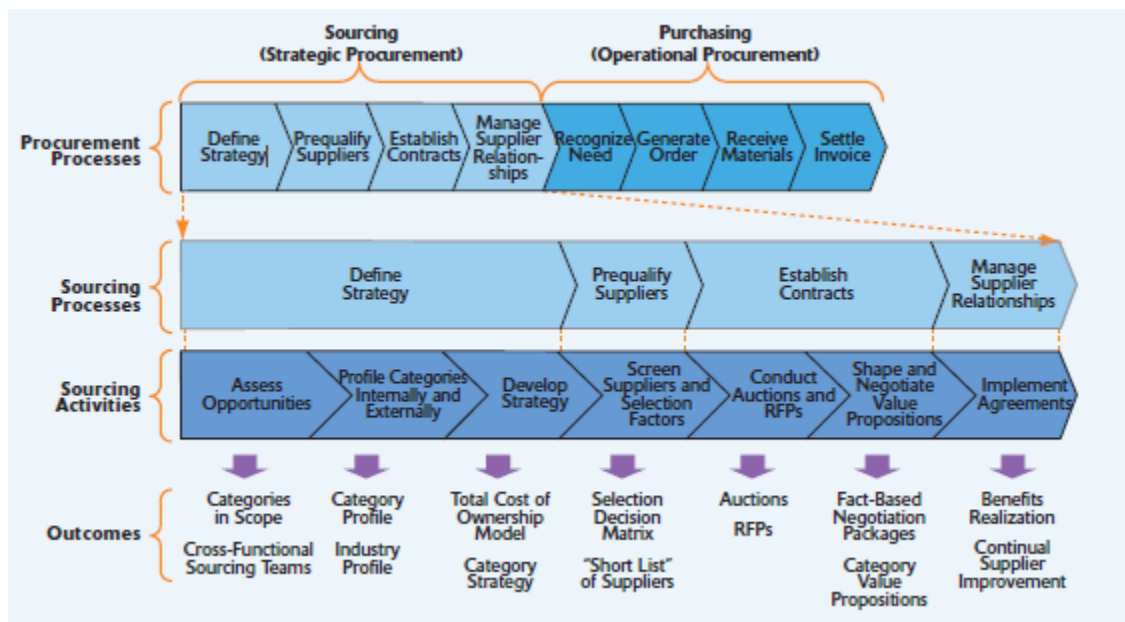
The Purchasing (operational Procurement) activities are focus on the operative side of the purchasing management. They are:

- **Recognize need:** The user issues the purchase request which describes in detail the technical characteristics of the material to be purchased, the quantities and conditions of delivery. For each purchase request, the company verifies the completeness of the data entered and checks the congruence with the physical quantities and the estimated values. If it is approved, it is forwarded to the selected suppliers.
- **Generate Order:** The purchase order is sent to the selected supplier or suppliers as the official document that contractually commits the parties. The order includes the main conditions of purchase such as price, form of payment, terms of delivery and

warranty conditions. This phase also includes monitoring the progress of the order and any requests if the supplier does not meet the agreed delivery dates.

- Receive Material and settle invoice: The customer receives the ordered material and verifies that all the requisites of quality and conformity of the goods are respected. The supplier sends the invoice related to the payment of the service performed. The company, after checking the conformity of the goods received, authorizes payment of the corresponding invoice.

The situation described is summarized in the figure below.



**Figure 3.1** Key Sourcing Process and Activities (Favre and Brooks, 2002)

### 3.2 Sidel Strategic Sourcing

After defining in general the procurement activities, now the same concepts are analyzed from a more specific standpoint, with the specific Sidel's vision applied to the concepts described in the last paragraph. Strategic Sourcing is a rigorous, systematic process by

which the organization analyzes its expenditures, evaluates both internal and external influences, and determines the appropriate supplier relationships necessary to support overall organizational goals. The most effective sourcing solutions are those that can integrate advanced negotiation technologies with considerable sourcing methodologies and product-category intelligence.

It is very important to understand that Strategic Sourcing is a very broad subject: it is not only concerned with the daily operational aspects of acquisition, neither an exclusively Purchasing or supply management responsibility. The execution of a sourcing strategy requires a high degree of cross functional integration for analysis, implementation and deployment of the strategy throughout the organization: delivering big cost reductions year after year requires sourcing leaders to do much more than simply demand price reduction from suppliers.

Given the nature of its function, the Sourcing organization faces pressures from both the external players that it contracts and the internal stakeholders it serves. Nowadays, the Function faces an increasingly global and constantly changing environment, where there are as many opportunities to be seized as many risks to be mitigated. The Sourcing function is engaged on all fronts: a cost reduction driver, contributor to risk management, and alternative source for business growth. This overview of Sourcing functions, prospects and priorities is intended to learn about the success of the most advanced initiatives. Sourcing performance practices are addressed under the triple heading:

- Cost reduction
- Procurement risk management
- Contribution to growth

### **3.2.1 Strategic Sourcing vs Transactional Buying**

To clarify what has just been said, it is important to stress the difference between the Strategic Sourcing and the Procurement:

- The objective of the Strategic sourcing is to establish and maintain long-term relationships between buyers and sellers, while for the procurement the objective is to process transactions according to pre-established contracts
- The essential activity of the Strategic Sourcing is concerned with the supplier selection and the contract negotiation, while the procurement essential activity is to place orders with contracted sellers
- Strategic Sourcing has impact on reducing the cost of goods sold, while procurement helps to reduce the paperwork processing costs
- Some of the most important skills required for the strategic sourcing are strategic view, contract negotiation, relationship buildings, while to work in the Procurement is enough to be reliable, accurate and self-organized

To summarize, the Sourcing Strategy is a more complex subject, more challenging and less routinely compared the Procurement.

### **3.2.2 Commodity Strategy: Concept**

First of all, what is a commodity? The term ‘commodity’ is used in supply chain management to refer to a general class of purchased items, so a commodity strategy is the specific decisions concerning sources of supply, number of suppliers, number of stocking points and relationship with suppliers that a company makes concerning any single commodity, while staying within the boundaries defined by the purchasing strategy. What

has been overlooked in the literature to date is the integration of environmental concerns such as redesign, substitutes, reduction, extension of the product life cycle and support for environmentally conscious suppliers into supply chain management via the primary vehicle for deployment: the commodity strategy.

The Global Commodity Strategy is the output of a cross-functional teamwork led by Sourcing, to identify for a specific Product or Service, for all Sidel Entities:

- The most sustainable supplier base in terms of quantity, profile and segmentation of Suppliers, with corresponding roadmap to cover the gap vs current situation
- The most suitable business model and best practices to apply to the reference market
- Any action to improve performances, such as cost, quality, delivery and technology.

Several criteria must be analyzed to consistently reach an objective decision on the appropriate strategy for each commodity. Indeed, before starting to work on a commodity strategy, it is very important to have a clear picture of the situation, in terms of the commodity, the suppliers, the marketplace and the context in which the company operates. Now these concepts that have just been introduced will be explained:

- Commodity: it is important to have clear what is the relative size of spend, what is the variety and complexity of product specifications, what are the main cost drivers, what is the rate of product and market innovation, and finally what is the potential for cataloguing.

- Suppliers and marketplace: it is important to understand the supplier fragmentation and if there is a sufficient availability of reliable suppliers. In addition, it must be clear the level of the market: if it is complex and if so, how much it is.
- Context: It is important to have a clear picture of the situation, in particular what is the Strategic Importance of the product or the service in question.

A good commodity manager must understand very well his/her commodity, suppliers and market place.

### **3.3 The Commodity Execution Process**

The Commodity Execution Process is a standard methodology to be followed in order to choose the right strategy for each commodity. It offers the most structured strategy with maximum potential benefits. First of all, it must be understood how critical the commodity is and whether the target is only on short term or if it also on long term.

Depending on the relationship and on the importance of the supplier, as will be explained better in the next paragraphs, Sidel chooses to prefer short term strategy, rather than a long-term strategy, or vice versa. If for example the supplier is a long-time supplier with a strategic partnership the target will be to gain results on a long-term basis. Instead, if Sidel is dealing with a spot supplier for a specific deal/tender, the objective will be to maximize the results on a short-term basis.

There are two kinds of approach, depending on the criticism of the commodity: if it is not so critical, the approach to be used is constituted by three principal techniques: price renegotiation, volume pooling, cost benchmarking. The first one refers to the fact that the commodity manager must focus on the negotiation of the price, terms and conditions.



If there is not a way to find a good agreement, the manager must evaluate the possibility to change supplier and redefine a new agreement. Otherwise, another option is to consider the internal make solution: if there are the conditions required this can be the best solution, in terms of costs and of lead time. The second one refers to a change in the volume pooling. It leads to leveraging existing contracts or extending an existing contract in a new one. The final consequence is a new volume allocation. Of course, the final goal is always a cost reduction. The third technique is the cost benchmarking. It consists in the comparison among different offers of the same supplier, or from different suppliers depending on which is the corporate strategy for the commodity.

The second approach is the one used in the case in which the commodity is critical. It is the essence of the commodity execution process and it is the approach that ensures sustainable savings over the years. It is used for commodities that represent an important spend. It is divided in two big categories based on the time horizon in which the commodity manager must keep the process under control:

- 6-9 months, that consists of 4 stages:
  1. Assess demand and specification: firstly, it consists in the definition of purchasing requirements and specification, secondly in defining current and future needs. In addition, in this stage is important to understand characteristics and cost drivers per category/segment. Moreover, it is necessary to identify lever that can be activated and quantify potential savings.
  2. Assess supply: it consists in screening supply market and reviewing current supplier performance. It means understanding the market structure and identifying most relevant sourcing countries and potential suppliers.
  3. Develop sourcing strategy: it refers to the development of the most relevant supplier selection strategy and consecutive negotiation approach based on demand, specifications and supply.

4. Negotiate and select supplier: it consists in the selection of the best supplier based on weighted selected criteria, like for example quality, cost, delivery, performance.
- 3-5 years, that consists of 2 stages:
    1. Implement: this stage ensures a proper implementation for sustainable impact on tracking savings and on monitoring and developing relationships with suppliers.
    2. Review: it consists in the planning of a regular strategy reviews, for example it could be done once a year. In this way, it is possible to anticipate bottlenecks, ensuring that the future strategy is prepared at the relevant time, and it is possible to define an action plan that allow to monitor the strategy.



**Figure 3.2** Commodity Execution Process: The Stages

All these concepts, that have just been listed and introduced in this paragraph, will be deepened in the rest of the chapter. In particular, to each of them is dedicated a single paragraph.

To summarize what has just been discussed, the global commodity execution process is a standard methodology to gather required data and to develop a sustainable three to five years plan that can allow to develop the products and the processes. In addition, it allows the supplier to impact more strongly on lowering down the Total Cost of Ownership.

### **3.4 Total Cost of Ownership (TCO)**

The Total Cost of Ownership has been mentioned in the last paragraph. It is a fundamental element in the definition of the commodity strategy. Before proceeding with the discussion, it is important to define what is in detail the TCO. This because in the purchasing process is very important consider the TCO, and not only the purchase price. The TCO is a full costing approach that reflects the entire life cycle of the product or service to be acquired. Indeed, it is becoming essential to consider all of the costs inherent in the planned purchase since the isolated price criterion is no longer the only component of a “good buy”.

According with Leenders and Fearon (1997), TCO can be divided in three macro categories:

- **Pretransaction Costs:** are those costs that occur prior to receiving the purchased items, and even prior to placing the order. These costs include all cost incurred from the time that anyone within the company begins to think about and investigate the possibility of buying an item, up to, but not including, order placement.

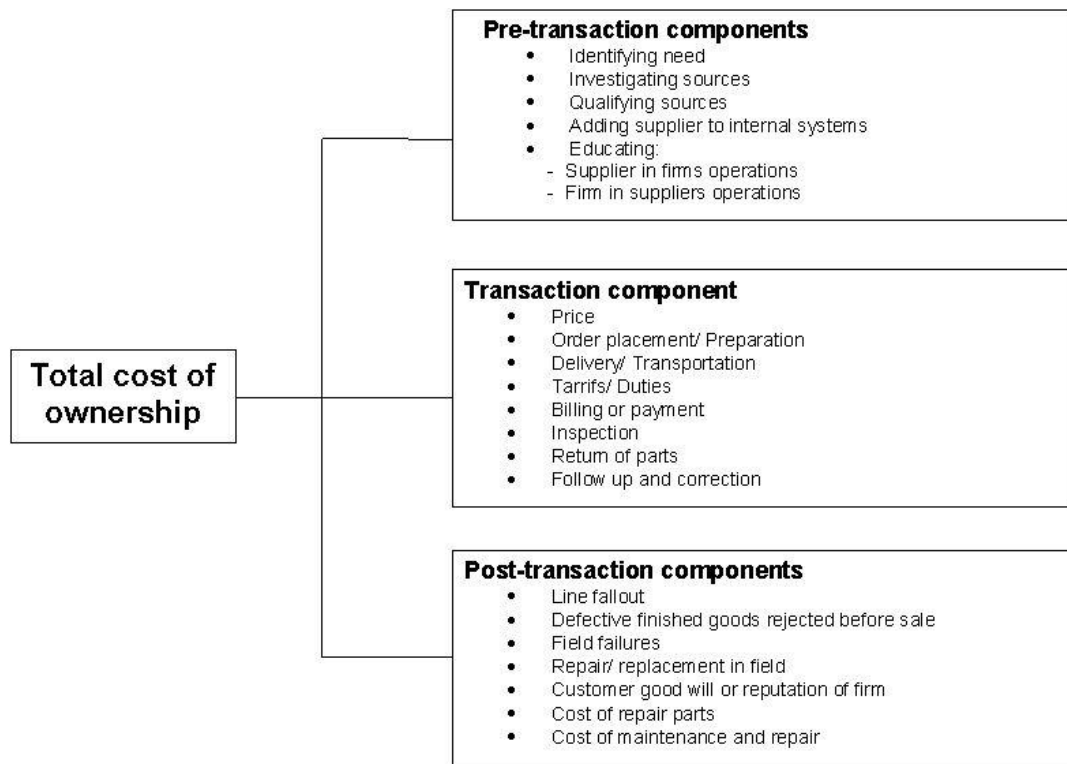
Some of the costs that may be overlooked are the costs of investigating alternative sources, qualifying and educating suppliers regarding the company’s

systems and expectation, and adapting to the systems, styles, and delivery methods of new sources of supply. The elements of the Pretransaction components are:

1. Identifying needs
  2. Investigating sources
  3. Qualifying sources
  4. Adding supplier to internal systems
  5. Educating supplier in company's operation and vice versa
- **Transaction Costs:** Transaction cost elements are those items that are related to order placement and receipt and include the price of the item or service itself. Included are those costs associated with actually placing an order and getting the order in to the Company or supply chain, ready for the next value-added process. As such, transaction costs are those costs associated with preparing and placing the order, following up on the order, receiving matching receiving data to the invoice, and paying the bill. Transaction costs elements tend to be more widely recognized than the other two categories, since these are the costs that occur in closest time, space and relationship with the transaction itself. Costs that are sometimes overlooked in compiling transaction costs are purchase order preparation, auditing and matching of order, receiving and invoice payment, and correction of incorrect documents.
  - **Post transaction Costs:** are those costs that occur after the purchased item is owned by the firm, in the possession of the firm, its agent and customer. The actual occurrence of post transaction costs may be soon after the order is received, or years later when the purchased item is use or being modified, repaired, or disposed of.

The more distant in time a cost occurs from the transaction, the less likely it is that the cost will be recognized as explicitly related to the purchase of a certain item from a certain supplier. Cost in this category are the most frequently overlooked by firms. Post transaction costs frequently overlooked include product repair in the field, routine and special maintenance costs, costs associated with replacement part scarcity and/or obsolescence, and similar issues. These costs are often difficult to track and may be separated from the purchase by a great deal of time.

The figure below summarizes what has been discussed.



**Figure 3.3** Total Cost of Ownership (Leenders and Fearon, 1997)

To summarize the paragraph, when the Global Commodity manager compares the prices of different suppliers, he/she must pay attention at the TCO rather than only at the

purchasing price. Indeed, a low-cost component can be very burdensome for the company as it can subsequently lead to additional costs, linked for example to the poor technical reliability of the product or supplier logistics, which may prove to be higher than its mere economic value of purchase.

### **3.5 Assess Demand and Specification**

After introducing the various stages that characterize the commodity execution process, the TCO, and more in general the global commodity strategy, now these topics will be deepened. In this paragraph is discussed how to assess demand and specification.

Firstly, it must be collected raw data: turnover for the category with data referred to the last 4 years, including volumes, prices, specifications, suppliers, and all other data that could be useful. After collecting these data, they must be analyzed and summarized. To do this, it could be useful to split the commodities into sub-commodities, to have a clearer picture of the situation. Afterwards, the situation for every sub-commodity could be split by the different suppliers that supply the commodity. So, it can be identified the number of suppliers and their geographical location.

The next step is to analyze cost structure, with a particular focus on performance: it is important to sketch the typical cost breakdown, to identify the main cost drivers and to sum up them to a basic Total Cost of Ownership, adding other cost elements, among which transportation and duties costs.

Regarding the assessment of specification, it is constituted by a first section in which is analyzed the technology and market trend. There is a focus on the product and innovation, and on the global market condition.

Product and Innovation is the section that regards the particular specifications of the machine in the commodity in analysis, while the global market conditions represent the trend of the commodity in question, but it is related to a more generic vision, not connected to the specifications of the machine.

Some examples can be very useful in order to clarify what has just been said. Questions related to product and innovation could be “Has the Company some on-going innovation projects related to these product categories?”,” Is a critical product for some Company application?”. Instead, a couple of questions related to the Global Market Condition could be “Do the Suppliers in the market differentiate ourselves in the market?”, “Is the market price depending on volumes, or strategic partnership?”.

