

Stručni rad

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Tvornica duhana Rovinj u Kanfanaru, 2005.

Professional Paper

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The Rovinj Tobacco Factory in Kanfanar, 2005

Poštivanje skupa tehnoloških zahtjeva i koncipiranje odnosa arhitektonskih oblika tvorničkog kompleksa izuzetno velikih dimenzija, temelji se na nekoliko principa: kaskadom više volumena prilagoditi se okolini; smještajem kompleksa na padini ispod linije horizonta ostvariti nenametljivu vizuru; dinamičnom likovnošću pročelja promjenom boja od bijele do tamno sive; neutraliziranjem velikog volumena snažnim ozelenjavanjem prostrane parkovne površine.

Ključne riječi: Tvornica duhana Rovinj, Kanfanar.

Respect for a group of technological demands and the creation of a relationship of architectural forms within a factory complex of exceptionally large dimensions are founded on a few principles: accommodation to nature through the use of a cascade of multiple volumes; the creation of an unintrusive view by placing the complex on a slope below the horizon; the dynamic appearance of the facade attained through colour changes from white to dark grey; the neutralisation of the large volume through the heavy planting of large park spaces.

Key Words: Rovinj Tobacco Factory, Kanfanar.



Tvornica je izgrađena u industrijskoj zoni Kanfanara, smještena je uz koridor brze ceste Istarski ipylon, a pristupa joj se novom lokalnom prometnicom. Građevinska čestica izdužena je oblika u smjeru istok – zapad, ukupne je površine veće od 130.000 m² i u blagom je padu od cca 6% prema jugu.

Tvornički se kompleks sastoji od tri osnovne međusobno povezane cjeline: skladišno-proizvodnih hala, upravne zgrade te kotlovnice s vanjskim skladištima.

Središnja se cjelina sastoji od skladišno-proizvodnih hala koje su toplim vezama povezane u proizvodni kompleks. Kako je riječ o padajućem terenu, proizvodne su hale s vanjskim pripadajućim površinama raspoređene kaskadno u tri razine s relativnim kotama (+0.00; +4.80 i +12.15m).

Radi se o velikom arhitektonskom projektu smještenom u prirodnom okruženju, što nužno traži postizanje skladnog odnosa s po čovjeku stvorenim (artificijelnim) oblicima. Budući da je riječ o industrijskom postrojenju, prilikom projektiranja strogo se poštovao skup tehnoloških zahtjeva, ali uz istovremeno koncipiranje odnosa arhitektonskog oblika i njegova odnosa prema kontekstu. U ovom slučaju oba su uvjeta ispunjena kroz konceptualnost oblikovanja i organizaciju kompleksa čija se veličina izuzetnih dimenzija osniva na nekoliko principa:

- Kaskadnost više volumena oblikovanih i mjerilom prilagođenih okolini
- Složena arhitektonska forma kompleksa smještena je na padini, tako da se u karakterističnim vizurama doživljava ispod prirodne linije horizonta
- Dinamična likovnost pročelja kroz promjenjivost svjetla i sjene rezultira optičkim fenomenom kontinuirane promjenjivosti boja od bijele do tamnosive.

Svojevrsni izraz dinamične likovnosti postignut je različito strukturiranim reljefnim pločama speci-

The factory was built in the Kanfanar industrial zone, placed along the corridor of the *Istarski ipylon* highway, and access to it is provided by a new local road. The parcel upon which it is built is elongated along its east-west axis, and its total surface area is 130,000 m², with a mild 6% southward slope.

The factory complex consists of three main connected wholes: the warehouse and production hall, the management building, and the boiler room with external warehouses.

The central whole consists of the warehouse and production hall, which are connected to the production complex via warm passageways. Since the terrain is sloped, the production hall and its external surfaces are distributed in a cascade with three levels with the relative elevations (+0.00; +4.80 m and +12.15 m).

