



Development in Steel Research

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SHRI B. MUTHURAMAN

Managing Director

Tata Steel, Jamshedpur-831001



Shri B. Muthuraman did his B.Tech. in Metallurgical Engineering from IIT Madras in 1966; MBA from XLRI Jamshedpur in 1975 and Advanced Management Programme (CEDEP/INSEAD) in France. He started his professional career in 1966. First he joined Tata Steel as a Graduate Trainee. On completion of his training, he worked in the areas of Iron-making and Engineering Development for 10 years. Then he moved to the Marketing & Sales Division of Tata Steel and spent nearly 20 years there ultimately rising to the level of Vice President. In 1995, Shri Muthuraman was selected to spearhead the prestigious Cold Rolling Mill Project, which was finally completed in record time. Then he was appointed as the Executive Director (Special Projects) in August 2000 and served as the main change agent for the major diversification projects of Tata Steel. Finally he was appointed as the Managing Director on July 22, 2001.

Shri Muthuraman is a member of various Boards. He is currently the Chairman of Tata Sponge Iron Ltd; TM International Logistics Ltd.; Tata SSL Limited and NIT, Jamshedpur. He is also the Director of Tata Ryerson Ltd.; The Tinsplate Company of India Ltd.; Tata Incorporated, New York International Iron & Steel Institute, Brussels and Chairman of Research Council, National Metallurgical Laboratory.

He is also associated with various professional bodies. He is the member of the National Council of CII; Chairman of the National Sports Committee of CII; President of the Institute for Steel Development & Growth; President of the Cricket Association of Jharkhand and Member of the Board of Governors, Xavier Labour Relations Institute, Jamshedpur.

He has received several awards and recognitions including the Distinguished Alumnus Award, IIT Madras (1997); Tata Gold Medal, Indian Institute of Metals (2002); CEO of the Year Award by Indian Institute of Material Management - 2002; Michael John Memorial Lecture Medal 2002 by Tata Workers Union.

Shri Muthuraman has travelled all over the world. He is an avid reader, a keen golfer and is a cricket buff.

The excerpts of the lecture delivered by Shri B. Muthuraman

Good morning every body. Prof. Mehrotra, Director of National Metallurgical Laboratory, Jamshedpur, Prof. Ghosh, Prof. Chopra, employees of the National Metallurgical Laboratory, guests and colleagues.

It's an honour and pleasure for me to participate in the inaugural function of the Diamond Jubilee Celebration of the CSIR. Over the last 50 years Tata Steel has had a wonderful association with the National Metallurgical Laboratory. As far as my own personal association is concerned, I recall a visit to Jamshedpur in 1965 even before I graduated from IIT Madras. And it was my first visit to Jamshedpur along with some of my classmates and along with me was our own director of IIT Dr. Vibhutipbushan Sen Gupta, who said he would take me to a friend of his. So I landed up in Dr. A. B. Chatterjee's house and little did I know that I would become a very close friend of Dr. A. B. Chatterjee's son who is here — Dr. Amit Chatterjee. So, that was my first visit to Jamshedpur and first meeting with anyone associated with National Metallurgical Laboratory and I very vividly recall spending that evening very pleasantly with Dr. A. B. Chatterjee and Mrs. Chatterjee and I don't think Amit was there that evening and we had a very pleasant evening. It was the house just off the straight mile road, one of those reddish coloured houses on the Pipe Line road.

And over the years I have had personal association with many of the Directors - Professor Nijhawan - every time he used to visit Jamshedpur, I have met him and there is not an international symposium where you would not meet him till 3 - 4 years ago. I have personally known - Prof. Altekar, Prof. Ramchandra Rao, Prof. Banerjee, who still shares with me and sits along with me on one of the boards of the Tata Companies and of course Prof. Mehrotra who I have had the good fortune to meet when he was in IIT Kanpur as my own son studied there till a few years ago. And, Tata Steel has had a wonderful relationship with National Metallurgical Laboratory over the last 50 years and I think it's fortunate for both the institutions that they are situated side by side and I recall Tata Steel getting greatly benefited by several of the early mineral beneficiation studies that were done with the help of National Metallurgical Laboratory - in setting up our washing plants at Noamundi, Jharia Coal Washeries, and several other work that we have done together. Only yesterday, we launched a new initiative between Tata Steel, National Metallurgical Laboratory and IIT Kharagpur because they happen to be situated in this part of the country and geographically close to each other and Tata Steel

is definitely one of the most outstanding companies in India and in the World and National Metallurgical Laboratory is an outstanding metallurgical institution and IIT Kharagpur is perhaps the best technical institute in India. Then, these three institutions are coming together and we have just launched a tri-partite program where work will be done in the area of steel which will help Tata Steel, which will help National Metallurgical Laboratory and which will use the resources of National Metallurgical Laboratory and IIT Kharagpur.

So, that it is for the betterment of the Steel Industry as a whole and that's a new initiative that we have taken and that only shows that there is much more that one can do, more than what we have ever done before, with the help of academic institutions, with the help of industry and with the help of Laboratories like the National Metallurgical Laboratory. So I am particularly proud and honoured to participate in this function and I am sure National Metallurgical Laboratory under the leadership of Prof. Mehrotra would go from strength to strength and will do new things which will help this nation to grow.