## Technology and market trend

<b>Product &amp; Innovation</b>	<ul style="list-style-type: none"> <li>▪ Has the Company some on-going innovation projects related to these product categories?</li> <li>▪ Is a critical product for some Company application?</li> </ul>
<b>Global Market Conditions</b>	<ul style="list-style-type: none"> <li>▪ Do the Suppliers in the market differentiates ourselves in the market?</li> <li>▪ Is the market price depending on volumes, or strategic partnership, ...?</li> </ul>

**Figure 3.4** Questions About Technology and Market Trend

### 3.6 Assess Suppliers

After assessing demand in terms of data analysis and cost structure, the next step is to assess the suppliers. Firstly, it is required to structure a summary overview for the main suppliers of the commodity. The summary overview is constituted by a comparative table, in which there are listed the principal elements that characterize the supplier profile, like

the turnover related to the last years, and the main products realized by the supplier. In addition, it is analyzed the relationship with Sidel in terms of the turnover of the supplier with Sidel and the quality assessment made by Sidel to evaluate the supplier. Finally, there is a section dedicated to the supplier commitment in terms of Quality, cost reduction and projects on going. This is very useful to have a first comparative picture for each supplier. Below there is an example of how is structured the comparative table.

**Table 3.1** Comparative Table to Assess Suppliers

Supplier		xy		Sub Commodity		Commodity			
Company profile				Business relationship with Sidel					
Turnover in total		Main products		Supplier since		Date			
CY2015	- € M			Turnover with Sidel					
CY2016	- € M			CY15	- € M	CY17	- € M		
CY2017	- € M			CY16	- € M	CY18e	- € M		
CY2018e	- € M			Quality assessment					
Most important customers		Production sites		Last supplier score		Last ppm-rating			
				Quality	A	Target	-	Status	-
				Logistics	A	Quality certificates			
				Communication	A	E.g. ISO 9001 / 14001			
				Purchasing	A				
				Total	A				
Supplier commitment for CY2018									
Commitment		Quality		Cost reduction		Jointly concluded engineering			
Remarks									

The most important parameter to assess the suppliers is the cost of their machines. Through a benchmark is possible to compare the costs. The cost is not the only element that has to be assessed in a supplier to establish which supplier is the best. Indeed, as it has been discussed in detail in the paragraph 3.4, the commodity leader has to evaluate all the elements of the TCO, or at least the elements the are considered most significant, and on



which there are data that can be evaluated. Sidel anyway considers the cost as the most important element of TCO. In order to assess the prices of the different suppliers on the same machine, the global commodity manager has to develop cost benchmark. Sidel uses principally two kinds of benchmark: the first one is based on the basic machine. It means that are compared the machines without any optional.

The second kind of benchmark is based on the standard machines. The configuration of the standard machine is defined by the Product Manager in accordance with the commodity leader of the commodity. The “standard machine” is the configuration that characterize the machines that Sidel normally purchases. If it is possible the best solution is to compare the machines of the supplier based on the “standard machine” configuration. This because in this way is possible to compare the realistic configuration that will be purchased by Sidel. Indeed, when the comparison is made on the basic machine, it is not realistic: some options are always bought. By the way, sometimes there are no choices, and the manager has to use the benchmark made on the basis machine. This because often there are no information on how is configured the standard machine. This is principally due to one of the following two reasons:

1. The machine has never been purchased before
2. The options of the different suppliers are difficult to compare

If the commodity leader has to face a situation described in the two bullet points above, it is preferable to assess the suppliers through a cost benchmark on the basis machine. It is anyway a very reliable tool that allow to have a first picture of the situation of the commodity in terms of costs. Of course, in a second moment, when the data are available,

the manager prefers to develop a cost benchmark based on the standard configuration that allow to have a more accurate analysis.

### **3.6.1 Tools and Methodologies: The Matrixes**

Aside from the cost benchmarking, the assessment of the suppliers is structured in different steps that allow to understand distinct aspects through the analysis of several matrix and diverse supporting tools. There are several matrices that can be powerful tools to assess the suppliers. It will be analyzed 6 types of matrix. All these matrices derive from the Kraljic matrix: it is an important tool that is very helpful to define the purchasing portfolio approach. So, in the next paragraph it will be introduced and explained in detail what is the Kraljic matrix. Then it will be explained what the tools are used to assess suppliers in Sidel.

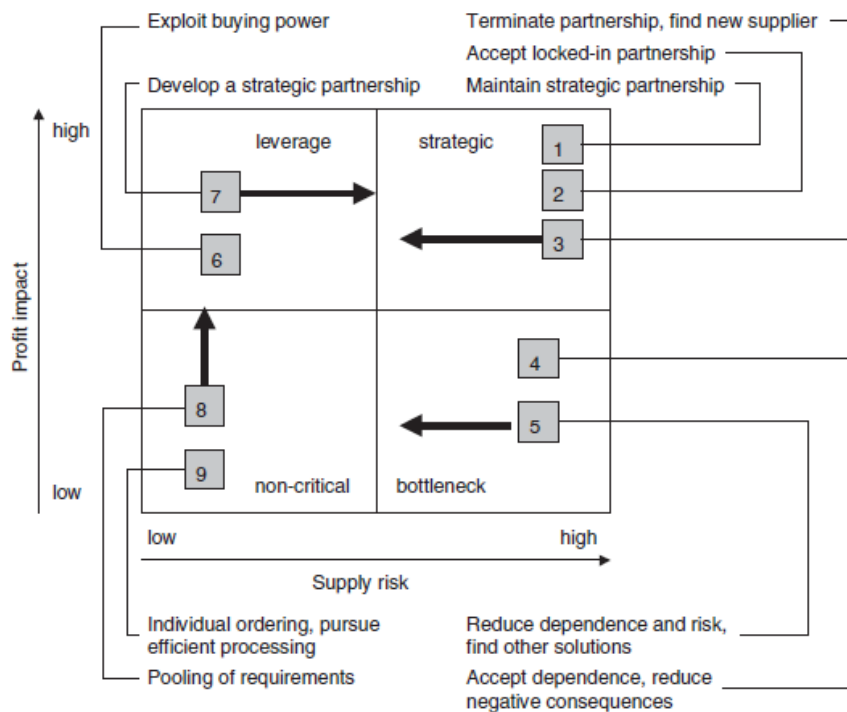
### **3.6.2 Kraljic Matrix**

One of the most famous portfolio models was introduced by Kraljic (1983). His model has had and still have a broad influence on professional purchasing, and the fact that it is used in Sidel is a prove of this. According to Kraljic (1983) a firm's supply strategy depends on two factors: profit impact and supply risk. Accordingly to this matrix, purchasers make a clear distinction between several strategies within each quadrant (Gelderman and Van Weele, 2003). Purchaser identify two main strategies: hold their position in the quadrant or move to another position. Kraljic (1983) stated that the general idea of the portfolio approach is to "minimize supply vulnerability and make the most of potential buying power". It seems that power and dependence play a significant role in the Kraljic approach.

The relative power and dependence position of buyers and suppliers are therefore expected to be factors of importance in explaining the conditions that influence the choice of purchasing strategy within each quadrant. Kraljic (1983) argues that supply management is particularly relevant in the case that the supply market is complex, and the importance of purchasing is high. He proposes a four-stages approach as a framework for developing supply strategies for single products or products groups. In the first stage, a company classifies all its purchased products in terms of profit impact and supply risk. Subsequently, the company weighs the bargaining power of its suppliers against its own power. Then, the company positions the products that were identified in the first stage as strategic (high profit impact and high supply risk) in a portfolio matrix. Finally, it develops purchasing strategies and action plans for these strategic products, depending on its own strength and the strength of the supply market. Three general purchasing strategies are recommended: exploit (in case of buyer dominance), balance (in case of a balanced relationship), and diversify (in case of supplier dominance). With the help of this matrix, professional purchasers can differentiate between the various supplier relations and choose strategies that are appropriate for each category and thereby effectively manage suppliers (Nellore and Soderquist, 2000).

The buyer's dependence on the supplier is a source of power for the supplier, and vice versa. A well-known definition is that the relative power of an organization over another is the result of the net dependence of the one on the other. If A depends on B more than B depends on A, then B has power over A (Pfeffer, 1981). Symmetrical interdependence exists when parties are equally dependent on each other. Buyer-supplier relationships that are characterized by asymmetric interdependence are more dysfunctional

because the independent partner experiences high power and will be attempted to exploit it (Anderson and Weitz, 1989; Geyskens et al., 1996; Frazier and Rody, 1991). A high level of total interdependence is an indicator for a strong, co-operative long-term relationship in which both parties have invested. Mutual trust and mutual commitment will characterize those relationships (Geyskens et al., 1996). Besides this loyalty towards the other partner and the accompanying desire to continue the relationship, there is an alternative motivation for both firms to keep the partnership intact. In the case that both parties know that the other party possesses much power, it is not likely that either side is going to use it. The risk of retaliation is often considered as being too high (Ramsay, 1996). In addition, when total interdependence is high, both partners are faced with high exit barriers (Geyskens et al., 1996).



**Figure 3.5** Kraljic Matrix (Gelderman and Van Weele, 2003)

After introducing the Krajiic, the four quadrants and the relative strategies that characterize each are described. The quadrants are: strategic item, bottleneck item, leverage item, non-critical item.

The strategic items represent considerable value to the organization in terms of a large impact on profit and a high supply risk. Examples are engines and gearboxes for automobile manufacturers, turbines for the chemical industry and bottling equipment for breweries. Often strategic products can only be purchased from one supplier (single source), causing a significant supply risk. The general recommendation for supplier management in this quadrant is to maintain a strategic partnership. Purchasing practitioners employ two additional purchasing strategies in this quadrant, namely accept a locked-in partnership and terminate a partnership, find a new supplier (Gelderman and Van Weele, 2003). The three possible strategies for this quadrant are:

1. **Maintain strategic partnership:** In order to counterbalance the supply risk, firms will aim at building a partnership relationship with its supplier (Elliott-Shircore and Steele, 1985). The mutual trust and commitment that is associated with an intensified relationship is likely to reduce the supply risk to a minimum. A close and lasting co-operation with suppliers will lead to improvements in product quality, delivery reliability, lead times, product development, product design, and it will result in cost reduction (Tuten and Urban, 2001; Hadelar and Evans, 1994). This situation can be characterized as one with balanced power. Buyers and suppliers are both heavily involved in the partnership, therefore mutual dependence is expected to be high. Total interdependence is high as well, since the relationship is very intense.
2. **Accept a locked-in partnership:** This strategy often occurs when the buyer is subject to unfavorable conditions of the supplier and is unable to pull out of the situation. The locked in position might be caused by the fact that the supplier holds the patent to a certain product and therefore, has monopoly power to some extent. This situation can be characterized as one dominated by the supplier. Buyers and suppliers are not as much involved in the partnership as in scenario 1 described above, therefore total interdependence is expected to be lower than in scenario 1.
3. **Terminate a partnership:** This strategy is employed when a supplier's performance has become unacceptable and incorrigible. The buyer will try to reduce his

dependence on the supplier. One way of achieving this is to search for alternative suppliers. In this situation the buyer still depends on the supplier, so it is expected to find supplier dominance, although to a lesser extent than when the lock-in partnership is accepted as described in scenario.

The bottleneck items are products that have a moderate influence. These products have a moderate influence on the financial results of a firm, however, they are vulnerable with regard to their supply. Suppliers have a dominant power position for these products (Kempeners and van Weele, 1997). The purchasing strategy that is commonly recommended for these products is primarily based on acceptance of the dependence and reduction of the negative effects of the unfavorable position. An alternative strategy suggested by purchasing practitioners is to find other suppliers and move towards the non-critical quadrant. The two strategies related to this quadrant are:

1. Accept dependence, reduce negative consequences: The main focus of this strategy is to assure supply, if necessary even at additional cost. Examples of this strategy are keeping extra stocks of the materials concerned or developing consigned stock agreements with suppliers. By performing a risk analysis firms can identify the most important bottleneck products and consider the implications. A possible action for dealing with unexpected bad dependence positions for certain products are to employ contingency planning.
2. Reduce dependence and risk, find other solutions: This strategy is geared towards reducing the dependence on the supplier. The most common way to achieve this is to broaden the specifications of the product or to search for new suppliers. It is expected that the supplier dominance to be the highest in the case that the buyer accepts the dependence position, i.e. scenario 1. In case of scenario 2 the buyer searches for ways out of the current situation, and for this to be possible it is expected that the supplier dominance to be less fierce than in scenario 1. Total interdependence in situation 1 is expected to be higher than in situation 2, since buyers are not very involved in the relationship when they are searching for alternative suppliers.

Leverage items are products that can be obtained from various suppliers. These products represent a relatively large share of the end product's cost price in combination with a relatively low supply risk. The buyer has many possibilities and incentives for

negotiation, since small percentages of cost savings usually involve large sums of money (Olsen and Ellram, 1997). At the same time the supply risk is minimal. These characteristics justify an aggressive approach to the supply market (e.g. Van Weele,2000). Frequently, a purchasing strategy directed towards exploitation of the buying power is pursued. Practitioners also identify an additional strategy in this quadrant, which is intended to change the current situation: develop a strategic partnership. The two strategies for the leverage items are:

1. Exploit buying power: In this strategy the firm pursues competitive bidding. Since suppliers and products are interchangeable, there is no need for long-term supply contracts. In general, a coordinated purchasing approach is adopted that has the form of a centrally negotiated umbrella agreement with preferred suppliers. Call-off orders are then placed as an administrative formality. The buying power is actively used to get better deals with interchangeable suppliers. This scenario is therefore characterized by buyer dominance (Kempeners and van Weele, 1997).
2. Develop a strategic partnership: In a few cases practitioners choose to abandon the leverage position and opt for a strategic partnership with a supplier. This cooperative strategy is only pursued when the supplier is willing and able to contribute to the competitive advantage of the buyer's firm. Hence, this role is only attainable for technologically advanced suppliers. In this scenario it is expected to find a balanced power position between the buyer and supplier. Total interdependence in scenario 2 is expected to be higher than in scenario 1, since buyers and suppliers become increasingly involved in the relationship when a strategic partnership is built.

Non-critical items are the products usually have a small value per unit. These products usually have a small value per unit. In addition, many alternative suppliers can be found. From a purchasing point of view, these items cause only few technical or commercial problems. As a rule of thumb routine products require 80% of the purchasing department's time, while they often represent less than 20% of the purchasing turnover. In general, in this situation purchasers are advised to pool purchasing requirements. In

addition, Gelderman and Van Weele (2003) identify the strategy of individual ordering and pursue of efficient processing. The two possible strategies related to non-critical items are:

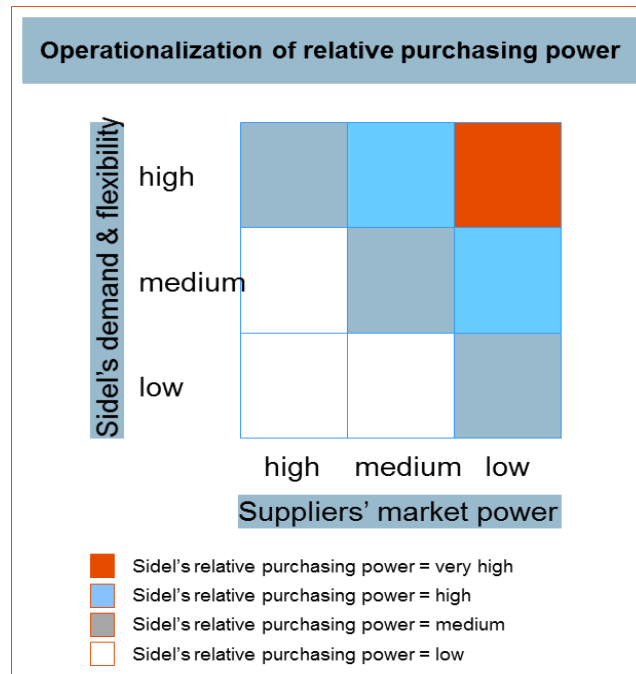
1. Pool purchasing requirements: The handling of noncritical products requires a purchasing strategy aimed at reducing the logistic and administrative complexity (Olsen and Ellram, 1997). Systems contracting is generally advised as the way of doing business with suppliers of routine products (Elliott-Shircore and Steele, 1985; Kempeners and van Weele, 1997). The main idea is to enhance purchasing power by standardization and bundling of purchasing requirements.
2. Individual ordering, efficient processing: Whenever it is not possible to pool the purchasing requirements, professional purchasers adopt some kind of individual ordering, for instance by means of a purchase card. This strategy is aimed at reducing the indirect purchasing costs that are associated with administrative activities, such as ordering and invoicing. In scenario 1 as well as 2 the routine character of the transaction implies that the relative power position between both parties is balanced. Total interdependence is expected to be lowest in scenario 2.

### **3.6.3 Sidel Matrices**

After introducing and explaining in detail the Kraljic matrix, now it is time to come back to the matrices used in Sidel to assess and to evaluate suppliers. All the matrices derived from the Kraljic matrix models and are variation of original Kraljic matrix. Depending on the exigency of each analysis, different parameters are positioned on the axis, but the main reference is the Kraljic matrix.

The first matrix analyzed is a matrix that is used to assess the Sidel's relative purchasing power in the supplier markets. It is used a matrix which objective is to understand the market and the power that Sidel has on it.

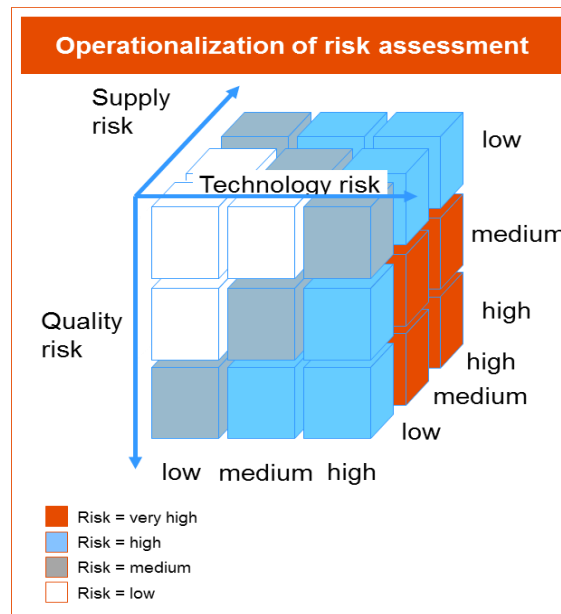




**Figure 3.6** Sidel Purchasing Power Matrix

On the y-axis is the Sidel's demand and flexibility, and on the x-axis, is the suppliers' market power. Both the parameters on the axis are divided in three categories, depending on their level: high, medium and low. So, the resulting matrix is a square divided in nine sub-squares that display the combination of the two parameters. In the upper right Sidel's relative purchasing power is very high. This is due to a high Sidel's demand and flexibility and to a low supplier's market power. As the Sidel's demand and flexibility decreases and the suppliers' market power increases, the Sidel's relative purchasing power gradually diminishes, as shown in the image above. Indeed, in the lower left Sidel's relative purchasing power is low, due to the a low Sidel's demand and flexibility and a high Supplier's market power.