The factory was a large architectural project in a natural setting, which sought a harmonious relationship between man-made (artificial) forms and nature. Since it is an industrial facility, the design process strictly respected a group of technological demands, with the simultaneous conception of the relationship between architectural form and its relationship towards context. In this case, both conditions were fulfilled through the conceptuality of design and the organisation of a complex whose exceptional dimensions were founded on a few principles:

- The cascading of multiple volumes designed and fit to the measure of their surroundings
- The complex architectonic form of the complex is placed on a slope, so that in a typical view it is perceived as being below the natural line of the horizon
- The dynamic appearance of the facade through variations of light and shadow, resulting in an optical phenomenon in which its colour continually changes from white to dark grey

A specific expression of dynamic appearance is achieved through differently structured embossed

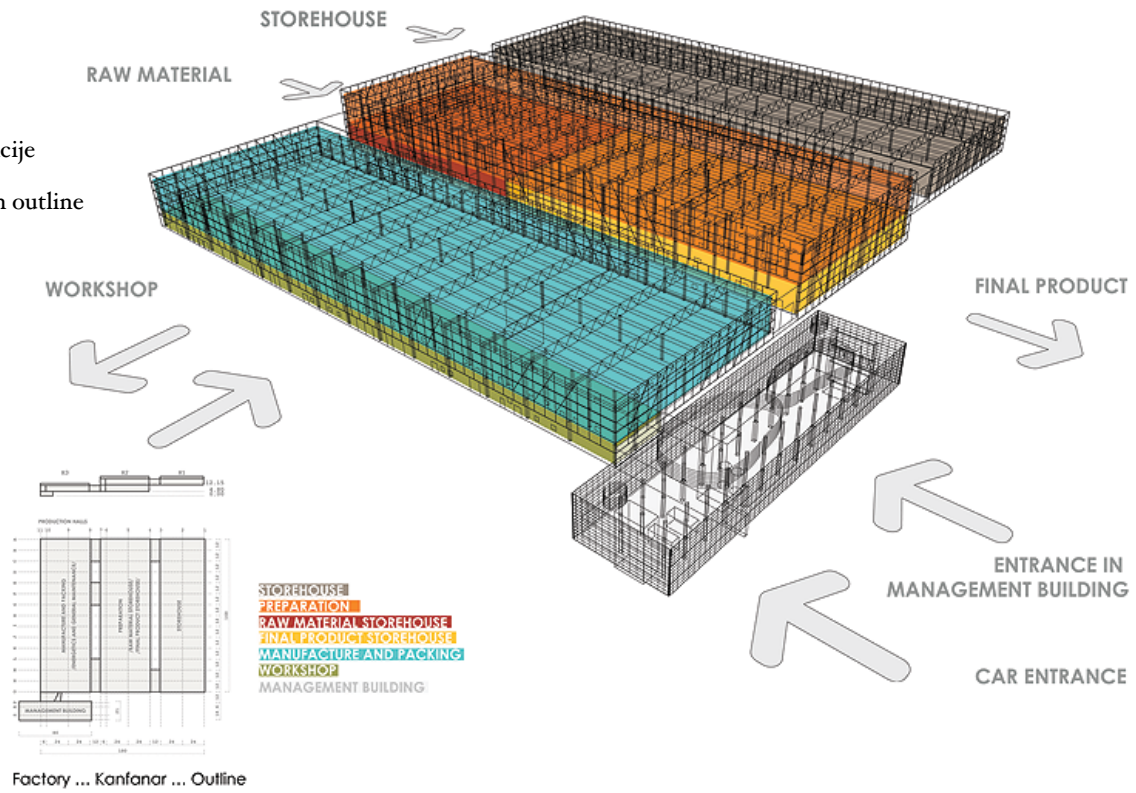


Pogled iz zraka

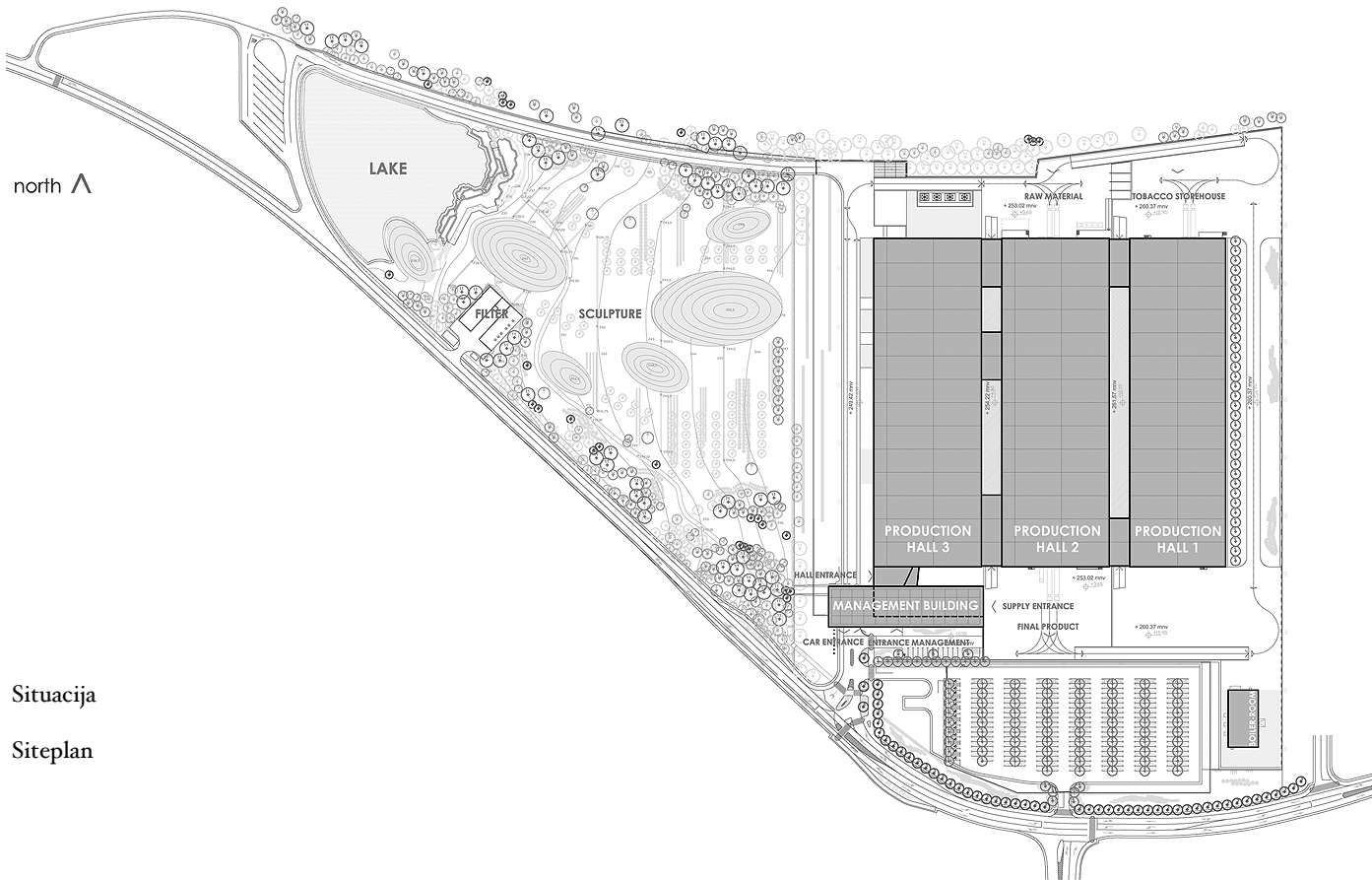
Aerial view



Shema funkcija i konstrukcije
 Function and construction outline



Factory ... Kanfanar ... Outline

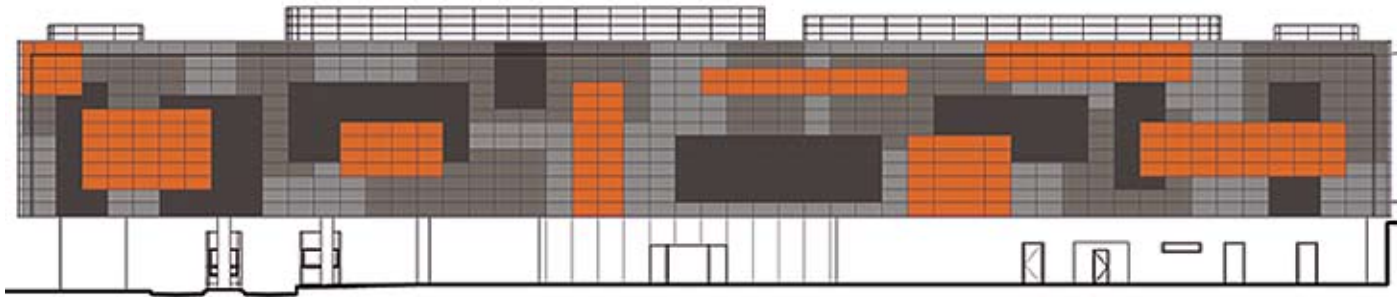


Situacija
 Siteplan

Pogled iz parka

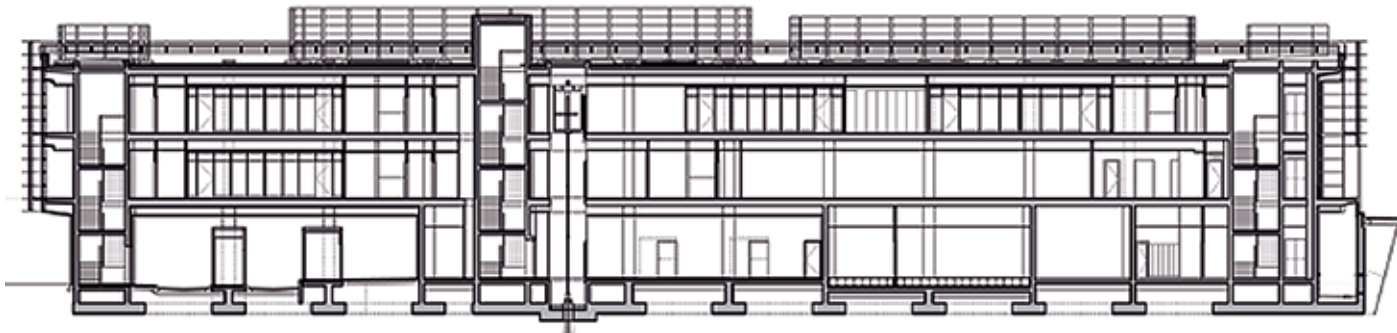
Park view





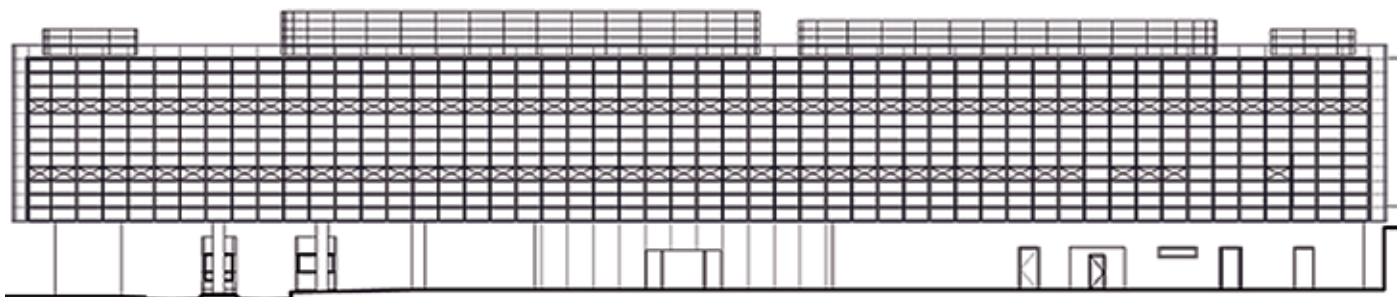
Vanjsko pročelje

External front