I thought today I will spend, may be 8 - 10 minutes on talking about Steel because Steel is important. All said and done, steel is the most important and useful metal for mankind and if you were to look around I think each person living in this world experiences approximately about a ton of steel in his every day life and the world consumes about 800 million tons of steel and the next metal aluminium which is perhaps about 25-30 or 35 million tons which is so far behind that steel will continue to dominate our lives for at least several years to come if not a couple of centuries. But if you look at the steel companies in the world, you will find that the steel companies in the world are not doing well. Steel companies in India are not doing well, infact there is not a single steel company in the world which has consistently returned the cost of capital on a sustained basis. There are may be two or three companies which have returned the cost of capital over a short period of time but there is no company in the world which has returned the cost of capital to the owners of that company over a sustained period of time. And, infact last year when the industry had a down turn, there were only 4 or 5 companies in the whole world which turned profits and Tata Steel was one of them and was the only company which made profit in India.

So, looking at steel as an important metal for human civilisation to progress and as an important material of sustaining and improving the

quality of life, I think it is very important for all of us to ensure as to how to make the steel company succeed and what is that needs to be done and what are the characteristics of steel companies that succeed. How do I look at steel companies, which are going to succeed in the future?

I believe that there are four important characteristics of steel companies to be successful in future. One - is control on raw materials. By control, I don't merely mean possessing raw materials or having mining leases although, that is definitely one way to ensure that you have control. Tata Steel has been fortunate because the founding fathers of Tata Steel really took control over lease of some of the best deposits of iron ores and coal and other mineral that are available in this part of the country and I think many of us in Tata Steel today are fortunate for that decision taken 100 years ago by Jamshedji Tata and the people who had followed him and the people who worked with him. But, apart from owning raw materials, it is important to have control on raw materials whether by location near the port or by location near where scrap is available depending upon the process you use. And as you look at the competitiveness of steel companies across the world, you will find that the bargaining power on raw materials or ownership on raw materials or being locationally close to raw material sources or whether it is iron ore or scrap whichever process that you may use, it is a very fundamental and important part of steel being competitive and not only that, it is also important to ensure that the raw materials are used well and to my mind, that is where, certain amount of fundamental work in terms of research and development is important perhaps more about it later.

The second important aspect for steel companies to be successful is cost leadership because, what is going to happen in the world is that, the steel prices are not going to go up, steel prices are going to go down. And it is to my mind, correct that the steel prices go down over time because it is important to ensure that the longevity of steel is going to depend upon what value steel gives compared to other competitive materials. So from that point of view, I don't see the steel prices go up and it is important to make sure that steel companies continue to remain profitable and wealthy even though the steel prices will continue to go down which is where the cost leadership is important in terms of capital productivity, in terms of improvement of processes, in terms of labour productivity, in terms of making sure that the assets are sweated better, in terms of operational excellence. You know, if you look at Tata Steel's

story in the last 10 or 12 years - just about 10-12 years ago, I would say our company was almost written off, we were in the dumps and it was in the last 10 years due to several correct choices and several correct decisions, we have now become one of the lowest cost producers of steel in the world. It's another matter that even the lowest cost producer of steel in the world does not return the cost of capital but I think there is something more that needs to be done. But it is very very fundamental and important that cost leadership is maintained and cost leadership is going to be one of the key competitive weapons in the steel industry. Here, is an area where I think technologists, researchers and academic institutions can play a very vital part. For example, let me give you a couple of examples from Tata Steel itself. We have two sinter plants - one which is very old and the other which was set-up just about 10 - 12 years ago. The two sinter plants have a combined capacity of about 2.45 million tons and last year we produced 4 million tons from them and we are planning to do something more and produce even more than 4 million tons in the future. We have blast furnaces whose combined capacity till recently was a little over 3 million tons while we produced 4 million tons. We have a wire rod mill which was set-up in 1987 with a capacity of 300 thousand tons. For a long time till about 1996-1997, it did not cross 300 thousand tons. Last year, we made 360 thousand tons, this year we were planning 400 thousand tons and I am quite sure that in the very near future we will make half a million ton from that wire rod mill.

So, there is a searching mind and there is a small little improvement, both in processes and in products and in methods of working that are fundamental and important for the success of steel companies to make sure that the capital productivity, that the money you have spent on your assets is used fully. And here is an area I believe and in several of the areas, several of the operating parameters, several of the control parameters in the plant, I think where in the academic and research institutions can contribute.

