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Control Activities

delta inženjering '07



Izdavač

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Zajedno izgrađujemo budućnost

Naša vizija i želja da u vremenu koje dolazi budemo spremni da udovoljimo i najstrožim zahtevima svetskih kompanija po pitanju kvaliteta i rokova realizacije izgradnje različitih industrijskih postrojenja, pružajući kompletne usluge u svim fazama investicione izgradnje, donosi i adekvatne rezultate. Sa ponosom ističemo naše partnere koji su nam poklonili poverenje u prethodnoj godini, a koji predstavljaju vrh u njihovim delatnostima: Holcim, Henkel, Alumil Yu, Volvo, IKEA, Messer, US Steel, Knauf, Monbat, kao i naše najveće kompanije kao što su NIS i EPS.

U našem sistemu, koji još uvek gradimo, trenutno je zaposleno oko 300 radnika od kojih je 60 inženjera sa zavidnim referencama i iskustvom.

Delta inženjering je ostvarila u prethodnoj poslovnoj godini oko 15 miliona Eura prometa, što je skoro tri puta više od prethodne, a sve to je rezultat velikog i odgovornog rada svih zaposlenih u Kompaniji, na čemu im se posebno zahvaljujem.

Želja mi je da istaknem prethodnu godinu kao godinu koja je u razvoju Kompanije bila jedan značajan iskorak u razvoju. Kao što smo pre 10 godina napravili važan korak u razvoju intezivirajući naše opredeljenje da se bavimo izgradnjom kompletnih objekata, ova godina je godina u kojoj smo snažno zakoračili u svet.

Kraj godine smo dočekali sa preko 5 miliona Eura poslova koje treba realizovati u inostranstvu, a što će nam pomoći da još odlučnije sledimo naše opredeljenje da gradimo snažnu i odgovornu Kompaniju.

Vaš, Vojislav Todorović

We Have Been Building The Future Together

Our views and wishes to be ready to meet the most demanding requirements of the world-recognized companies in respect of the quality and the implementation of various industrial plants, together with the complete services in all stages of investment construction in the forthcoming years, have been having adequate results.

We are proud to mention our partners that had confidence in us in the previous year, which represent the leading companies in their respective fields of activities:

Holcim, Henkel, Alumil Yu, Volvo, IKEA, Messer, US Steel, Knauf, Monbat, as well as our largest companies such as NIS and EPS.

Our system, which we have been building, employs about 300 workers at present, of which 60 are engineers with enviable references and experience.

Last year Delta inženjering generated profit of about EUR 15 million, which is almost three times higher than the year before and the result of hard and

responsible work of all people employed with the company, for which we thank them all in particular.

I would like to stress the last year as a year of crucial step forward in the development of the company.

In the same way as we did 10 years ago when we made another important step in our development by intensifying our efforts to deal with the construction of complete units, this year is going to be the year we are going to make firm steps into the world.

At the end of last year we had over EUR 5 million of jobs concluded that are to be implemented abroad, which is going to help us follow our determination to build a strong and responsible company even more.

Sincerely yours, Vojislav Todorović

Delta inženjering grupa

■ konsolidacija

Delta inženjering ističe da je 2007. bila godina konsolidacije aktivnosti Grupe i svih njenih članica. Naša kuća je sada u prilici da izjavi da su ostvareni izvanredni rezultati što je dovelo do kreiranja brenda u oblasti investicione izgradnje sistema »Delta inženjering«.

Ponosni smo na velike uspehe u cementari »Holcim Srbija« kao i ozbiljan udeo Grupe u poduhvatu rekonstrukcije nove instalacije na sistemu silosa klinkera, zatim postrojenja aditiva, tretmana otpadnih voda i dr.

Dobar posao daleko se čuje. Stigle su nove narudžbine: »Mlin cementa 2« i »Tretman otpadnih voda – faza II«. Sredinom ove godine očekuje nas najavljeno angažovanje na velikom projektu rekonstrukcije cementare »Petrus« čija bi realizacija trajala naredne dve godine.