The second step is the definition of the material group importance. It depends on the risk profile of the material. It is used a matrix which goal is to understand the critical issues connected with the product.

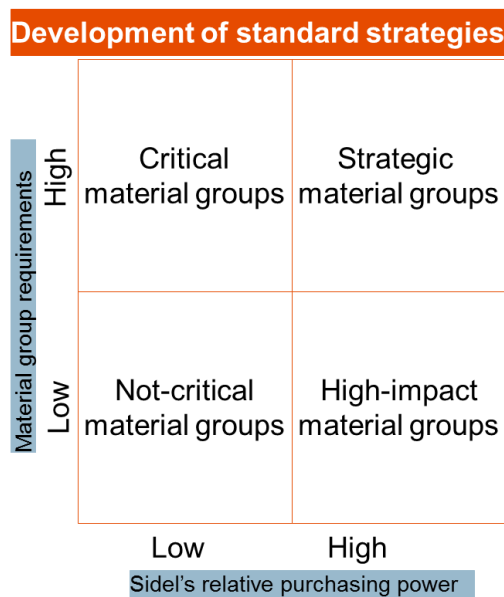


**Figure 3.7** Sidel Material Group Importance Matrix

It is a three-dimensional graph: on the x-axis is Technology risk, on the y-axis is Quality Risk, on the z-axis is the Supply risk. The resulting graph is constituted by 27 cubes that represent a difference in terms of material. Four critical level are defined based on the risk for Sidel, as shown in the image above: very high, high, medium and low risk. In the lower right three cubes represent a very high risk for Sidel: this because each of the parameters on the axis have a high level of risk. The result is an elevate overall risk for Sidel. On the opposite side, some cubes have low supply risk, low quality risk and low

technology risk. This means a low overall risk for Sidel for the material in analysis. With the same procedure the whole matrix is defined.

The third step is reached combining both elements from the first two steps, Sidel's relative purchasing power and the risk profile of the material. It results in a matrix in which the material group strategy is defined. The matrix is constituted by four quadrants that settle the material group.



**Figure 3.8** Sidel Purchasing Power and Material Group Importance Matrix

On the x-axis is Sidel's relative purchasing power, while on the y-axis is the material group requirements. According to these two parameters are identified four quadrants:

- Strategic material: if a material is classified in this quadrant, it means that Sidel's relative purchasing power and material group requirements are high. So, it is necessary to have a deep understanding of which are the best supplier in Sidel's panel and it is important to create strong partnership to establish strong relationship.

In this case Sidel must focus on medium-long term cost savings: short term focus does not pay in this situation.

- **Critical material:** in this case Sidel's relative purchasing power is low, while material group requirements are high. The material classified in this quadrant are the most difficult to manage: this is due to the low purchasing power of the company. These are critical commodities as they represent high risk either due to quality, technology boundaries or supplier market. In this situation it is necessary to build good and communicative relationships with focus on mitigating the risk and obtaining long terms gains, rather than short term cost savings.
- **High impact material group:** are materials characterized by a high Sidel's relative purchasing power and low material group requirements. Sidel is in an advantageous position, since it has high purchasing power; the right chose is to change the supplier if it is not enough competitive. In this group of products, the company can push the suppliers into a strong but healthy competitive environment, and this in undoubtedly an advantage situation for Sidel. So, the strategy in this case it to put high pressure on the suppliers and to utilize high dependency.
- **Not critical material:** these materials have low Sidel's relative purchasing power and low material group requirements. The focus is on short term cost savings.

Aside from these three matrixes, there is another group of matrices constituted by three matrices, in which the idea is to plot suppliers and product groups to a matrix based on defined criteria. The three matrixes are:

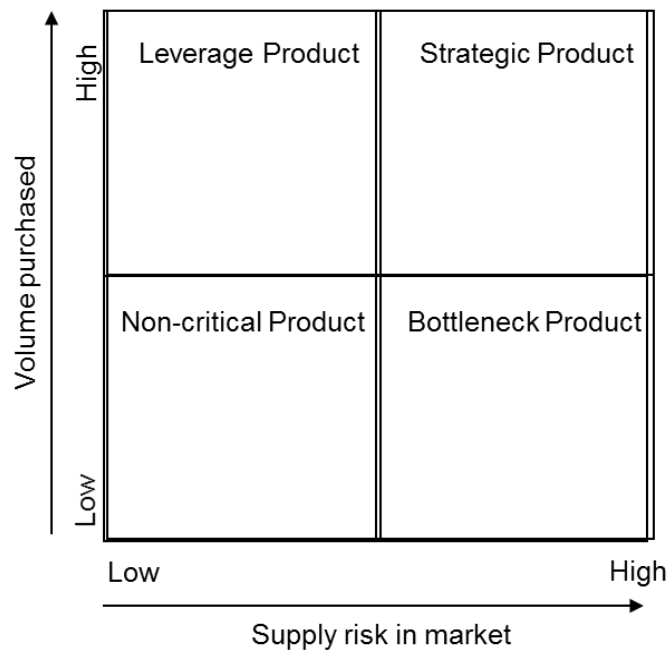
- Product Portfolio Matrix (PPM)

- Supplier Portfolio Matrix (SPM)
- Supplier Strategy Matrix (SSM)

The Product Portfolio Matrix (PPM) demonstrates how important the Product is for the Company. It is constituted by four quadrants, that represent four diverse critical levels:

- Strategic Product
- Leverage Product
- Bottleneck Product
- Non-critical Product

These four quadrants are identified based on the two parameters on the axis: the supply risk in the market and the amount of volume purchased.

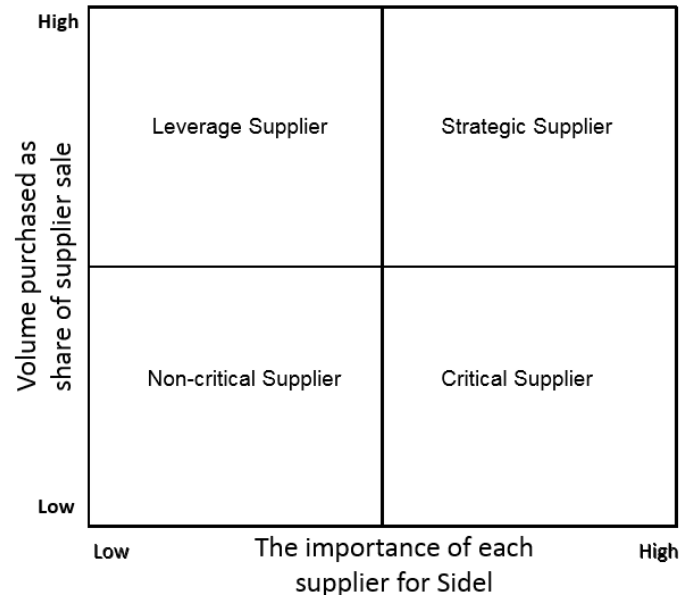


**Figure 3.9** Sidel Product Portfolio Matrix

The strategic products have a significant strategic importance for the company: both the volume purchased and the supply risk in the market are high. This situation is typical in a context in which the substitution or the change of a supplier is difficult, the market is oligopolistic, that is there are few suppliers for a large majority of sales, and the volume purchased are high. The leverage products are characterized by a low supply risk in the market and high volume purchased. This means that there is an adequate availability of others supplier that can offer the same product, so substitution of the supplier is possible. The bottleneck products refer to those products that have a high risk in the market and a low amount of volume purchased. In this context the situation is not easy: is difficult to change the supplier because the market is monopolistic, with or few suppliers. There are high entry barriers and the geographical and political situation in the market is critical. Lastly, the non-critical products are those less important to the company. This because their level of supply risk in the market and their amount of volume purchased are low. The product in this quadrant are characterized by and adequate availability of possible substitution. In addition, they have standardized specifications.

The Supplier Portfolio Matrix (SPM) displays how much is important Sidel for each potential supplier. All the potential suppliers are placed in this matrix. As well as the Product Portfolio Matrix, it is constituted by four quadrants, that are:

- Strategic Supplier
- Leverage Supplier
- Critical Supplier
- Non-critical Supplier



**Figure 3.10** Sidel Supplier Portfolio Matrix

These four quadrants are defined based on the two parameters on the axis: the importance of each supplier for Sidel and the Volume purchased by Sidel as share of the supplier sales. It is important to stress which are the aspects that have impact on the importance of each supplier for Sidel. Firstly, it depends on how much Sidel needs the supplier, because of its technical knowledge. It happens that only one supplier is capable at producing a certain type of machine, as it will be seen in the next chapter, in the case of Nitro Dozers. In that case, only the “Supplier Green” is capable to produce the “Aseptic Nitro Dozers”. For this reason, Sidel cannot prescind from “Supplier Green”, and consequently it has a high importance for Sidel. Strategy choices are another factor that has a big impact on the importance of a supplier for Sidel: indeed, if Sidel decides to promote a supplier due to a strategic partnership, it consequently has a high importance for Sidel.

The Strategic suppliers are those which have a high importance for Sidel, and for which a large part of the turnover is due to sales with Sidel.

The Leverage suppliers are those which have a low importance for Sidel, but a large part of their turnover is due to sales with Sidel.

The Critical suppliers are very important for Sidel, but the turnover with Sidel has not a big impact on their total turnover.

Finally, the non-critical suppliers are neither important for Sidel, neither their turnover is affected in a significant way by the turnover with Sidel.

The Supplier Strategy Matrix (SSM) shows how Sidel is currently dealing with each potential supplier of the category and how it should try to change the relationship with some of them. All the potential suppliers are placed in this matrix. The parameters on the axis are the same as the Supplier Portfolio Matrix: the importance of each supplier for Sidel, and the turnover of the Supplier with Sidel, related to its total turnover. According to these parameters are identified four quadrants that suggest how to behave with the suppliers:

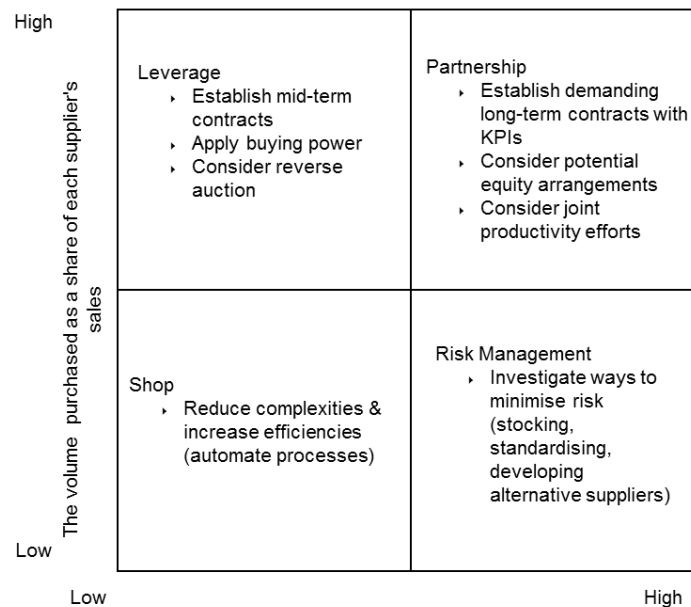
- Partnership
- Leverage
- Risk Management
- Shop

Partnership is the right choice when the importance of the supplier to Sidel is high, and the percentage of the turnover with Sidel related to the total turnover of the supplier is high (approximately more than 25%). In this case Sidel should establish demanding long-term contracts, consider potential equity arrangements and consider joint productivity efforts.

Leverage is the approach that has to be chosen when the importance of the supplier to Sidel



is high, but the percentage of the turnover related to the total turnover of the supplier is not high (approximately less than 25%). In this situation Sidel should establish mid-term contracts, apply buying power, and consider the possibility to resource activity. Risk Management is the quadrant that represent the situation in which the importance of the supplier to Sidel is high, but the turnover with Sidel has not a significant impact on the total turnover of the suppliers. In this case Sidel should analyze ways to minimize the risk: it could for example increase the number of stocked products, or it could standardize more the product or eventually try to look for alternative suppliers. Another option is to evaluate the possibility to manufacture internally the equipment, based on which is the best solution. Finally, the suppliers that has a low importance for Sidel and a low volume of shared turnover are classified in the category “shop”. In this case, the goal is to reduce complexities and to increase efficiency.



**Figure 3.11** Sidel Supplier Strategy Matrix

After introducing the Supplier Strategy Matrix, some considerations can be done. Firstly, if the company consolidate the relationship with a supplier, it will be moved to the upper quadrant. This because consolidating the relationship the volume purchased ad share of the supplier sale will naturally increase. If it will increase enough to roughly 25%, the supplier will be moved to the upper quadrant. Another consideration regards an aspect that is only partially managed by Third-Party Equipment Sourcing, but on which Third-Party Equipment Sourcing has to interface with Sales department: it often happens that Sidel's final customer affects the decision of which supplier to apply for the purchase of a machine or an equipment that will be integrated in the complete line purchased by the final customers. In this case the lead buyer has to manage deviations from the commodity strategy defined according to customer vendor list. The deviations must be authorized by the Executive Sourcing Vice President before proceeding with the purchasing from the supplier selected by the final customer. This is delicate situation that must be kept under control by the commodity leader. Indeed, Sidel's demand power must be enforced by reducing as much as possible the deviations from the commodity strategy. Decreasing customer direction setting would result in increased sourcing flexibility and in better purchasing outcome. As it has already been said, some customers may have specific requirements. Some regions may have specific regional preferences as well. But the global commodity manager must keep this process under control: it is necessary try to reduce these deviations, but they must be contemplated. This because is quite common that the final customer, especially when it is big and powerful, wants a specific supplier for its complete line, and not the one defined in the commodity strategy by Sidel. The global

commodity manager must involve the supplier in the right tuning even in case of deviations, in order to do not lose power in the relations with the supplier.













### 3.6.4 Other Tools and Methodologies

Aside from the matrices analyzed in the previous paragraph, there are other tools that can be very useful in the supplier’s assessment. Indeed, some tables can be very important to compare different characteristics for each supplier. Four comparative table will be analyzed in the next rows.

1. The supplier capabilities table: it is used to evaluate each supplier regarding its capabilities in terms of:
  - the product category that is supplied to Sidel
  - where are located the production facilities
  - If the supplier is a manufacturer or a dealer

So, on the rows are the suppliers name, while on the columns are the product categories and the other characteristic examined. Below there is an example of this table.

**Table 3.2** Supplier Capabilities

	 / 	 	Product category 1	Product category 2	Product category 3
<b>Sidel Suppliers</b>					
Supplier 1		 			
Supplier 2		 			

 **Manufacturer**   
  **Dealer**   
  **Production in EU**   
  **Production in China**  
 **Already supply Sidel**   
  **Able to supply**

- The supplier performance table: it is used to analyze the supplier performance in terms of KPI (Key Performance Index) such as the outcomes gained in terms of logistic efficiency, quality efficiency and so on. It is constituted by the supplier name on the rows, and by the parameters such as logistic and quality on the columns. An example is below.

**Table 3.3** Supplier Performance

	Logistics	Quality
Supplier 1	✓	✗
Supplier 2	✓	✗

✓ In line or exceeding target    ✗ Not in line with target  
 ✗ Very far from target

- Supplier current contractual conditions table: it compares the situation in terms of contract signed for each supplier. On the rows are the suppliers, while on the columns are the contracts. The most important contracts to keep under control are:
  - GPA: is the General Purchase Agreement, a legal document recording the final understanding between the purchaser, in this Case Sidel, who agrees to buy and a seller, in this case the supplier, who agrees to sell the specified items under stated terms and conditions. This is the contract that Sidel signs with its more important supplier, that are the ones with which Sidel establishes long Partnership. To this category belongs all the supplier that are classified as “strategic” or “preferred”, as it will be seen in the paragraph 3.8. The most important clauses are analyzed in this type of contract. The prices are agreed, as well as the payment terms, the durations and the conditions of the warranty, the liability and the insurance, the penalties in cases in which the supplier is not

able to deliver the equipment in time, or in accordance to the performance level requirements. Of course, is agreed the duration of the contract and the cases in which one of the two parties can ask for an early termination of the contract. This is the most complete and structured contract, so it takes a lot of time to be signed. For this reason, it is required only for the suppliers which have a high spend with Sidel.

- **GT&C:** is the General Terms and Condition. It is standard terms of purchase, mandatory for all suppliers. The structure of the GT&C is less detailed than the one of GPA. The price list, the payment terms and all the other clauses are not included in this type of contract. All these clauses indeed are evaluated on a case by case base, in accordance with the spot agreement signed for the specific job. A typical GT&C includes the supplier's general duties, the packaging, delivery and acceptance of products, the transfer of risk and title, the health and safety requirements, the liability and insurance. In addition, it includes the BCfS, a document that can be signed even as a standalone.
- **BCfS:** The Business Code of Conduct for suppliers is a management tool for setting out an organization's values, responsibilities and ethical obligations. In particular, it is a document that ensures that the Sidel 'values and attention to cultural, ethical and legal compliance are respected. The most important sections are the ones referred to the human rights, to the child labor and more in general the fair employment terms like the regularization of the working hours and wages, the freedom of association and the environmental requirements.

**Table 3.4** Supplier Contractual Conditions

	GPA	GT&C	BCfS
Supplier 1	X	✓	✓
Supplier 2	X	X	✓

✓ Signed without deviations  
 ✓ Signed with deviation  
 X Not signed

- Competitive landscape table: it gives an idea of what are the relationships between Sidel 'competitor and Sidel's Suppliers. Data are provided with surveys with Suppliers or information from other stakeholders.