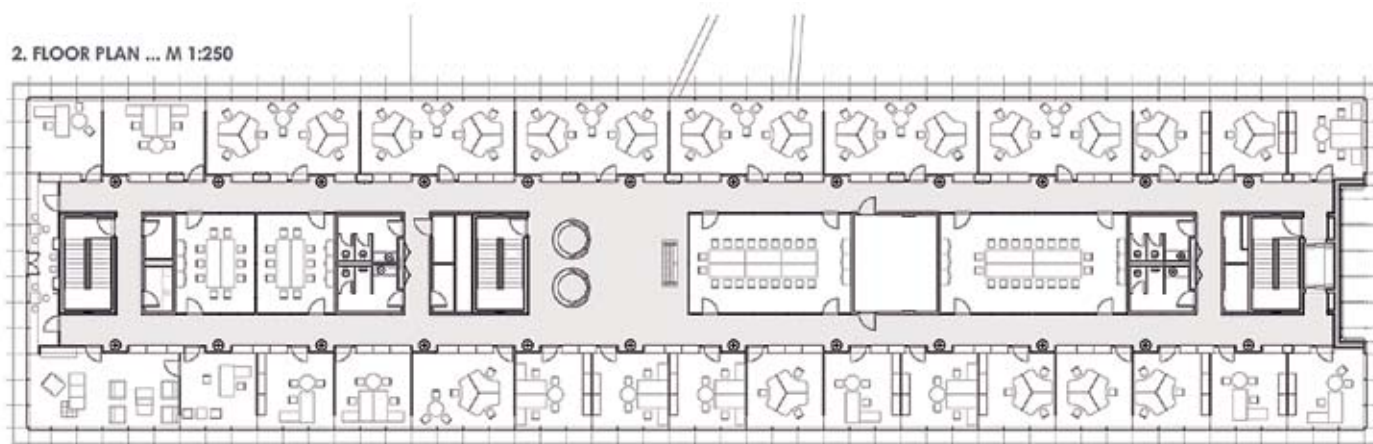
Uzdružni presjek

Longitudinal section



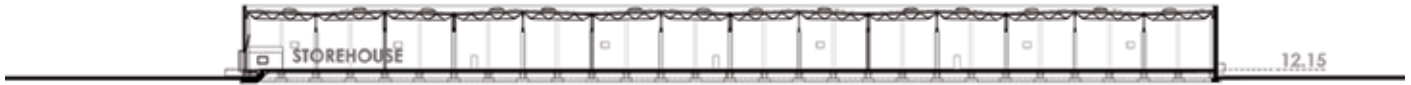
Nutarnje pročelje

Inner front



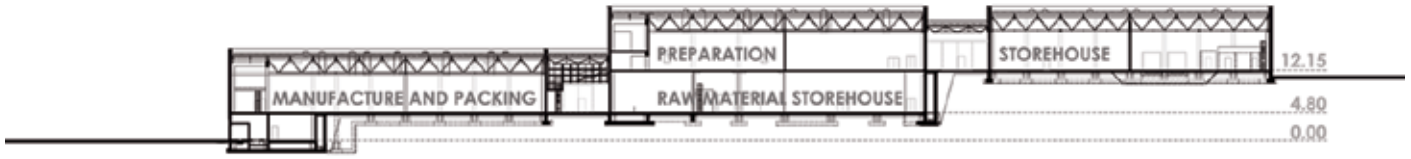
Zgrada uprave

Management building



Poprečni presjek

Cross-section



Uzdužni presjek

Longitudinal section



Pogled s jezera

Lake view

fičnih presjeka trokutastih nabora koje kretanjem promatrača stvaraju optički efekt promjenjivosti boja od tamnosive do gotovo bijele.

Netipičnost gradnje ovako velikog volumena u pejzažu neutralizirana je snažnim ozelenjavanjem parkovnih površina oko tvornice autohtonih vrsta zelenila na površini veličine cca 10 ha uz umjetno jezero sa slapištem te reljefno oblikovanim i ozelenjenim zemljanim uzvišenjima tumulusa; ovaj se kompleks u punom značenju harmonično stapa s okolišem.

Proizvodne su hale tlocrtnih dimenzija 181 x 50 m i 181 x 54 m svijetle visine do nosača 6,5 m. Osnovni nosivi sustav čine konzolno upeti stupovi koji nose čelični rešetkasti krov. Dimenzije su stupova 60/60 cm. Raspon glavnih nosača iznosi 2 x 24 m na rasteru 12 m. Glavni nosači krova niz su paralelnih pojasa, a sekundarni rešetkasti nosači jednostrešnog nagiba pokriveni su sendvič-panelima.

Ispuna fasadnih zidova izvedena je polumontažnim sustavom predgotovljenih dvostranih AB zidova s monolitizacijom jezgre laganim betonom, odnosno vertikalnih serklaža na spojevima zidovima. Stupovi su upeti u temeljne stope. Podna AB ploča debljine 20 cm leži na uvaljanu kamenom nasipu.