The third important thing for competitiveness is - technology management. Again, Tata Steel as you know, is very nearly 100 yrs. old company but today it is the one of the most modern companies in the world. I always call it as a modern company in a very old campus. Our campus only is 100 years old, our company and many of the facilities are less than 15 years old and there is no company in the world, no large scale company in the world which has got more modern facilities than

the Tata Steel. And I think our people - many of my colleagues including Dr. Amit Chatterjee here, have been responsible for selecting the correct processes. You know steel industry is not one where you can afford to make too many mistakes. Too many mistakes can prove extremely costly and there are companies which have closed down, many of us will probably know the names. There are companies that have closed down and have come close to bankruptcy because of technologically wrong decisions. I recall when we are in the early part of 1980's, 1981-1982, when the company was deciding between choice of LD Process and the OBM Process which had just come about, at that time. We took a long time, we finally made our choice - the LD Process which you know. This single decision I believe, has turned this company into the correct direction and if we had chosen the other process I do not really know what would have happened to Tata Steel. Similarly, we went in for stamp charging technology some years ago and we have built one battery after the other with stamp charging technology and that is something which is giving us a very big competitive advantage over any other steel company in the world. So, it is very important, not necessarily to be the most up-to-date but adopt the technology which is suiting local conditions. For example, we have got high phosphorus raw materials, high phosphorus iron ores but we still manage to make low phosphorus steels for the automobile industry by newer innovations in steel making, in iron making and in treatment of metals. I some times feel a little disappointed when I hear that now-a-days in the academic institutions, IITs and the institute of science and other places - people are not, the youngsters are not often paying attention to iron and steel and metallurgy and they all want to go to dot-com and you know some of the more modern and some what sexy looking industries. I always tell these youngsters when I meet them, infact, I was telling Professor Mehrotra only this morning - I was in Bangalore recently and I was giving a lecture in the CII where the audience comprised almost entirely of software engineers and I was telling them that "Look, I am from some what backward part of the country and I know that all of you are modern, you are all software and sort of click-it-click and all that. But, I want to tell you that irrespective of what products your company makes whether your company is making steel or automobiles or software or telecom, the processes that go through a manager's mind, the processes that go through an executive's mind or a scientist's mind are the same. It is just that the

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product is different, the processes are not different. It is just because steel is as you know few thousand years old and telecom is only a few years old and software is only a few years old. It does not mean that the mental processes become old. So, there is something fundamental that we all need to think, as to how can we create interest, renewed interest in the minds of youngsters, the students and the IITians and the other college students to create and rekindle interest in some fundamental aspects of life including metallurgy and iron and steel.

The fourth important point is - the mind shift change. I recall a conversation that I had with somebody in London just about ten years ago and he was a consultant and I was asking him as to what is wrong with steel industry? He said that "Look, metals industry is by nature so traditional in the manner in which it organises itself and the manner in which it thinks about its work that we are finding it extremely difficult to extricate it from the normal traditional thinking". You know all Iron steel companies are no exceptions, we have all got traditional organisation structure, traditional thinking, we don't worry about re-engineering business processes, we don't think about, you know, putting up IT systems into our work, we are not market oriented, we don't brand our products, you know, some of these aspects steel companies need to think a lot and I believe that the Tata Steel has done some outstanding work in this area in the last 10 years.

We stopped thinking that we are merely a steel company. We started thinking that we are a steel company, which needs to work along modern lines. So, we started looking at our business processes, re-engineering our business processes, we started putting organisation structure in our companies, which are more market oriented and customer oriented, which are more innovation oriented, and where some new thinking can flourish. We have knowledge management systems in the company even though we are a steel company, many people who come from the IT industry and some of the more modern industries are quite surprised to see what a steel company does. Tata Steel does many things that steel companies across the world don't do. So, there is a fundamental mind shift change that needs to be done that even though you make steel which may be an old material there is a modern thinking that can be brought about in the processes of the company whether it is a decision making process or whether it is management process, whether it is marketing process, whether it is product development process. Many of these, for

example, the steel industry has not done much work in the area of promotion of steel and I was telling Prof. Mehrotra just this morning once again that Tata Steel is going to start, within the next one month, a new group called The Steel Construction Group whose prime job is going to be to promote steel and finding new ways of promoting steel usage in many applications where steel today has not been used. We have recently, just about a month ago, have built two houses in a village about 15-20 k.m. of Jamshedpur which the Housing Development Corporation (H.D.C.), people are going to come and see to promote steel housing in the rural areas. That house looks as good or even better than a conventional R.C.C. house and actually it is cooler inside in summer than a normal non-airconditioned house feels like inside. So some of these things the steel companies need to start thinking about.

The steel companies in the future are not going to survive easily unless they fundamentally change their ways of thinking about how to promote their products, how to organise their work, how to make people more innovative - where you give the freedom to do experiment and to fail. Steel industry has to succeed in order to ensure that steel continues to be the metal of choice, the material of choice for human beings. For Steel industry to succeed, I believe it is fundamentally essential for doing much more work in a searching way, in a fundamental way - in terms of improving processes, in terms of improving products, in terms of making sure that the capital productivity is improved, in terms of finding new ways of working and new products to develop and new ways of applications and new ways of helping customers to improve their processes and in all this, I believe that there is a very big role for academic institutions, there is a very big role for laboratories like National Metallurgical Laboratory and there is a very big role for companies which think of the future like Tata Steel. With this let me once again wish this National Metallurgical Laboratory a great success in the future. And, let me wish the celebrations of the Diamond Jubilee Celebrations a great success.

Thank you very much for inviting me.