**Table 3.5** Competitive Landscape Table

	Competitor 1	Competitor 2	Competitor 3	Competitor 4
Supplier 1	✓	✓		
Supplier 2	✓	✓		

✓ In case they supply this product category  
 ✓ in case they supply another product category  
X In case they do not supply this product category

Of course, not every commodity strategy must have all these matrices and tables. In this paragraph has been offered a complete view of all the possible tools, but in the concrete cases all these tools are not necessary used: indeed, depending on the case, in the commodity strategy are used the most significative tools that can add value to the

commodity strategy, and that can help the global commodity manager in the supplier's assessment.

### **3.6 Develop Commodity Strategy**

All the necessary elements to define the strategy are available after completing step A (Assess Demand) and step B (Assess Supply) of the commodity execution process. It is good practice collected data to evaluate and prioritize several potential scenarios with the support of the matrices and the tables described in the previous paragraphs. The proposed strategy needs then to be well documented and approved. In order to complete the strategy, it is necessary to define the specific targets which will be based also on the analysis done while assessing demand and supply. In addition, it is important to conduct a spend analysis and to prioritize commodities with highest spend. In this way it is possible to analyze each commodity to determine preferred tactic and consequently the potential percentage benefit in terms of savings for each commodity. The commodities are scattered in a prioritization matrix according to absolute euro potential benefits, based on the Economics data. This is done in order to ease the implementation and to speed up the achievements of those benefits, taking into account resource constraints.

The development of the commodity strategy is constituted by a series of actions that the global commodity manager must keep under control. Here are listed the most significant:

- Defining sourcing options for the specific category: The commodity manager has to evaluate all the possible options for the specific category. Firstly, he/she has to evaluate to which material group belongs the commodity. As it has been illustrated

in the previous paragraph, the right behavior towards supplier for chosen strategy must be defined, depending on the quadrant in which the material group is allocated, that can be strategic, high impact, critical or non-critical. Of course, all the choices must be well pondered in accordance with the corporate strategy and must be reviewed with the top management.

- Validate the advantages and disadvantages of variants: after defining the alternatives and, once they are evaluated, the global commodity manager must point out the advantages and the disadvantage of each possible sourcing option that he/she has assessed.
- Decide about the Total Cost of Ownership elements to be included in the tender: firstly, a tender, according to its meaning, is a written or formal offer to supply goods or do a job for an agreed price. For what concerns this context, it is a written offer to the supplier in order to find an agreement on the equipment or spare parts or service that Sidel wants to buy from it. The commodity leader shall decide which of the TCO are important in the assessment of the proposal of the supplier. Normally, the elements evaluated are the price, the quality level of the supplier, and its reliability. Other TCO elements are considered in the assessment only in more complex cases if other data are available.
- Defining long-term behavior towards supplier for the chosen strategy: if the supplier has a high importance for Sidel, and if its turnover is due to Sidel at least for 25%, the goal of the global commodity manager is to establish a deep relationship with the supplier, focusing on the long-term outcomes rather than on the short-term cost savings.



The ultimate goal of the manager is always to increase savings, in accordance with the corporate strategy. The most important challenge for the commodity leader is to achieve continuous savings year over year. For a Third-Party Sourcing manager, the challenge is more complex than for other departments. Indeed, the cost breakdown with standard approach is only possible for few components/modules with high level of supplier commitment. It is difficult to have cost breakdown as for the mechanical parts. This is because there are no data on the machine, but only indications that say how the machine is made. This is because the supplier does not want to share its information. The supplier indeed is the owner of the machines rights.

The target in addition should be chosen based on the material group strategy to which belongs the commodity. If it belongs to the strategic material group, it means that the Sidel's purchasing relative power is high, and the same is the material group requirements. The target in this case is to deepen the relationship with the supplier with a strategic partnership. If the commodity belongs to the high-impact material group the target goal is to realize savings with a multiple sourcing, by realizing comprehensive benchmark that help in the assessment of the different suppliers. In this case there are high negotiation targets. This is possible thanks to the fact that the material group requirements for this material group category are low, while Sidel's relative purchasing power is high. If the commodity belongs to the critical material group, the corporate strategy consists in the mitigation of the risk: it is suggested to make strategic partnerships, and to simplify and decrease the specifications. This is since the material group in analyses is characterized by a low Sidel 'relative purchasing power, and by a high material group requirement. Finally, if the commodity belongs to non-critical material group, the target is the reduction of the

complexity: it means bundling volumes, reduce the number of supplier and improving the processes. The material that belongs to this group category are characterized by a low Sidel's relative purchasing power and by a low material group requirement.

### **3.7 Strategic Vision**

The three most principal strategic visions are:

- Option 1 (Single Sourcing): Consolidate partnerships: it means sourcing from one key strategic partner to supply the complete range of the product. This option is characterized both by advantages and disadvantages. The advantages are for example the fact that is easier to work together with partner to specify and develop optimal solutions (unique technical interface). Another advantage is that is easier to train internal technicians on few supplier's equipment. This results in an increment of the service level because the technicians become very familiar with the equipment. The principle disadvantage is the risk of supply: If the company purchases only from one supplier, and it has any kind of problem, Sidel cannot purchase anymore the equipment, and it leads to a very problematic situation. In addition, a possible high risk is for example when the supplier is not able to carry out the supply for reasons of force majeure, like in case of earthquake, flood or so on. In these cases, if the Company purchases only from one supplier, it cannot purchase anymore the equipment required.

Other examples of disadvantages are the fact that there are few opportunities to increase scale of procurement and to negotiate better prices. This is because with this approach there are not alternatives to the supplier chosen. In addition, an

effective partnership model is hard to establish. Then, depending on only one supplier has another negative impact; indeed, Sidel depends on it, but the supplier has several other customers, so the dependency relationship is not biunivocal. This solution in real cases is not common. This because is always preferable to have alternatives, even in cases in which there is a strategic partnership between Sidel and the supplier. This is due to the drawbacks related to this option that are higher than the benefits.

In real cases this solution is applied almost only in monopolistic situations, in which the market is characterized by only one player, so Sidel is forced to purchase from it. These cases are difficult to manage because the supplier is aware of its power, and it can play with that.

- Option 2 (Multiple Sourcing): More than one key supplier for the product to create competition on the price, on the performance and on the reliability of the different suppliers. The advantage is that is possible to negotiate better prices for each equipment thanks to the increased competition. This results in potential savings opportunities. The disadvantage is that with a multiple source that complexity becomes higher. This results in low power to influence design, quality and performance of the solution. In addition, as it has already been said, when the strategic vision is the multiple source, the customer often wants to impose its preferred supplier, and this leads to negative outcomes. Other risks related to this option can be for example the fact that it can be very difficult to maintain a good relationship with a supplier that has not a big turnover with Sidel, since it is not classified as first in the global commodity strategy. Therefore, Sidel purchases from

it only in particular conditions: when the supplier classified as first in the commodity strategy is not available for the job, or when the regional position of the final customer makes it preferable.

The strategy can be very varied. If for example Sidel decides to purchase from two suppliers, not necessary the spend is 50% on each supplier. Indeed, as it will be seen in the next chapter, the volume attribution per supplier can be different. The goal is to find the right balance between the suppliers that mitigates the supply risk and that is more convenient for Sidel.

- Option 3 (Parallel Sourcing): It is an alternative to both single sourcing and multiple sourcing, of which it is an intermediate form. For example, it may happen that two suppliers are selected to supply the same components for two different plants, each of them responsible for procuring a single impact with single sourcing. The objective of parallel sourcing is in fact to exploit the advantages of multiple sourcing by applying them to a very narrow circle of suppliers, even though they are unique resources or the purchase of some components, they feel the competitiveness of other suppliers with similar skills and abilities between them. This strategy allows Sidel to increase supplier performance while enjoying the benefits of a single source approach.

To summarize the paragraph, there is not only one right strategic vision approach: all the approaches described can be appropriate depending on the situation in which they are applied. This means that the global commodity manager does not have to choose an a priori approach but based on the commodity critical issues he/she must make the best choice.

### 3.8 Supplier Classification

In alignment with the strategic vision, it is necessary to classify all the suppliers that have been chosen. Indeed, in the strategy it must be considered what type of suppliers and how many suppliers the commodity manager plans to develop. Each category type has different characteristics, so it is important to understand well each of them, that are:

- Strategic supplier: it is a supplier who the company sees a value in using now and in the future. The commodity manager considers that Sidel will improve business performance thanks to this supplier. These suppliers are characterized by high switching costs, and by the fact that they often have a unique offer. They have a tremendous potential for further improvement. At the same time the downside is that the strategic suppliers are characterized by a high risk and they can have a large negative impact on the Sidel's company if they are not managed properly: the global commodity manager must handle them with care.
- Preferred supplier: it is a supplier the Company wants to promote, because of scale, volume and performance over others that could deliver almost the same, despite low switching costs.
- Base supplier: it is a supplier which can be substituted with low switching costs and no cost increase. It is often chosen because of the price, the delivery or the quality. It is used almost only when the customer has a specific request, and it imposes to use a particular supplier, regardless the classification made by Sidel.
- Drop Supplier: it is a supplier which does not enter in any of the above segments. It is a supplier that the Sidel does not want to do business with in future. These are suppliers who does not fit in the corporate strategy. As the base supplier, the drop

supplier is used only when the customer has specific requirements, due to its personal preference or to logistic reasons.

It is necessary to fill in the strategy document in which the commodity supply overview is included after deciding in which category the suppliers should be classified. In addition, in this table is important to define the different commodities name, and the overall planned number of suppliers considered for each commodity name. An example of how is structured this table is reported below.

**Table 3.6** Commodity Supply Overview

Mechanical components	Mechanical components					
	Sub-commodity 1	Sub-commodity 2	Sub-commodity 3	Sub-commodity 4	Nb suppliers	Target Nb
Strategic						
Preferred						
Base						
drop						

### 3.9 Negotiate and Select Suppliers

Once the strategy has been completed and approved, the tendering process can start. In the tendering process it is necessary to prepare accurately the Request For Quotation document (RFQ).

What is a Request for quotation? Before proceeding with the paragraph, it is necessary to answer to this question. RFQ is a standard business process whose purpose is to invite suppliers into a bidding process to bid on specific products or services. RFQ generally means the same thing as IFB. An RFQ typically involves more than the price per item. Information like payment terms, quality level per item or contract length may be requested during the bidding process. To receive correct quotes, RFQs shall include the technical specifications of the items/services to make sure all the suppliers are bidding on the same item/service. Logically, the more detailed the specifications, the more accurate the quote will be and comparable to the other suppliers. Another reason for being detailed in sending out an RFQ is that the specifications could be used as legal binding documentation for the suppliers. RFQs are best suited to products and services that are as standardized and as commoditized as possible, as this makes each supplier's quote comparable. An RFQ allows different contractors to provide a quotation, among which the best will be selected. It also makes the potential for competitive bidding a lot higher, since the suppliers could be quite certain that they are not the only one's bidding for the products. In the RFQ document is important to include:

- Schedule plan of the tendering process including the dead lines
- Terms and Conditions of the agreement
- Cost breakdown which will support the analyses and the comparison of the different offers. In addition, it will be helpful to understand the cost drivers, and to negotiate the future modifications in terms of new products or other changes

After completing the tendering process, it is a good practice to provide a feedback also to suppliers who have lost the tender. The stages that characterize the negotiation and

the selection of the supplier process can be summarized in some basic steps, here listed in bullet points:

- Prepare and issue the tender document: it must be focused on strategic goals, on Total Cost of Ownership elements, and on the principal targets that must be gained. It must include the points listed below
- Prepare a matrix in which the tenders can be compared
- Have a clear picture of each supplier to which the Request for Quotation has been sent
- Negotiate and renegotiate the contract. The renegotiation is based on the fact that the supplier market and Sidel demand do not ask for a strategic sourcing. In many cases, current contracts need to be extended and re-negotiated. The main levers to be taken into consideration are supplier performance, consumption requirements, specification adjustments, possible alternatives
- After concluding the negotiation, prepare the contract

### **3.10 Implement**

The implementation stage, along with the Review stage, must be monitored on a 3/5 years interval. Firstly, it should be organized a kick off internal meeting for the implementation about what it has been decided. It is the first meeting with the project team. This meeting would follow definition of the base elements for the project and other project planning activities. This meeting introduces the members of the project team and the client and provides the opportunity to discuss the role of team member. Other base elements in the project that involve the client may also be discussed at this meeting (schedule, status



reporting, etc.). If there are any new team members, the process to be followed is explained so as to maintain quality standards of the organization. Clarity is given by the project lead if there exists any ambiguity in the process implementations. The kickoff meeting is an enthusiasm-generator of ideas. By displaying a thorough knowledge of the goal and steps on how to reach it, the customer gains confidence in the team's ability to deliver the work. Kickoff means that the work starts.

The next step is to make the contract or the agreement available for users. To do this, it is necessary to upload the contract on the Internal database (SRM) that collects all the contracts. Especially in a multinational company like Sidel, in which are managed suppliers globally, if the contract or the agreement is not properly uploaded in the database it is like it was not signed. So, it is very important to make sure to timely upload all the signed documents. Sometimes fault of the global commodity manager is to underestimate this aspect.

Then, it is also important to point out that the same applied to track changes to the new supplier and the new conditions on SAP. It is one of the largest vendors of enterprise resource planning (ERP) software and related enterprise applications. The company's ERP system enables its customers to run their business processes, including accounting, sales, production, human resources and finance, in an integrated environment. The integration ensures that information flows from one SAP component to another without the need for redundant data entry and helps enforce financial, process and legal controls. It also facilitates the effective use of resources, including manpower, machines and production capacities. It is important to keep updated with the last modification this software, then it

is fundamental to track if there is a contract signed by a new supplier or if there are any modifications to an historic supplier.

Another very important step in this stage is the internal communication: it is very important indeed to share the commodity strategy with the other corporate departments connected with the sourcing, like for examples the sales department: this because when the sales department negotiates the sales of the complete line with the final client, it can have specific requirements in terms of some equipment that are bought by Sidel from Third Party. In this case the right choice is trying to impose the classification drawn up by the global commodity manager in the commodity strategy. It is possible to indulge the client's requests only if it has justified reasons to refuse the sourcing choice. So, it is fundamental to communicate the commodity strategy internally.

### **3.11 Review**

The last stage of the commodity execution process is the review. It is important to consider a series of things after the implementation phase. The most important are discussed below:

- Plan regular strategy review, for example once a year. It is necessary to make sure to be aligned with the goals prefixed and to keep up with time.
- Anticipate bottlenecks that are for example contract expiry, supplier bankruptcy, or product obsolescence
- Anticipate recovery plan and action plan in case of low supplier performance
- Ensure that benefits are being reported
- The impact of the new product development on commodity strategy
- Ensure that the future strategy is prepared at the relevant time

- Define of the action plan to review fine tune strategy.

Another way to keep under control the situation is a tool called After-Action Review (AAR). It systematically gathers lessons learned. It is an end-of-action evaluation, it means a review for persons responsible and involved in the task to be evaluated. It enables to track what happened, why it happened, and how strengths can be sustained, and weaknesses can be improved. An AAR is not a critique or a search for the guilty. It always follows the same four simple groups of questions and a more or less standardized procedure. The four simple groups of question are listed in the below table.

**Table 3.7** After Action Review Principles Questions

What did I set out to do?	<ul style="list-style-type: none"> <li>▪What were my objectives?</li> <li>▪What standards did I have?</li> </ul>
What actually happened?	<ul style="list-style-type: none"> <li>▪What went well?</li> <li>▪What did not go well?</li> </ul>
Why did it happen?	<ul style="list-style-type: none"> <li>▪Why were I successful?</li> <li>▪Why did I not reach my goal or why did I fail?</li> </ul>
What am I going to do next time?	<ul style="list-style-type: none"> <li>▪What are the ways I could improve next time or fine-tune of an ongoing task?</li> <li>▪How and with whom do I share lessons learned?</li> </ul>

To conclude this chapter, the strategic Sourcing is the principal driver for Sidel to establish sustainable relationships with global/local suppliers according to commercial, technical and quality criteria. The execution of a global sourcing strategy requires following a structured methodology and schedule plan for analysis, implementation and deployment of the strategy. The commodity execution process is framework practice for selecting, evaluating, negotiating and contracting with suppliers; it can be used when the

value of the commodity exceeds a defined percentage of total spend, and when there is a strong impact on total cost and full specifications.

## CHAPTER 4

### THE CASE OF NITRO DOZERS

In the last chapter, it has been discussed what is a commodity strategy, what are the steps to create a commodity strategy, and what the global commodity manager should do in order to define a commodity strategy. In this chapter a concrete case will be faced: the one of Nitro Dozers.