Osnovni nosivi sustav upravne zgrade čine AB okviri raspona 9m s konzolnim prepustima od 4,5 m. Raster okvira iznosi 6 m. AB stupovi kružnog su presjeka i promjera 70 cm, a dimenzije grede iznose 50/90 cm. Stropnu konstrukciju čini monolitna AB ploča debljine 20 cm. Stupovi okvira temeljeni su na temeljima samcima tlocrtnih dimenzija 300/300 cm.

Inspiracija za oblikovanje tvornice dijelom je oslonjena na iskustva iz '60-ih (grupe EXAT 51 te novih tendencija), a isto tako i na iskustvo povijesne arhitekture Pallazo dei Diamanti, Ferrara, iz 1494. god.

O tome cijenjena kritičarka arhitekture i povjesničarka umjetnosti Silva Kalčić piše:

panels with specifically cut triangular furrows which create the optical effect of a colour change from dark grey to nearly white depending on the movement of the observer.

The atypicality of a building of such large volume in a natural setting is neutralized through the heavy planting of native species of greenery on cca. 10 hectares of park around the factory including an artificial lake and waterfall and sculpted earthen mounds with greenery; this complex truly merges harmoniously with its surroundings.

The factory halls have a floor size of 181 x 50 m and 181 x 54 m, and the clear height to the girders is 6.5 m. The basic load-bearing system is made up of cantilevered columns bearing an iron latticed roof. The column dimensions are 60/60 cm. The span of the main load-bearing girders is 2 x 24 m at a raster of 12 m. The main roof girders are a series of parallel belts, and the secondary, monopitched latticed girders are covered in sandwich panel.

The filling of the facade walls was carried out using a semi-prefabricated system of two-sided AB walls with a light concrete monolithic core and vertical ring beams at the wall joints. The posts are rooted in the foundation. The 20cm thick AB paneling on the floor lies on a steamrolled breakstone foundation.

The basic load-bearing system of the administration building is made up of AB frames with a span of 9m with a cantilevered overhang of 4.5 m. The raster of the frame is 6 m. The AB posts are round with a diameter of 70 cm, and the dimensions of the beams are 50/90 cm. The ceiling construction made of monolithic AB panels 20 cm thick. The posts of the frame are built into independent foundations with a floor size of 300/300 cm.

The inspiration for the design of the factory partly relied on experience from the 1960's (the EXAT 51 group and New Tendencies), as well as on the historical architecture of the Pallazo de Diamanti in Ferrara, built in 1494.