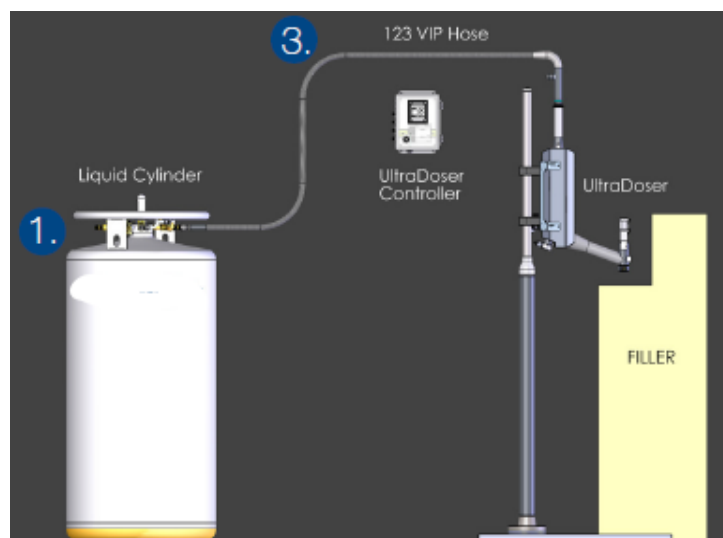
**Figure 4.1** Example of Nitro Dozer

#### 4.2 Product Overview

First of all, what is a Nitro Dozer? It is an equipment used to pressurize or inert cans and PET bottles. In today's competitive food and beverage market, most companies are looking to reduce costs. One way to do this is to reduce the cost of packaging used in their production facilities. Even small savings on container costs can result in large overall savings because of the quantity of units processed. To accomplish this per unit savings, containers are made more light-weight by removing material. However, with less material

the containers are also less structurally stable which can lead to collapse when stacked, or improper labeling and packaging. In carbonated soft drinks, the presence of carbon dioxide in the product provides internal pressure making the package rigid and stable. Liquid nitrogen can be used in non-carbonated beverages such as bottled water, juice, and teas to achieve the same effect but without adding the “bubbly” feel of carbonation, which may not be desired. Gaseous nitrogen has been used to expel oxygen and increase shelf life of products. Liquid nitrogen can serve this same purpose while reducing nitrogen consumption by 80% over traditional gas tunnels. Whether pressurizing or inerting food or beverage containers, handling liquid nitrogen on a production line poses challenges. Liquid nitrogen has a boiling temperature of  $-196^{\circ}\text{C}$ , and it will boil away rapidly when exposed to room temperatures. Therefore, insulated equipment must be used to ensure efficiency and safety. This equipment includes an injection device capable of metering small doses of liquid nitrogen into food or beverage containers, as well as storage vessels or tanks and piping to transport the liquid nitrogen to the injection location. Storage vessels generally come in two forms: large bulk tanks and small portable tanks called “dewars”. Both designs feature a double-wall construction with the inner and outer walls separated by a vacuum space. This vacuum “jacket” allows the tank’s outside surface to remain at ambient temperatures, while maintaining cryogenic temperatures inside. The nitrogen can be held in liquid form for quite a while, but even with this vacuum barrier, the insulation isn’t perfect and tank losses can range 0.5% – 2% per day. Large bulk tanks are typically installed outside and require longer piping systems to transfer the liquid to the use point. Dewar tanks are portable and can be situated closer to the use point, therefore requiring a shorter length of hose. For either type of storage vessel, insulated piping should be used to

limit losses and improve efficiency. There are multiple types of insulated piping, but generally they can be categorized as vacuum jacketed and non-vacuum jacketed. Vacuum jacketed piping is a similar concept to that found in bulk tanks or “dewars”. An internal pipe is surrounded by a vacuum annulus that provides the insulation between the cryogenic temperatures in the pipe and the ambient temperature outside it. This vacuum space greatly reduces the heat losses, giving the pipe its efficiency. Vacuum jacketed piping is more efficient than non-jacketed piping and offers completely frost-free operation. The vacuum jacket on this type of piping is generated by attaching the pipe to a vacuum pump. In a dynamic-vacuum system, a vacuum pump is continuously pumping, and the vacuum quality is consistently improving. With the need for a dedicated vacuum pump running all the time, the operating costs are slightly higher with this style. The vacuum on a sealed-vacuum system is typically evacuated at the factory and then sealed off. Over time, this vacuum will gradually degrade resulting in increased heat losses and decreased performance.



**Figure 4.2** Functioning of Nitro Dozer

Either type of vacuum jacketed piping can come in rigid or flexible sections. Rigid piping needs to be accurately dimensioned to ensure a proper fit in the field. Flexible piping is fabricated in sections making it easier to install as it's more adaptable in routing around obstructions. Non-vacuum jacketed lines are often insulated with foam and are not as efficient with heat losses as high as 20 times that of vacuum jacketed piping. As the foam degrades over time it loses its insulating qualities. These piping systems also have larger outer dimensions making it difficult to route through tight spaces. Nitrogen dosing equipment is the main component of a liquid nitrogen system. It's often what production facilities are most interested in as it directly affects their ability to meet pressurization or inerting goals. Typically, these are called dozers, and must operate frost-free and efficiently during dosing or idle times. The reliability of a dozer on a production line is very important as losses are calculated in minutes of downtime. As with any cryogenic device, internal exposure to moisture must be limited at all times as it's a dozer's biggest enemy. Care must be taken during nozzle changes and maintenance to prevent contamination by moist air. In certain industries, like in beverage industry for specific application, and it is the case of Sidel, there may be a requirement that the liquid nitrogen be delivered aseptically, and therefore the unit must be capable of being sterilized. This is always more frequent requirement: indeed, as it will be discussed later in this chapter, the final clients request recently a very large amount of Nitro Dozers classified as "Aseptic". This kind of Nitro Dozer, due to the its characteristic that allow the unit to be capable of being sterilized, is became the most requested one.





**Figures 4.3** Other Examples of Nitro Dozers

#### **4.1.1 Production Goal and Safety Issue**

Aside from operating frost-free, a dozer must also meet the goals of the production facility. Any bottling or canning operation will be looking for consistent pressurization or inerting of their containers. This requires the dozer to consistently output an accurate dose of liquid nitrogen, whether dosing discretely or steady-streaming. Too small of a dose can lead to unstable containers and the possibility of collapse. For inerting processes this could lead to food spoilage. If dosed with too much nitrogen, there is risk of containers bulging or bursting, which could cause jamming and down time. The challenge for the dosing equipment is to reliably and accurately control the liquid nitrogen dose for each container up to speeds of 2000 bottles per minute. In order for the production goals of pressurization to be met, a dozer relies on consistent fill heights from the filler. Even a small change in fill height can lead to under or over-pressurization. The dozer does have the ability to adjust to changes in line speed of the filler. As the line ramps up or down, timing is adjusted automatically to ensure each dose enters the container. Likewise, dose compensation adjusts the amount of LN<sub>2</sub> dispensed as the line speed changes. For example, as a line slows down there is more time between filling and capping which means more time for the

nitrogen to boil off. Therefore, a larger dose is dispensed to maintain consistent pressures. Other factors on the production line must be considered as well to ensure proper pressurization. Travel time from the dozer to the seamer or capper should be minimized to prevent excess boiling or loss of nitrogen. Shaking or bouncing of containers on the conveyors can force nitrogen and product out of the package before closure. Reliable sealing closures are also needed to maintain the pressure within the container after dosing.

Regarding the safety, it is important to address worker and machine safety when dealing with liquid nitrogen. When boiling from a liquid to a gas, nitrogen expands roughly 700 times. Safety relief valves are installed on tanks, piping, and dozers to prevent over pressurization and potential equipment ruptures. Where there are shut off valves in a system there is potential for nitrogen to be trapped. A safety relief valve must be placed between any two such valves. On bulk tank-fed systems, the lowest rated relief device typically is placed outdoors. If a safety relief valve does relieve, it is safer if it happens outdoors rather than inside where workers are present.

## **4.2 Business General Overview**

The business general overview is the section in which some parameters are analyzed in order to have a complete picture of the situation related to the commodity. In addition, in this section are listed the supplier from which Sidel purchases. Regarding the Nitro dozers the strategy is temporarily single source. This is because in the past were not evaluated alternative suppliers in a serious manner and with enough internally effort. The commodity leader would have preferred the multiple source approach in accordance with the corporate strategy, but due to a lot of reasons, among which the difficulty to find other suppliers

capable to satisfy the different types of Nitro Dozers, it was not possible. So, there were not alternatives, and the single source was the only possible solution: indeed currently, Sidel purchases from only one supplier, called in this thesis elaboration “Supplier Green” due to confidentiality reasons and to the fact that in this thesis cannot be shared confidential information between Sidel and the suppliers. For the same reasons, the other two suppliers mentioned in this thesis are called with fake names as well.

So, even if the single source was not the ideal solution, during the last years Sidel tries to take advantages of the opportunities related to the single source, as for example the fact that is easier to work together with partner to specify and develop optimal solutions (unique technical interface). Another advantage is that is easier to train internal technicians on few supplier’s equipment. This results in an increment of the service level because the technicians become very familiar with the equipment. But this strategy as it has been explained in the chapter 2 does not fit the corporate strategy, and it is used almost only for cases in which there is only one supplier able to supply the commodity (monopolist situation). This is due to all the negative sides that prevail on the positive aspects of this strategy. This is pretty much the situation for the Nitro Dozers commodity, so, recently, it has been taken again into consideration the option of purchase from at least another supplier, due to the advantages of the multiple supplier strategy like the fact that is possible to negotiate better prices for each equipment thanks to the increased competition and to reduce and mitigate the risk of supply. These advantages, in accordance with the corporate strategy, are much more significant than the advantages of the single source strategy. Actually, till the end of 2017 the Nitro Dozer has been purchased only from the “Supplier Green”, but in the new commodity strategy it has been added the “Supplier Yellow”, even

if it has not been used so far. Before using the new supplier, it is necessary to qualify the new supplier with the supplier qualification process, that will be discussed in the last chapter. It is a long procedure that takes time; in the meantime, the Supplier Yellow has been considered as well, aside from the Supplier Green that has always been used. A third supplier, called “Supplier Grey”, could be added in the commodity strategy of the next year, but so far it has not been considered in the current commodity strategy, if not in same tables in which it has been added in order to have an initial idea of what could have been its prices compared to the ones of the other two suppliers.

Current Supplier Panel		
Key Supplier Segmentation	Supplier	Country of Manufacturing
Strategic		
Preferred	Supplier Green	
Base		
Spot	Supplier Grey	
Drop		

**Figure 4.4** Current Supplier Panel Overview

The “Supplier Green” is classified as preferred supplier. It means that it is a supplier the Company wants to promote, because of scale, volume and performance over others that could deliver almost the same, despite low switching costs. A generic Spot supplier is a supplier which can be substituted with low switching costs and no cost increase. It is often chosen because of the price, the delivery or the quality. It is used almost only when the

final customer has a specific request, and it imposes to use a particular supplier, when there is a deviation from the defined commodity strategy.

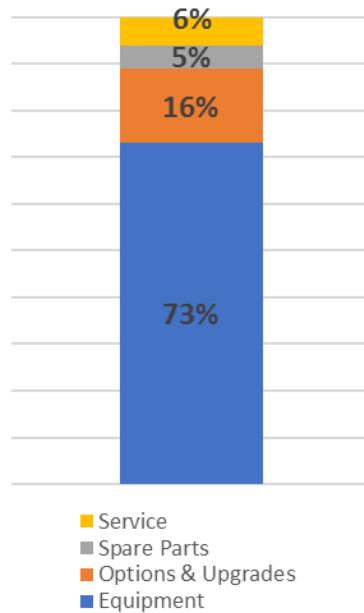
In this case the situation is quite different, because the “Supplier Yellow” has not been considered yet in the current panel, since it has not been qualified yet. But according with the Strategic Vision, as it will be seen in the next paragraphs, it is expected that the “Supplier Yellow” will cover in the next three years the 25% of the spend of the commodity. For this reason, it will be probably classified as spot. Regarding the “Supplier Grey”, the situation is different: it has already been validated, and it is currently used for other commodities. It is classified as a spot supplier, and for this reason it appears in the Panel, but it is not part of the Nitro Dozers commodity.

The most important parameters analyzed in the business overview are:

- Spend breakdown: in this section it is pointed out how much it has been spent in terms of each categories of spend. The categories of spend are: equipment, that represents the spend in terms of machines purchased; Options and upgrade, that are referred to the expenses that are necessary when the machine is not so old to be replaced, but it needs to be improved and updated or converted; Spare parts, are the expenses referred to the replacement parts that are interchangeable part that are kept in an inventory and used for the repair or replacement of failed units, and for the replacement of parts affected by wear and tear. Service, that is the spend referred to the labor cost for of the technicians that are sent on-site to repair or to control the machines installed.

The spend breakdown relative to the nitro dozer for the 2017 is the following: 73% is related to the Equipment; 16% is due to the purchase of Options and Upgrade; 5% is

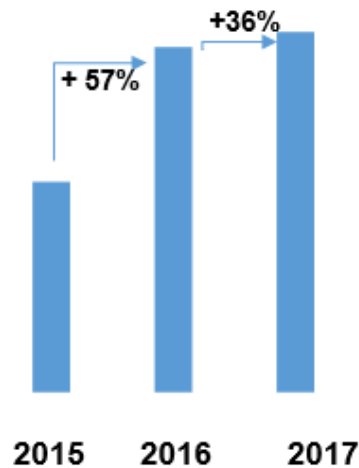
related to the Spare Parts; 6 % is due to the expenses related to the service. It is aligned with the expectations and with the other comparable commodities.



**Figure 4.5** Spend Breakdown Overview

- The commodity trends: in this section is evaluated the trend of the commodity in terms of spend related to the last three years. In the case of the nitro dozers, the spend is increased a lot: from 2015 to 2016 there was a 57% increase, while from 2016 to 2016 there was a 36% increase. If it is compared the spend between 2015 and 2017, there was a 114% increase. It means that the spend of 2017 is more than double compared to the one of 2015. This is due to the fact that in today's competitive food and beverage market, all the companies try to reduce costs. One easy way to realize savings is to reduce the cost of packaging used in the production facilities. To reach this goal, containers are made more light-weight by removing

material. However, with less material the containers are also less structurally stable which can lead to collapse when stacked, or improper labeling and packaging. Liquid nitrogen can be used in non-carbonated beverages such as bottled water, juice, and teas to achieve the same effect but without adding the carbonation. This is the reason that explain a such important increase of spend.



**Figure 4.6** Nitro Dozer Commodity Trend

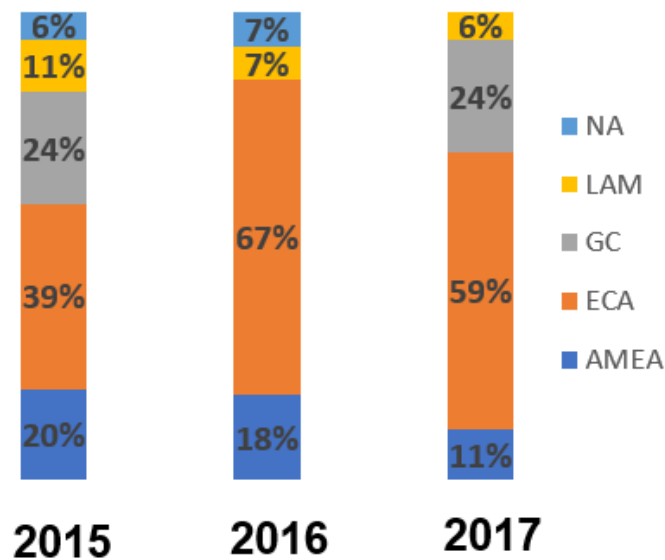
- The spend by zone: It indicates what percentage is purchased by each Sidel's entities across the World. For some equipment the percentage can be concentrated only in same areas because that kind of equipment is integrated in the complete line only in specific countries. An example that goes beyond the case of Nitro Dozers, the principle topic of this chapter, but that could very important to clarify what has just been said, is the one of handle applicator, an automatic packaging machine that applies the self-adhesive tape carry handle on the packaging. Indeed, this kind of machine is not sold on the American market, where it does not exist. The reasons that affect the commodity trend by zone are:

1. The scope of supply
2. Marketing Trends that characterize a geographic area

A typical example of how these two reasons affect the trend by zone is the one of handle applicator, explained above.

Regarding the Nitro Dozer, it is being purchased from almost each entity in the last three years, except from the Nord America last year, even though in different quantities. The European entity is the one with the higher percentage of spent in the last three years: 39% in 2015, 67% in 2016, 59% in 2017. The second entity in terms of percentage is the China in 2015 and 2017, with a percentage of 24%, while for 2016 is the Africa and Oceania entity with a percentage of 18%. The lowest percentage is the one of the America: considering together North and South America, the percentage is 17% in 2015, 14% and only 6% in 2017. To summarize, the trend is growing almost everywhere, as it has been pointed out with the graph related to the commodity trend. The only geographical area in which the trend is negative is the AMEA, that includes Africa, Oceania and Middle East. This is probably due to the fact that the beverage companies that operate in this area are less focus on light-weight bottles. An alternative reason could be that fact that these companies are looking for market in which are not required Nitro Dozers. A third reason could be the fact that the final customers in these areas prefer to buy directly to the Nitro Dozers suppliers rather than from an intermediary like Sidel.





**Figure 4.7** Spend by Zone

### 4.3 Assess Demand and Specification















This section is constituted by two separate parts: the first one is characterized by the demand assessment; a second one characterized by the specification assessment. For what concerns the demand assessment, it is evaluated by looking at technology and market trend; these aspects are analyzed under two perspectives:



- Product and innovation: in the case of Nitro Dozers there are not common innovations on projects on-going, but it has been identified an increased request for Aseptic machines in the last years. Regarding the “Supplier Green” a new model for aseptic machines is in phase in. More in general, new series have been recently introduced to optimize the dosing accuracy and precision. The “Supplier Yellow” holds patent in dosing system technology that can be used as optional in the machines to reduce the consumption of nitrogen and increase efficiency in dosing.

- Global Market trend: it is important to underline that for Nitro Dozers there are not so many suppliers able to realize the product in the world. The three major Global suppliers recognized in the market are: “Supplier Green”; “Supplier Yellow”; “Supplier Grey”. For many years Sidel has purchased only from “Supplier Green”, but recently the Company felt the needs to extend the circle of suppliers, due to all the risks connected with a single source strategy. In addition, Nitro Dozer machines are acquiring more importance since always more customers are looking for smart ways to reduce costs, and it seems that using Nitro Dozers machines to reduce packaging cost is a good solution always more adopted: Nitro Dosing machines have direct impact on filling block, so it results in a direct impact on the product, that means a direct influence on Sidel competitiveness on the market.

After assessing product and innovation and global market trend, the next stage is the specification assessment. In this section are analyzed and assessed all the key specifications that characterize the Nitro Dozers. For each of them are listed the advantages and how is the situation for the suppliers for each key specification. For simplicity’s sake it is used a table to better explain the situation.

**Table 4.1** Specifications Assessment Table

Key market assets	Advantages	Supplier Green	Supplier Yellow
Accuracy of dosing	<ul style="list-style-type: none"> <li>Reduction of packaging weight with cost savings and efficiency of PET container design</li> <li>Efficient nitrogen consumption</li> </ul>	 Dosing control by sensors/encoders. Average accuracy range: $\pm 3\%$	 Patented technology for dosing heads, adjustable to final product. Average accuracy range: 2%
CIP protection	<ul style="list-style-type: none"> <li>Immediate closure after dosing stops</li> <li>Hands free operation</li> <li>Withstands high pressure wash down and aggressive chemical clean up</li> <li>Eliminates human error during CIP</li> </ul>	 Available option for the main machines	 Option not available
Compact solutions	<ul style="list-style-type: none"> <li>Improve installation and layout at facilities</li> </ul>	 Good compact design solutions	 Good compact design solutions
Hygienic design	<ul style="list-style-type: none"> <li>Guarantee hygienic standard in sensitive filling areas</li> </ul>	 Stainless steel material	 Stainless steel material
Aseptic capability	<ul style="list-style-type: none"> <li>Wide range of application</li> </ul>	 Covered by product portfolio	 Not covered by product portfolio
User-friendly panel control	<ul style="list-style-type: none"> <li>interface operators vs machine more simple and immediate</li> </ul>	 Touchscreen panelview	 Touchscreen panelview
Availability for customized version	<ul style="list-style-type: none"> <li>Flexibility for improve layout solutions</li> <li>Dedicated products for special beverage application</li> </ul>	 Availability for customized solutions	 Availability for customized solutions

 High
  Low

The dots in the table indicate how much the supplier complies with the key market assets. If the dot is totally grey it means that the supplier performs very well, if it is totally white it means that the supplier is inadequate in realizing the specification or that the specification is not even available. If it is a middle way, it means that the supplier is just adequate.

#### 4.4 Assess Suppliers

In this section are evaluated the suppliers under different perspectives:

- The supplier capabilities and the equipment cost benchmark;

- The Sidel Matrices;
- The supplier footprint, to identify where the suppliers manufacture and where are located their service facilities
- Other tables, to have a complete picture of the situation of each supplier in terms of the contractual conditions, and in terms of the competitive landscape, that means a table to compare the situation between Sidel's supplier and Sidel's competitor.


















For each of the situation described above it will be dedicated a single sub-paragraph.

#### **4.4.1 Supplier Capabilities and Equipment Cost Benchmark**

Firstly, it is evaluated the capacity of each supplier to realize the machine for the segmentations identified. Regarding the case of Nitro Dosers are identified five types of machines: the first four are based on the dosing speed and on the feed pressure, while the fifth category is dedicated to the Aseptic Nitro Dozers. The five categories are the following:

- Low speed and low pressure
- Low speed and high pressure
- High speed and low pressure
- High speed and high pressure
- Aseptic Nitro Dozers.

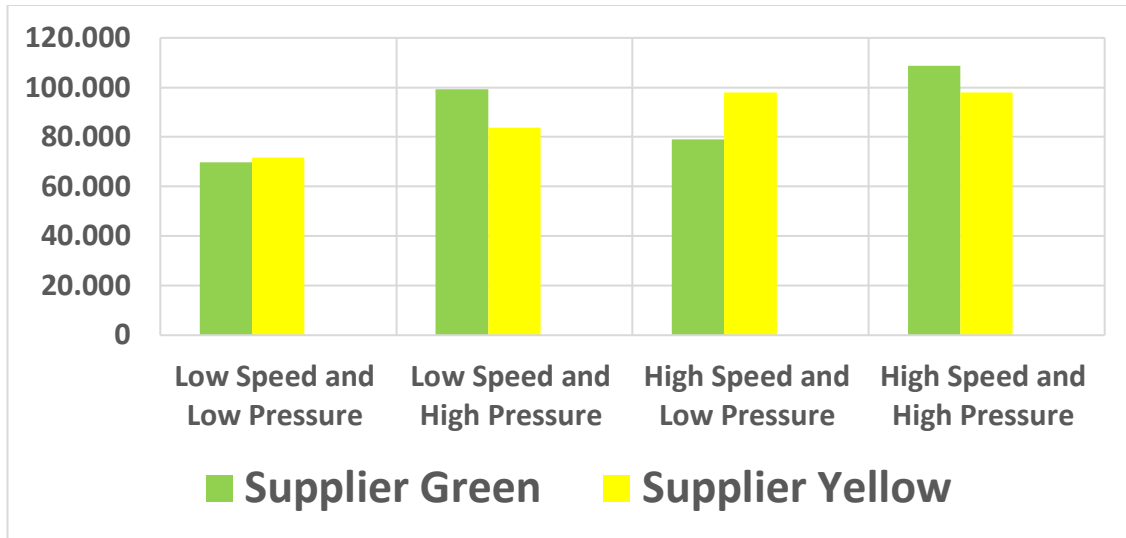
**Table 4.2** Nitro Dozer Suppliers Capability Table

		  	Low speed/Low pressure	Low speed/High pressure	High speed/Low pressure	High speed/high pressure	Aseptic nitrodoser
Supplier Green							
Supplier Yellow							

 Manufacturer  
  Dealer  
  Production in EU  
  Production in China  
  Already supply Sidel  
  Able to supply  
 Production in USA

As it appears from the above table, the “supplier Green”, is capable on all the Nitro Dozers categories, and it already supplies Sidel. The “supplier Yellow” instead, is able to supply all the categories except the “Aseptic Nitro Dozers”, but as it is pointed out in the table, it is not currently a Sidel’s Supplier for any of the categories. The table above gives other import information: if the supplier is a manufacturer or a dealer, and where the supplier has the production site. The “Supplier Green” is a manufacturer and it produces in US, while the supplier Yellow is a dealer, and it produces in US like the other supplier.

After assessing the supplier capabilities, it has been developed a benchmark, in order to have a complete picture of the situation and to have to possibility to compare the different prices between the suppliers.



**Figure 4.8** Nitro Dozer Benchmark on Basic Machine (The values have been modified, because the information is confidential and cannot be shared, but the ratio between the values is right)

The benchmark has been developed on the base machine for each of the categories in which are capable both the “Supplier Green” and the “Supplier Yellow”, that are all the categories except the “Aseptic Nitro Dozers”. The benchmark has been made on the base machine, that means that the price is referred to the machine without any optional. Of course, the benchmark has not been developed for the product category “Aseptic Nitro Dozers”, since the only supplier capable is the “Supplier Green”: a comparison in this way would have been meaningless. The analysis focuses on the “Supplier Green”, the single source so far, and the “Supplier Yellow”, that the Company wants to qualify within the end of the year. The “Supplier Grey” has not been considered in the analysis due to the following reasons:

- It covers only two of the five product segmentations described above, so it does not cover the required range of products

- It has established a partnership with two of Sidel's biggest competitors. So, even if it is used for other commodities, the global commodity manager prefers to not include it in the new commodity strategy of Nitro Dozers.

By looking at the benchmark, it is clear that the "Supplier Green" is more convenient on "Low Speed and Low Pressure" and "High Speed and Low Pressure" Nitro Dozers, while "The Supplier Yellow" is more convenient on "Low Speed and High Pressure" and on "High Speed and High Pressure" Nitro Dozers. To be more accurate, the "Supplier Green" is less expensive than 3% on the "Low Speed and Low Pressure" machines, and it is less expensive than 24% on "High Speed and Low Pressure". On its side, the "Supplier Yellow" is less expensive than 16% on "Low Speed and High Pressure", and it is less expensive than 10% on "High Speed and High Pressure".

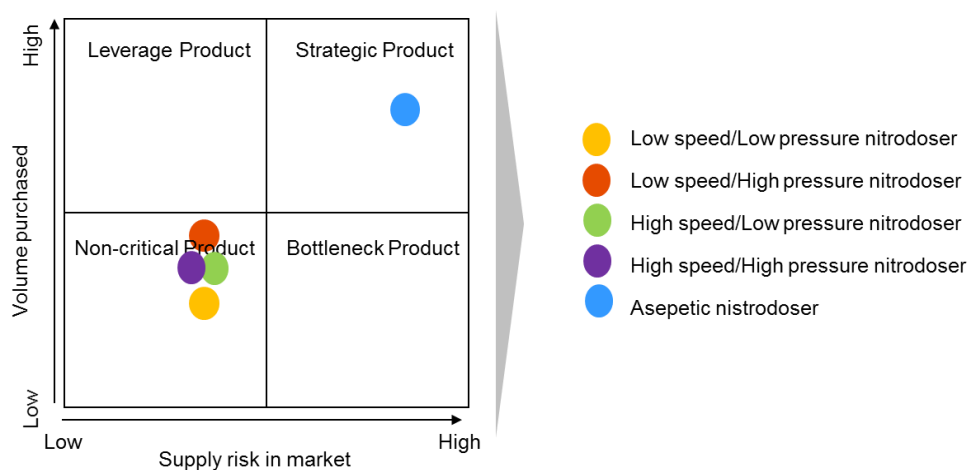
Based on the benchmark analysis, and based on the fact that in the sourcing strategy has been defined to switch from a single source strategy to a multiple source strategy, the ideal choice will be to purchase "Low Speed and Low Pressure" and "High Speed and Low Pressure" from the "Supplier Green", while "Low Speed and High Pressure" and "High Speed and High Pressure" from the "Supplier Yellow". In this way, and by purchasing "Aseptic Nitro Dozers" from the "Supplier Green", the only able to produce them, the spend will be covered in the next three years for 25% from "Supplier Yellow" and for 75% from the "Supplier Green". The "Aseptic Nitro Dozers" shifts the balance since it is purchased much more than the other categories. Indeed, even if the ideal numerical partitioning of the products segmentation is three for the "Supplier Green" and two for the "Supplier Yellow", consequently the spend should be ideally 60% vs 40%. By the way, the corporate strategic vision of the next three years will be deepened in the next paragraphs.

#### 4.4.2 Sidel Matrices

The first matrix used to assess the suppliers is the Product Portfolio Matrix. As is has already been explained in the chapter 3, on the x axis is the supply risk in the market, while on the y axis is the volume purchased. The five types of product are positioned in the matrix according to their characteristic related to the two parameters on the axis. The Nitro Dozers characterized by low speed and low pressure are positioned in the non-critical Product quadrant. This because from a purchasing point of view these items cause only few technical or commercial problems. Indeed, the supply risk in the market is low, and the same is the volume purchased by Sidel. This because, even though Sidel purchases so far only from one supplier these equipment, there are other suppliers that are able to supply it. The same considerations can be done for the Nitro Dozers characterized by low speed and high pressure, high speed and low pressure, high speed and high pressure. Indeed, these four categories of Nitro Dozers are all located in the non-critical Product, even if not exactly in the same position. Low speed and high-pressure Nitro Dozer are slightly in a higher position compared to other categories: this because the Nitro Dozers with these characteristics are the ones with the higher purchase volume, even if not enough high to be in the leverage product quadrant. Regarding the high speed and low pressure, and high speed and high pressure, they are positioned between the other two categories respect to the y axis, but in the same position on the x axis. This because the supply risk in the market is always the same, while the volume purchase is lower than for the Nitro Dozers with low speed and high pressure, and higher than for the Nitro Dozers with characterized by low speed and low pressure.



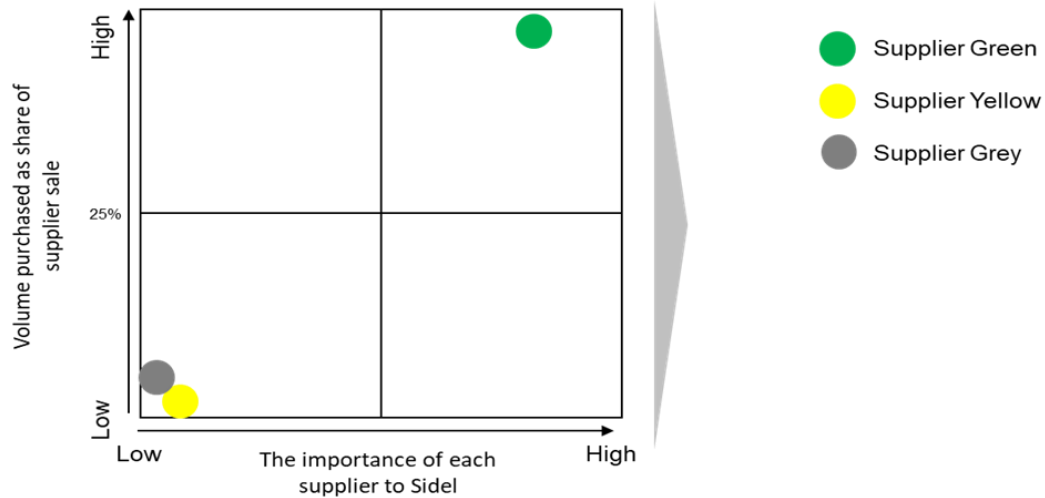
The situation is different for the “Aseptic Nitro Dozers”. They are in the strategic product quadrant. This because these products represent a considerable value to the organization since they have a large impact on profit, and a high supply risk on the market. For this reason, it is very important to consolidate the partnership relation with the “Supplier Green”. Indeed, in the new commodity strategy it has been confirmed as a “Preferred Supplier”. The high supply risk in the market is due to the fact that these products can only be purchased from one supplier. Indeed, at the moment the only supplier able to sell to Sidel this kind of product is “The Supplier Green”. The other two suppliers analyzed in the commodity strategy are still not able to commercialize “Aseptic Nitro Dozers”, but they are working on these kind of machines, that recently have become the ones with the higher request on the market. Anyway, so far only “The Supplier Green” is able to produce “Aseptic Nitro Dozers”. The other reason because of the “Aseptic Nitro Dozers” is in this quadrant is due to the large volume purchased recently. Indeed, this kind of Nitro Dozers is the one with the higher rate of grow; currently the “Aseptic Nitro Dozers” are by far the most purchased ones. The graph below can exemplify what has just been discussed.



**Figure 4.9** Nitro Dozers Product Portfolio Matrix

The second matrix used to assess the suppliers is the “Supplier Portfolio Matrix”. On the x-axis is the importance of each supplier to Sidel, while on the y-axis is the volume purchased by Sidel as share of supplier sales. The “Supplier Green” is positioned in the strategic supplier quadrant. This because the importance of the supplier to Sidel is high, and the same is the volume purchased from this Supplier by Sidel as a share of the supplier sales. So, there is a strategic partnership: it has been established a relation based on mutual trust and mutual commitment to reduce the supply risk to a minimum. Sidel and the Supplier are both heavily involved in the partnership, therefore mutual dependence is expected to be high. Total interdependence is high as well, since the relationship is very intense.













Regarding the “Supplier Yellow”, and the “Supplier Grey”, the situation is totally different: they are both located in the non-critical supplier quadrant, very near to the origin of the graph. This because their importance to Sidel is almost nothing, and the same is the volume purchased by Sidel as share of supplier sale is almost nothing. To be more accurate, the “Supplier Yellow” is slightly more important than the “Supplier Grey”, due to the fact that the corporate target is to introduce a validated second source in order to increase competition between suppliers, and consequently to increase Sidel power within the Commodity. Since the supplier individuated to be selected as a second source is the “Supplier Yellow”, it is a little bit more important to Sidel. At the same time, since it is not validated yet, Sidel does not purchase nothing from it, while the “Supplier Grey” is already validated because it is used to supply other commodities. This is the reason because of on the y-axis the “Supplier Grey” is positioned slightly higher the “Supplier Yellow”. To better exemplify the situation, it is very useful the graph below.





**Figure 4.10** Nitro Dozers Supplier Portfolio Matrix

After assessing the suppliers by using the Matrices, it is important to have a complete picture of them. To reach this goal, it has been created a comparative table that paragon the suppliers in terms of their key features. For each of them is assigned a symbol that reflects the level reached by the supplier in terms of each key features analyzed. In this table only the “Supplier Green” and the “Supplier Yellow” have been considered. Regarding the price competitiveness, each of the two suppliers is more competitive on some products segmentation, and less on others, as it is clear after analyzing the benchmark in the paragraph 4.4.1. The other feature that is important to discuss more in detail is the product portfolio: while the “Supplier Green” has a complete range of machines, the “Supplier Yellow” is not able to produce “Aseptic Nitro Dozers”. Finally, regarding the customer perception, the “Supplier Green” is recognized globally as a dominant supplier, while the “Supplier Yellow” is well recognized in the market, but not so much as the other. The table below explains all the key features

**Table 4.3** Nitro Dozers Supplier Summary Table

KEY FEATURES	Supplier Green	Supplier Yellow
TECHNOLOGY & INNOVATION	 Good level of technology. New aseptic range development	 Good level of technology. Patented solutions for dosing optimization.
PRODUCT PORTFOLIO	 Complete range of machines. Aseptic machine available.	 Aseptic machines not available
GLOBAL FOOTPRINT/ INSTALLED BASE	 Manufacturing in one location (US). Installed base WW (including GKAM)	 Manufacturing in one location (US) Present also in areospace market
SERVICE NETWORK	 Different service subsidiaries around the world (mostly US/Belgium)	 Different service subsidiaries around the world (mostly US/UK)
PRICE COMPETITIVENESS	 More competitive on some products	 More competitive on some products
CUSTOMER PERCEPTION	 High recognition in beverage Industry	 Perception lower than competitor.