Južno pročelje

South front



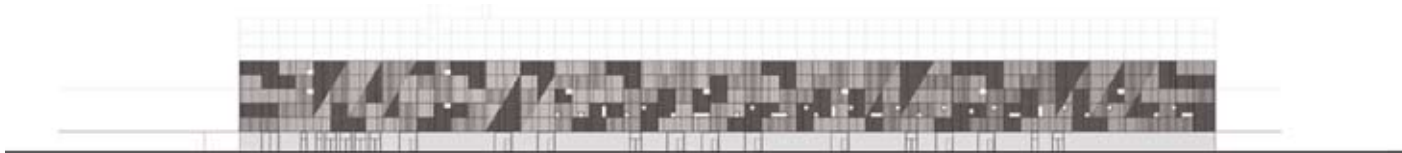
Sjeverno pročelje

North front



Proizvodne hale – detalj zapadnog pročelja

Production halls – Detail of western face



Zapadno pročelje

West front



Proizvodne hale – detalj zapadnog pročelja noću

Production halls – Western face by night

Upravna zgrada – južno pročelje

Management building – Southern face



Proizvodne hale – detalj pročelja

Production halls – Facade detail



Upravna zgrada – ulazni hal

Management building – Entrance hall



Upravna zgrada – ulazni hal

Management building – Entrance hall





Proizvodne hale – noćni pogled iz parka

Production halls – Park view by night

„... tvornica kao slika upućuje arhitekturu na sebe samu; cik cak pattern pročelje sugerira siluetu arhetipa tvornice bez prethodnih primjera arhitekture; točnije, piktogram za tvornicu. Dijagonalni otklon od ortogonalne sheme zapravo je prekid, rez u protočnosti vertikalnih lamela što prizivaju brisoleje... graditelj takvim strukturalnim intervencijama postiže igru svjetla i sjene, punog i praznog, karakterističnu za tradicionalnu arhitekturu plastično modeliranih pročelja... to je prostor otvoren vremenu – prolaženja mimo, odignut i poput kokpita izbačen nad ulaznom etažom – postamentom (zgrada uprave), tamnih zidova geometrizirane ograničene površine (nalik na modernističke zidne elemente i oplata). Uslojavanje prostora unutar njih samih, meandriranje ploča od neobojanog i žutog, crvenog i zelenog stakla u jednom od četiri sloja – polja kvantitativnih razlika sastavljenih od piksela –

Silvia Kalčić, renowned architecture critic and art historian, writes:

“as a picture, the factory redirects its architecture towards itself; the zig-zag pattern of the facade suggests the silhouette of an archetype of a factory without any prior example in architecture; more specifically, a pictogram of a factory. The diagonal offset from the orthogonal scheme is actually a break, a cut in the flow of the vertical plates that evoke a brise soleil... with these structural interventions, the builder creates a play of light and shadow, full and empty, characteristic of the traditional architecture of plastic modelled facades... it is a space open to time – passing by, raised and thrown over the entry floor like a cockpit – the pedestal (administration building), with its dark walls with their geometrised, limited surface (like

*modula učvršćenih kromiranim nosačima koji stvaraju ornament nalik na punctume Wagnerove poštanske štedionice – na semantičnoj razini ponovno stvara referencu na nefigurativnu umjetnost moderne.*¹

Umjetno je jezero rezultat odluke investitora o održivoj gradnji. U njega se slijevaju nakon biološke i mehaničke obrade sve vode koje se sustavno skupljaju na doslovno svim artificijelnim i prirodnim površinama kompleksa. Nakon obrade i aeracije na slapištu voda je pripremljena za vraćanje reverzibilnim sustavom u tehnološki proces proizvodnje, zalijevanje velikih parkovnih površina te za sanitarne potrebe tako da se voda iz vodoopskrbnog sustava upotrebljava samo za piće i kuhanje. Na taj je način postignuta velika ušteda. Termički zaštićeni visokovrijedni pročeljni zidovi sastavljene su višeslojne konstrukcije s ventilirajućim slojem kako kod tvorničkih hala tako i kod poslovne zgrade. Veliko polje fotovoltaznih panela veličine cca 3.000 m² predviđeno je na ravnim krovovima tvorničkih hala, no – nažalost – još nije izvedeno. Izvedbom svih predviđenih sustava održive gradnje navedeni kompleks postaje uzorna građevina visokog stupnja održivosti.

*Modernist wall elements and plating). The layering of space within them, the meandering panels of clear and yellow, red and green glass in one of four layers – a field of quantitative differences composed of pixels – a module of fixed, chromed girders that create an ornament like the punctum of Wagner's Postal Savings Bank – on the semantic level, it once again creates a reference to non-figurative Modernist art.*²

The artificial lake is the result of the investor's decision to apply principles of sustainable building. All water that collects on literally all of the artificial and natural surfaces of the complex, after biological and mechanical processing, drains into the lake. After processing and aeration in the waterfall, the water is ready to be returned through a reversible system into technical production, used for watering the large park surfaces or for sanitary needs, leaving water from the water supply system to be used only for drinking and cooking. This process results in large savings. The thermally protected, highly valuable facade walls are made of a multi-layered construction with a ventilating layer both on the factory hall and the office buildings. A large field of photovoltaic panels 3,000 m² in size was planned for the flat roof of the factory hall, however – unfortunately – it has not yet been installed. The execution of all of the planned systems of sustainable building would make the complex an exemplary building with a high level of sustainability.

¹ KONTURA, Silva Kalčić, Branko Kincl – Tvornica duhana Rovinj, Kanfanar, 2006.

¹ KONTURA, Silva Kalčić, Branko Kincl, The Rovinj Tobacco Factory in Kanfanar, 2006.