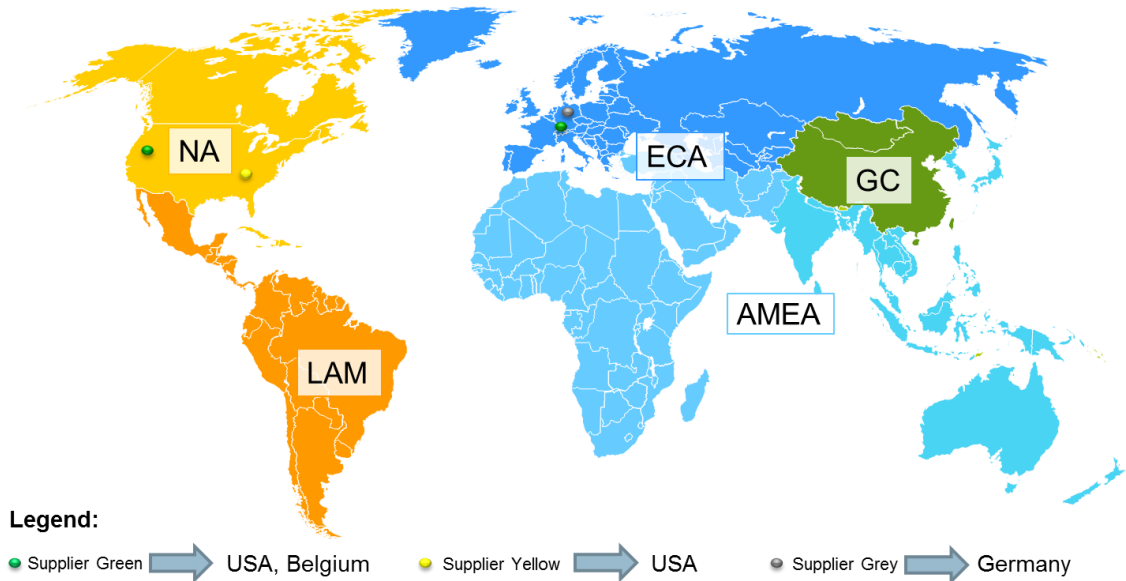
 High     Low

#### 4.4.3 Suppliers Footprint

This section is constituted by two different sub-section:

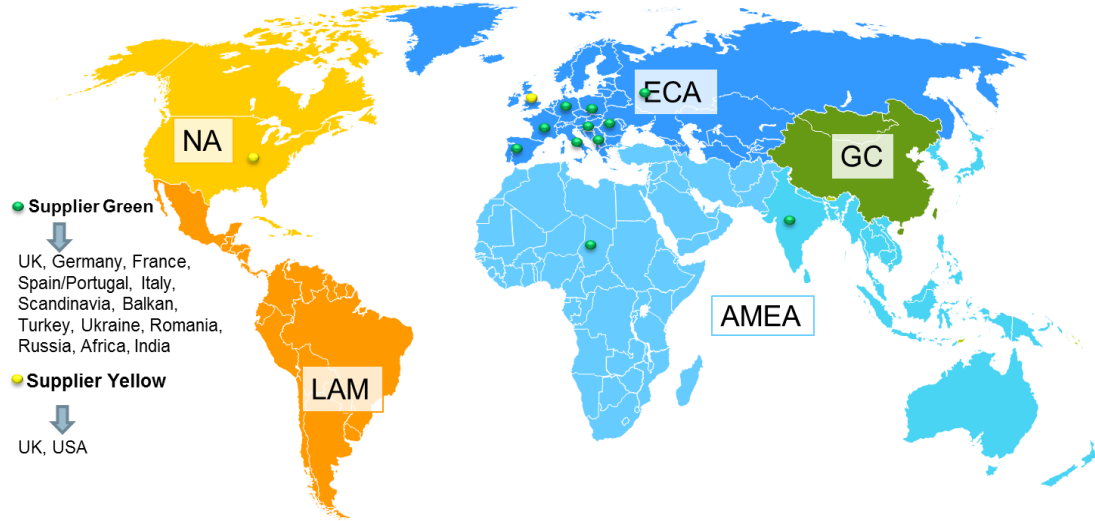
- Manufacturing footprint: the supplier is evaluated in terms of how are distributed its manufacture bases in the world. The “Supplier Green” has two manufacture bases, one in US, and the other one in Belgium. The “Supplier Yellow” has its manufacture base in US, while the “Supplier Grey” has its manufacture base in Germany. Having a clear picture of where the suppliers have their bases is not a factor that can be neglected. This because it has a discrete importance in the moment in which Sidel decides to which supply purchase from. This because the

transportation costs are of course related to the distance between the manufacture site of the supplier and the manufacture site of Sidel or of the final customer, in which the product will be installed.



**Figure 4.11** Supplier Manufacturing Footprint

- Services footprint: the supplier is evaluated in terms of how are distributed its service bases in the world. The “Supplier Green” has service bases almost everywhere in Europe, in addition it has a base in Africa and one in India. The “Supplier Green” has one service base in US, and the other in United Kingdom. The location of the service price is very important in the evaluation of a supplier. This because the more service bases a supplier has all over the world, the more it can react promptly to an emergency situation and more in general to a situation in which the Supplier must send some technicians in one site where its equipment are installed. The graph below describes the situation.



**Figure 4.12** Supplier Services Footprint

#### 4.4.4 Other Elements to Assess Suppliers

After evaluating the suppliers based on their supplier footprint, there are others two tables that have been used to complete the suppliers' assessment:

- **Supplier current contractual condition:** This table is used to compare the suppliers on the contractual condition signed with Sidel. In this case the comparison is quite easy, because only the "Supplier Green" has the contract signed. The "Supplier Yellow", since it has not been qualified yet, it has not contracts signed. In particular the "Supplier Green" has signed the General Purchase Agreement (GPA), that is the contract that Sidel signs with its more important supplier, in which all the most important clauses are defined. The GPA, since is the most complete contract type, includes the General Terms of Conditions (GTC) and the Business Code of Conduct for Suppliers (BCfS) as well. The situation is exemplified in the table below.

**Table 4.4** Contractual Condition Nitro Dozer Table

	GT&C	GPA	BCfS
<b>Supplier Green</b>	Covered by GPA	✓	Covered by GPA
<b>Supplier Yellow</b>	✗	✗	✗

✓ Signed    ✗ Not signed

- Competitive Landscape: This table is used to compare how is the situation between Sidel’s suppliers and Sidel’s competitors. The information is obtained through surveys with Suppliers and Sales force. From what has been got from the surveys, it seems that the “Supplier Green” supplies the two principles Sidel competitor as well. This because it is perceived as supplier leader in the Nitro Dozers market, and it is globally recognized. As a consequence, also the competitors purchase from it. The situation is slightly different for the “Supplier Yellow”. Indeed, only one of the two principles competitors purchase from it. This because it is not perceived so good as the “Supplier Green” and it is not so globally recognized. In addition, the fact that it is still not able to supply “Aseptic Nitro Dozers”, has a determinant impact on the fact that it is not used by the competitor 1. From what has been obtained from surveys, Competitor 1 purchases 30% more than Sidel from “Supplier Green”. Competitor 2 purchases about the same amount from “Supplier

Green”, but it already purchases from the “Supplier Yellow”. The situation described is illustrate in the image below.

**Table 4.5** Competitive Landscape Nitro Dozer Table

	 Sidel	Competitor 1	Competitor 2
<b>Supplier Green</b>	✓	✓	✓
<b>Supplier Yellow</b>			✓

**4.5 Development of Sourcing Strategy**

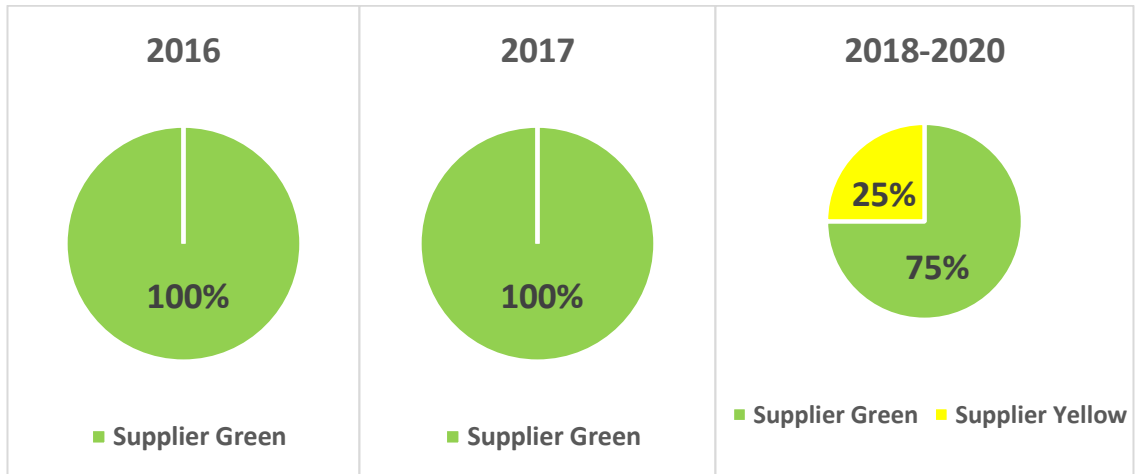
After assessing the suppliers, in this section it is explained and developed the strategy for the commodity. So, as it is clear at this point of the chapter, the sourcing strategy so far has been the single source. Indeed, the only supplier from which Sidel purchases Nitro Dozers at the moment is the “Supplier Green”. It has been possible because the “Supplier Green” has the capability to supply the complete range of product. In fact, it is so far the only supplier on the market able to supply all the five types of Nitro Dozers on the market, as it has been pointed out in the table 4.2. Sidel adopted this solution even if it was the most suitable one, because in the past were not evaluated alternative suppliers in a serious manner and with enough internally effort. By the way, even if the single source was not the ideal solution, during the last years Sidel tries to take advantages of the opportunities related to this kind of strategy: the fact that working with an only partner could lead to a partnership, in which Sidel and the partner work together to develop optimal solutions. In



this situation this is easier to accomplish, because there is a unique technical interface. But as time goes by, Sidel has suffered from possible opportunistic behaviors on the part of the supplier, because of its greater contractual power, and it has felt itself subject to greater risks as a result of the lack of alternative sources from which to purchase. This has led to the research of new suppliers, to switch from a single sourcing to a multiple sourcing strategy. This in order to limit the drawbacks of a single sourcing strategy, and to take advantage of the positive aspects of the multiple sourcing strategy. Sidel in this way, having the availability of more resources, can always ensure continuity of supply and put suppliers in competition with each other, obtaining price reductions. The strength of this approach lies in the greater degree of flexibility available to the company in the face of any significant variations in demand. So, as it has been explained in the last paragraphs, the “Supplier Yellow” has been assessed, but it has not been qualified yet.

In the last two years, the strategy has been to purchase only from the “Supplier Green”. For the three years 2018-2020 the corporate goal is to redistribute the spend: 75% on the “Supplier Green”, while 25% on the “Supplier Grey”. The strategic vision objective is to introduce a second source. The principle problem in this perspective is related to the “Aseptic Nitro Dozers”: it has not been found yet an alternative to “Supplier Green” for this product segmentation. But anyway, as it has been discussed in the benchmark paragraph, the idea is to purchase “Low Speed and Low Pressure” and “High Speed and Low Pressure” from the “Supplier Green”, while “Low Speed and High Pressure” and “High Speed and High Pressure” from the “Supplier Yellow”. In this way, and by purchasing “Aseptic Nitro Dozers” from the “Supplier Green”, the only able to produce them, the spend will be covered in the next three years for 75% from the “Supplier Green”,

while for 25% from “Supplier Yellow”. The strategic view is illustrated in the figures below.



**Figure 4.13** Nitro Dozer Strategic Vision

As it has been underlined in the “Services Footprint”, the “Supplier Yellow” has two services bases around the world. This could seem not enough compared to the number of bases of the “Supplier Green”, but it is enough to cover the 25% of the spend.

To conclude, by redistributing the spend, the ultimate goal is of course to get more savings in this commodity, in accordance with the corporate strategy. This will be possible purchasing three kinds of Nitro Dozers from the “Supplier Green”, and two from the “Supplier Yellow”.

#### 4.6 Next Steps

After defining the vision, it is necessary to think about the actions required to reach what has been decided. Firstly, it is important to consolidate the partnership with the “Supplier

Green”. Indeed, even if the goal is to decrease of 25% the spend, it is still the most important supplier because is the only one capable of supply the “Aseptic Nitro Dozers”. The second step is to complete the “supplier qualification process” for the “Supplier Yellow”, required to purchase from it. The “supplier qualification process” will be deepened in the next chapter, that is completely dedicated to the procedure to qualify a new supplier.

After qualifying the “Supplier Yellow”, the third step will be the finalization of the negotiation with it. Consequently, Sidel will get in touch with the “Supplier Green” to renegotiate the prices by leveraging what has been obtained with the “Supplier Yellow”.

# CHAPTER 5

## SUPPLIER QUALIFICATION

### 5.1 Introduction

The supplier qualification is a process to qualify new suppliers who have not yet had relations with Sidel. The supplier qualification procedure is required if the global commodity manager decides to purchase from a new supplier after defining the commodity strategy. It is the case described in the last chapter for the “Supplier Yellow”. Before using it as an alternative supplier, it must be validated through the qualification process that will be discussed in detail in this chapter.

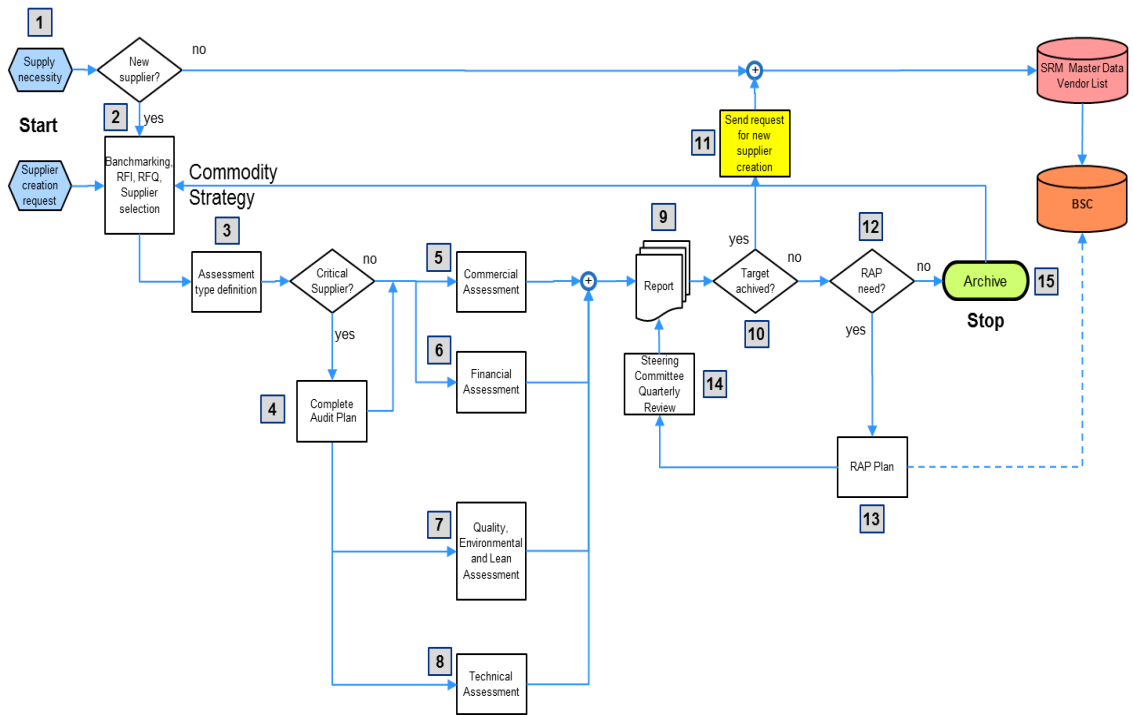


Figure 5.1 Supplier Qualification Flow Chart

The first question after that occurs a supply necessity is “Is the supplier new”? If the answer is yes, the supplier qualification process begins. This Procedure affects the Suppliers and the service providers that supply products with direct influence on the quality of the finished goods. The figure above represents the Supplier Qualification flow chart that explains the steps that characterize the procedure.

## **5.2 Qualification Criteria**

The Supplier qualification aims at assessing the Supplier situation for:

- Mandatory requirements defined as condition to start a commercial relationship with Sidel
- Overall compliance level towards Sidel requisites to be a qualified supplier
- Essential conditions for a possible long-term cooperation with a continuous improvement perspective
- Ability to create value for Sidel and for the Supplier
- Flexibility in responding to changing market or customers’ needs
- Capacity to contribute to Sidel profitability and customer satisfaction

The four audit areas for the Supplier qualification are:

- a. Commercial, and the relative owner is the Commodity Manager
- b. Financial, and the relative owner is the Commodity Manager
- c. Quality assessment and validation, and the relative owner is the Supplier Development Engineer
- d. Technical assessment and validation, and the relative owner is the Industrial Engineering & Production Technology

### **5.3 Supplier Qualification Process**

The assessment of the Supplier follows the sequences suggested in the Supplier Qualification Flow Chart. A final evaluation and scoring is the summary result of the single qualification areas assessment scores. The most important steps for the Qualification Process are eight and they will be discussed in the next paragraphs.

#### **5.3.1 Start**

A new supply need can come from:

- the product development process
- the product evolution management

or a new Supplier research necessity comes from:

- a Commodity Strategy
- a Supplier performance evaluation
- a specific request of the Sourcing Management that can be principally cost reduction or innovation

In these cases, the Commodity Manager verifies the availability of an appropriate Supplier in the Sidel Vendor List on SAP or SRM, another company database. In case the qualified Sidel Suppliers are not fitting the business need, the Commodity Manager starts the new Supplier research. A typical example is the one described in the last chapter.

#### **5.3.2 Supplier Research**

The Commodity Manager defines the scope of supply (type/family of the product) and the critical performance levels. Depending on the requirements, he/she starts the market

research and supplier selection by market scouting, sourcing expertise and sourcing strategy execution. When a potential new Supplier is selected, the Commodity Manager creates the appropriate folder in the Group Sourcing Folder with the name of the Supplier. All the documents related to the scouting (benchmarking, RFI, RFQ) are stored in a dedicated sub-folder. The Request For Information (RFI) is a request made typically during the project planning phase where a buyer cannot clearly identify product requirements, specifications, and purchase options. RFI clearly indicate that award of a contract will not automatically follow. The request for Quotation (RFQ) is a standard business process whose purpose is to invite suppliers into a bidding process to bid on specific products or services.

### **5.3.3 Assessment Type Definition**

In all cases, the qualification process consists of four type of assessment areas: commercial, financial, quality, and technological compliancy.

Under some specific circumstances or exceptions:

- Commodity Commercial Components: catalogue parts with not relevant manufacturing critical aspects
- Commodity Third Party Equipment: for market recognised supplier performances. The RFI document should reflect this market recognition with the supplier certified performance references

The Commodity Manager can derogate the full-scale assessment to apply a light assessment type with only the commercial and financial module included. A rationale should be provided by the Commodity Director for traceability following the template in the Light assessment approval logbook stored in the Group Sourcing Folder.

The full-scale assessment requires the direct involvement of other Departments representatives like Industrial Engineering, Quality or R&D technicians, while the Commodity Manager can handle the light assessment autonomously. Furthermore, a full-scale assessment must comprise a supplier site visit while a light one can be managed with a remote data collection and with the supplier representatives paying visits to Sidel only.

After the definition of the type of assessment, the Commodity Manager nominates the Supplier Assessment Team Leader choosing from a Manager, a Specialist or a Module & Product Development Engineer of the Sourcing Department. The Supplier Assessment Team Leader fills in the summary page of the New Supplier Assessment Template with all the basic supplier information and the essential financial documentation (balanced sheets, income statement, Organizational Charts and so on) and save it in the Group Sourcing Folder.

**Table 5.1** New Supplier Assessment

<b>Sidel - New Supplier Assessment</b>			<b>Driver</b>		<b>Sourcing Manager</b>	
			<b>Commodity</b>		<b>Commodity</b>	
			<b>Assessment date</b>		<b>gg/mm/yyyy</b>	
<b>1. Assessment Team</b>						
<b>Assessment team</b>	Name Surname		Site Sidel			
Financial						
Sourcing						
Supplier development						
Technical Expert						
<b>2. Basic Supplier information</b>						
<b>Supplier name</b>			<b>Sourcing Group</b>			
Address			Switchboard number			
City	ZIP Code		Fax number/ E-mail address			
Country			Homepage www			
Sensitive Country?			Supplier screening			
Tax Haven Country?						
<b>Owner (s)</b>			<b>Agents/Distributors</b>			
<b>Managing Director</b>			<b>Quality Manager</b>			
Phone		Mobile	Phone			
E-mail address			E-mail address			
<b>Sales Manager</b>			<b>R&amp;D / Engineering Mgr</b>			
Phone		Mobile	Phone			
E-mail address			E-mail address			
<b>3. Key figures</b>						
		<b>2018</b>	<b>2017</b>	<b>2016</b>		
Annual Turn-Over	Local				Total employees	
	Holding				ISO 9001 y/n	
Annual Turn-Over with TLI	Local				ISO 14001 y/n	
	Holding				Others ....	



#### **5.3.4 Audit Plan**

The Supplier Assessment Team Leader creates the Audit Team (Process& Performance specialist, Supplier Development Engineer, Industrial engineer, Quality technician, Production technologist, and other). A Production Technologist or an Industrial Engineering expert must be made part of the audit team in all cases the supplier manufacturing process contains special or critical to quality or to cost processes. In this event the appointed technology expert defines before the audit execution a specific audit check list to score the supplier special or critical process. The Team leader prepares also the Audit Plan and schedule the audit in agreement with the Supplier and the Sidel Assessment Team Members.

The planning phase is completed with the sign off the audit plan by the Team Leader and the Supplier Representative, thus acknowledging the notes and the recommendations listed out at the bottom of the Audit Plan spreadsheet. The Team Leader saves a copy of this signed off Audit Plan page of the Supplier Assessment Template in the Group Sourcing Folder.

#### **5.3.5 Audit Execution**

The four audit areas checklists contain some audit points that are mandatory conditions to achieve the qualification level. In the audit checklists in orange are highlighted the mandatory audit points. These audit points must have a score of at least 3 points. For these audit points, the auditor has to collect the documental evidences (procedures, traceability, calibration reports, etc.) collected during the site visit and to store them in the Group Sourcing Folder.

The first audit area is the commercial assessment. It is based on the checklist contained in the commercial table of the Supplier Assessment Template. It is composed of two parts: “1. Commercial” and “2. Logistics and basic Quality”. It is recommended to fill in these two sections as much as possible prior to the supplier site visit through supplier interviews. This section must be filled in and completed, together with the financial one, before the Quality and Technological assessment are carried out at the supplier site.

**Table 5.2** Commercial Assessment

Supplier:		date:	gg/mm/aaaa	no less than	3
a.	<b>Commercial assessment</b>				<b>SCORE</b>
<b>1. Commercial</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
1.1	Benchmarking Improvement Results. Explain how you know your position among competitors	Does not have evidence of benchmarking	Proactively participates in benchmarking industry best practices	Proactively participates in benchmarking industry best practices and has records on file by production area/technology of industry best practices	3
<b>2. Logistics and basic quality</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>1</b>
2.1	Availability of quality metrics	No Availability	Only customer references	Internal KPI system in place and up to date (NC, Claim, OTIF at least and positive scores)	1

The second audit area is the financial assessment. It is based on the checklist contained in the financial table of the Supplier Assessment Template. In case of complex financial evaluations or application of the financial KPIs, the Team Leader will involve a representative of the Sourcing Process & Performance team to support the correct supplier evaluation.

**Table 5.3** Financial Assessment

Financial assessment (certified IS/BS available: obliged or willing to disclose)				SCORE
Inquiry	1	3	5	9
D&B Evaluation	Supplier has a D&B rating $\geq 4$ or not available	Supplier has a D&B rating = 3	Supplier has a D&B rating $\leq 2$	3
NFP (Net Financial Position) of the last three years (to be integrated with cash flow statements when available)	Cash deterioration $>10\%$	Cash deterioration $<10\%$	Cash improvement	3
Turnover (gross sales) of last three years	In reduction	Stable: $0 < \text{Turnover evolution} < 3\%$	Growth: Turnover evolution $>3\%$	3

The third audit area is the quality assessment. It is based on the checklist contained in the Quality table of the Supplier Assessment Template. It is composed by of six parts: “1. Quality and Environment System”, “2. Purchasing”, “3. Logistics and Planning”, “4. Manufacturing Process Control”, “5. Design and Engineering Technology”, “6. Production Technology”. The Supplier Development Engineer fills in the seven sections through supplier interviews and observations of the state of art of the manufacturing areas throughout the site tour. The Supplier Development Engineer stores in the dedicated Group Sourcing folder the documental evidence of the mandatory audit points.

**Table 5.4 Quality Assessment**

Supplier:		date: gg/mm/aaaa		no less than	<b>3</b>
<b>c.</b>	<b>Quality assessment</b>				<b>SCORE</b>
<b>1. Quality &amp; Environment system</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
1.1	Are there quality manual, procedures or equivalent documentation in place?	Not present but planned within one year	Manual, procedure and documentation	Manual and procedure have been understand and applied for production activities	3
<b>2. Purchasing</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
2.1	Do you have a procedure for selection and qualification of your suppliers?	Not present but planned within one year	It is clearly defined how to select and qualify suppliers	Suppliers are always selected and qualified according to the procedure	3
<b>3. Logistics &amp; Planning</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
3.1	Are customer specifications available to the Shipping personnel (including dispatch form, inspection report at least)?	Not present but planned within one year	There is procedure to be sure logistics person to get and understand customer specification	Shipping personnel know clearly the customer's requirement and with specification in place	3
<b>4. Manufacturing Process Control</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
4.1	Is there a system to check compliance against the specification of requirements for equipment received by the company (including equipment furnished by customer)?	Not present but planned within one year	There is a procedure to control equipment received	It is clear to see equipment management record	3
<b>5. Design &amp; Engineering Technology</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
5.1	Availability of a design department	Not present	Engineering department is present, with design interaction capacity	Design department is available. Design process in place. Some sample of designs are showed.	3
<b>6. Production Technology</b>		<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
6.1	Equipment condition. Will be observed during plant tour.	Equipment are not in good working condition	Some equipment in good working condition	All equipment is state of the art	3

The last audit area is the Technological assessment. It is based on the checklist contained in the Technological table of the Supplier Assessment Template. The Technological assessment is structured to verify at the Supplier site the technological equipment capability and technical competence of the supplier resources. Following the checklist customized for the specific supplier in the Audit Plan phase, the auditor, evaluates the Supplier “Special or critical processes” such as welding, surface treatments, specific tooling equipment. In addition, the auditor stores in the dedicated Group Sourcing folder the documental evidence of the mandatory audit points. It is not easy to create a generic

example table: this because the table should be customized case by case with the contribution of the assigned technology auditor.

### **5.3.6 Report Analysis and Target Achievements Evaluation**

The team leader once collected all the audit checklists and scores by the different auditors informs the Commodity Manager and stores the audit results in the Group Sourcing folder.

The Commodity Manager verifies the assessment outcomes and he/she validates them.

The Supplier Assessment Summary spreadsheet describes the PASS/FAIL criteria.

Based on the results, the Commodity Manager faces the following options:

- PASS: to forward the request to SRM team to create the new supplier
- FAIL: to archive the supplier as not fit for Sidel Supply Chain
- FAIL: to apply to the Supplier Qualification Steering Committee for a derogation period approval to start a Recovery Action Plan in all the cases of technological or commercial constraints that impose to start a commercial collaboration.

### **5.3.7 Supplier Master Data Management and Recovery Action Plan**

In a PASS situation, the Commodity Manager provides the SRM Team with the information required in the Sidel Supplier Creation form. The SRM team check the received master data, creates the supplier code, loads data in SRM, checks and activates the bank details. The supplier Master Data is an excel file in which are collected all the most significant information related to the suppliers.

In case of technological or commercial constraints, the Sidel Function who holds the specific business need put forward to the Supplier Qualification Steering Committee

the request for a derogation to start the commercial collaboration while a Recovery Action Plan is activated.

The Recovery Action Plan takes into consideration the entire mandatory audit points not fulfilled and/or other audit weak points to achieve the minimum qualification score levels. It is prepared in agreement with the Supplier defining the corrective actions to achieve the operational processes and controls satisfying the Sidel audit points. The supplier condition of being under Recovery Action Plan must be kept as short as possible to avoid ruling out a supplier not achieving the Recovery Action Plan targets after having already invested too much in the development of the supplier relationship. The Supplier Development Engineer team manage the definition and the follow up of the Recovery Action Plan and report quarterly to the Supplier Qualification Steering Committee.

### **5.3.8 Quarterly Review and Record Track**

The Supplier Qualification Steering Committee is composed by managers or their nominated delegates:

- Sourcing Supplier Development
- Sourcing Module & Product Development
- Commodity Directors
- Supply Chain Planning
- Supply Chain Plant Managers
- Product management & Development: Module Development
- Product management & Development: Automation

The steering committee has a quarterly review meeting to:

- evaluate new requests of supplier qualification under derogation: the risks and the possible costs associated to the supplier activation under derogation should be quantified and accepted by the committee members. Failing to reach consensus on the request of derogation will determine the possibility for the applying Manager to escalate the decision to the GLT.
- approve the recovery action plan needed to reach the minimum qualification level
- monitor the progress and the time keeping of the Recovery Action Plan previously approved

Each new supplier under Recovery Action Plan regime must accomplish his recovery action assignments before the following quarter steering committee meeting. After two consecutive Supplier Qualification Steering Committee review meetings from the Recovery Action Plan approval if the supplier has not completed the required improvement path or the assessment score has not reached the minimum required level it will be ruled out from the qualification process and banned for a new application for the qualification process for a period of three years. Urgent evaluation meetings can be called between to subsequent steering committee meetings in case a critical to business request need to be evaluated.

The Supplier Qualification ends when the Supplier is in SRM and in SAP officially recorded and activated or ruled out and archived in the “Supplier Qualification failure log book” stored in the Group Sourcing Folder for future reference. The Commodity Manager, should verify that all prescriptions of this document are accomplished, and all the documentation required is stored in the Group Sourcing Folder, before communicating

officially to the Supplier the assessment results and before starting the Supply Qualification process. Supplier process step owners are in charge of recording all the assessment information in the documentation. For each evaluated Supplier, the Commodity Manager creates a dedicated folder in the Group Sourcing Folder.

To summarize the chapter, a new supplier can supply Sidel only after being assessed and evaluated through a series of steps and a series of person who are in charge of this process. If the supplier receives a positive feedback, it can start its relationship with Sidel.

An entire chapter in this dissertation has been dedicated to the “Supplier Qualification Process”. This because, in the last chapter, it has been discussed the “Case of Nitro Dozers”. The chapter has been concluded with the next steps for the near future regarding the commodity strategy process. One of them is to qualify the “Supplier Yellow”, to have an alternative to the “Supplier Green”. So, it has been decided to deepen the procedure to qualify a new supplier in order to have a complete picture of the situation. The objective is to complete the qualification process for the “Supplier Yellow” within the end of the 2018.



## CHAPTER 6

### CONCLUSION

The objective of the dissertation has been reached: the purchasing strategic plan that meets the targets and mitigates the supply risk for the Company has been defined in detail.

Firstly, it has been used a theoretical approach that has allowed to have a clear and complete picture of what is a commodity strategy and what are the corporate procedures and process to structure it. Aside from the description of a lot of tools helpful in the assessment of the suppliers, the three possible purchasing strategies have been described:

- Single Sourcing
- Multiple Sourcing
- Parallel Sourcing

Then, thanks to the description of the case of Nitro Dozers, it has been possible to deeply understand through a concrete example what are the most important parameters that the global commodity manager has to evaluate to define the right sourcing strategy. In particular, the case of Nitro Dozers has shown how the Company prefers the multiple sourcing strategy: Sidel considers much more relevant the advantages connected with this choice than the drawbacks. The advantage is that is possible to negotiate better prices for each equipment thanks to the increased competition. This results in potential savings opportunities. The disadvantage is that with a multiple source that complexity becomes higher. This results in low power to influence design, quality and performance of the solution.

Finally, in the fifth chapter, it has been offered a complete view of what is the supplier qualification process, when it is required and how it is structured. The supplier qualification process is part of the sourcing strategy, and it is directly linked to the commodity strategy: when the Global Commodity Manager accordingly with the corporate management decides to purchase from a new supplier, it is necessary to qualify it before proceeding with the purchase.

### **6.1 Future Steps**

The commodity strategies are reviewed and updated in average every twelve months. This is due principally to two reasons:

- Checking on a regular basis if the strategy is respected
- Keeping up with the new exigencies of the market or of the Company

Regarding the Nitro Dozers Commodity Strategy, the principle goal is to qualify within the end of the 2018 the “Supplier Yellow”, in order to have an alternative to the “Supplier Green”. The corporate sourcing strategy, that is a guideline for every commodity strategies, considers the multiple source approach as the best sourcing option. In this way, the Nitro Dozers Commodity Strategy will be aligned with it.

## REFERENCES

- Aberdeen Group, "Strategic E-Sourcing Could Save Business \$1.7 Trillion on a Global Basis," press release, April 3, 2001.
- Aberdeen Group, "Strategic E-Sourcing: A Framework for Negotiating Competitive Advantage," April 2001, as cited in Barlas, Demir, "e-Sourcing Still Promising, Says Aberdeen," Line 56, May 4, 2001.
- Anderson, J.C., Weitz, B.A., 1989. Determinants of continuity in conventional industrial channel dyads. *Marketing Science* 8, pp. 310–323.
- Caniel C.J., Gelderman, C.J., 2005. Purchasing strategies in the Kraljic matrix - A power and dependence perspective. *Journal of Purchasing & Supply Management* 11, pp. 141–155.
- Cavalieri S., Pinto R., 2015. *Orientare al successo la Supply Chain - seconda edizione*, Isedi.
- Elliott-Shircore, T.I., Steele, P.T., 1985. Procurement positioning overview. *Purchasing and Supply Management* December, pp. 23–26.
- Favre D., Brooks J., 2002. E-sourcing: Procurement's Leading Edge, "ASCET", Vol. 4
- Frazier, G.L., Rody, R.C., 1991. The use of influence strategies in interfirm relationships in industrial product channels. *Journal of Marketing* 55 (1), pp. 52–69.
- Gelderman, C.J., Van Weele, A.J., 2003. Handling measurement issues and strategic directions in Kraljic's purchasing portfolio model. *Journal of Purchasing and Supply Management* 9 (5–6), pp. 207–216.
- Geyskens, I., Steenkamp, J.E.M., Scheer, L.K., Kumar, N., 1996. The effects of trust and interdependence on relationship commitment: a trans-atlantics study. *International Journal of Research in Marketing* 13, pp. 303–317.
- Hadeler, B.J., Evans, J.R., 1994. Supply strategy: capturing the value. *Industrial Management* 36 (4), pp. 3–4.
- Handfield R., Walton S.V., Sroufe R., Melnyk S.A., 2002. Applying environmental criteria to supplier assessment: A study in the application of the Analytical Hierarchy Process. *European Journal of Operational Research* 141, pp. 70–87
- Handfield, R.B., Pannesi, R., 1995. Antecedents of lead time competitiveness in make-to order manufacturing firms. *International Journal of Production Research* 33 (2), pp. 511–537.

- Kempeners, M., van Weele, A.J., 1997. Inkoopportfolio: Basis voor inkoop marketingstrategie. In: Van der Hart, H.W.C., Van Weele, A.J. (Eds.), *Dynamiek in Commerciële Relaties*. F&G Publishing, Bunnik.
- Kraljic, P., 1983. Purchasing must become supply management. *Harvard Business Review* 61 (5), pp. 109–117.
- Leenders M., Fearon H., 1997. *Purchasing and Supply Chain Management – 11<sup>th</sup> Edition*, Irwin/McGraw-Hill, Boston.
- Monczka, R.M., Trent, R.J., Callahan, T., 1993. Supply base strategies to maximize supplier performance. *International Journal of Physical Distribution and Logistics Management* 23 (4), pp. 42–54.
- Monczka, R.M., Trent, R.J., Handfield, R.B., 1997. *Purchasing and Supply Chain Management*. Southwestern Publishing, College Division, Cincinnati, OH.
- Nellore, R., Soderquist, K., 2000. Portfolio approaches to procurement: analyzing the missing link to specifications. *Long Range Planning* 33, pp. 245–267.
- Olsen, R.F., Ellram, L.M., 1997. A portfolio approach to supplier relationships. *Industrial Marketing Management* 26 (2), pp. 101–113.
- Pfeffer, J., 1981. *Power in Organizations*. Pitman Publishing Inc., Massachusetts.
- Ramsay, J., 1996. Power measurement. *European Journal of Purchasing & Supply Management* 2 (2/3), pp. 129–143.
- Richardson, J., 1993. Parallel sourcing and supplier performance in the Japanese automobile industry. *Strategic Management Journal* 14, pp. 339–350.
- Tuten, T.L., Urban, D.J., 2001. An expanded model of business-to business partnership formation and success. *Industrial Marketing Management* 30, pp. 149–164.
- Van Weele, A.J., 2000. *Purchasing Management: Analysis, Planning and Practice*. Chapman & Hall, London.
- Fallon, J., 2017. <http://www.vacuumbarrier.com/articles/how-to-dose-liquid-nitrogen-effectively.html>