Delta inženjering je izgradila Henkelovu fabriku građevinskih lepkova u Indiji za samo 7 meseci. Ovaj izvanredan rezultat naše kuće, renomirana svetska kompanija označava kao svoju najuspešniju realizaciju u regionu jugoistočne Evrope. Potvrda dobrog rada je nastavak saradnje: Delta inženjeringu predstoji izgradnja nove Henkelove fabrike na istoj lokaciji.

■ standardizacija

Grupa je bila veoma angažovana na dobijanju sertifikata za čitav sistem, posebno fabrike u Žitorađi, kao i ispunjavanju odgovarajućih standarda za rad na realizaciji složenih poduhvata u zemlji i za izvoz. Za »Čelik« je dobijen sertifikat ISO 9001/2001. Okončan je dug postupak kod nemačkog SUD TUV-a, za dobijanje svetski poznatog sertifikata za zavarivanje čeličnih konstrukcija i procesne opreme. Slobodni smo da cenimo da je ovo ključni momenat za budući rad Delta inženjeringa na planu investicionih usluga.

Delta inženjering grupa

■ Consolidation

2007 was the year of consolidation of the Group and all its members

Tremendous results were achieved, which caused gradual and systematic creation of our own brand in the field of investment construction by Delta inženjering system.

We are especially proud of our great success at Holcim Srbija cement factory and of serious participation of the group in successfully completed reconstruction of the new installation in the system of clinker silos, additive plant, waste water treatment, etc.

As a confirmation of our good work, we have had new orders: Cement Mill 2 and Waste Water Treatment – Stage II. Since the middle of this year we expect serious engagement in the large project of reconstruction of Petrus cement plant, which should take the next two years to be implemented.

We have arranged the construction of Henkel factory of glues required in civil engineering in Indija in only 7 months. The esteemed company appreciates the extraordinary result and deems it its most successful investment in the region of South East Europe.

Another confirmation of our good work this time is the continuation of our co-operation and entrusting Delta inženjering with the construction of a new factory in the same location.

■ Standardization

Group had made enormous efforts to provide certification for the entire system, in particular for the factory in Žitorađa and fulfilment of relevant standards to work on the implementation of complex projects in the country and for export.

ISO 9001/2001 certificate was obtained for Čelik and the long procedure with the German SUD TUV was also completed to obtain the certificate well-recognized all over the world for welding of steel structures and process equipment.

■ snažna izvozna orijentacija

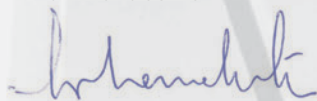
Delta inženjering je postala pouzdan partner ozbiljnih svetskih kompanija i upitima i idejama učestvuje u realizaciji brojnih projekata izvan naše zemlje.

– u »Holcim Bulgaria«, 2007. godine izvezena je oprema izrađena u Srbiji (Čelik Žitorađa i Metalotitan) za novi pogon »Spaljivanje otpada životinjskog porekla«.

– u poslednjem kvartalu 2007. sa danskom firmom H & H, dogovoren je posao na isporuci složene i vredne opreme za dve fabrike građevinskog materijala: Sankt Petersburg – Rusija i Varšava – Poljska. Nosilac proizvodnih aktivnosti na ovim složenim poslovima je Čelik a realizacija bi trajala do kraja godine.

Delta inženjering group sada može reći da je realno očekivati da će 2008. godinu karakterisati njen pravi mali izvozni bum. Za realizaciju ovako ambicioznih poslova Group ima podršku poslovnih banaka. Snažna orijentacija na inostrana tržišta biće apsolutna preokupacija naše kompanije u tekućoj godini i budućem periodu. Najvažnije pripreme su izvršene. Mi smo optimisti.

Milan Kovačević



We feel free to estimate this to be one of crucial moments for the future and hope to have systematic presence on the scene of investment services.

■ Firm export orientation

Since we have been recognized as a reliable partner, very distinguished companies from foreign countries contact us with their inquiries and ideas to participate in the implementation of numerous projects outside our country.

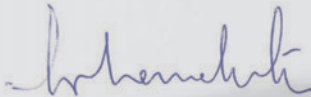
– In 2007 the Group exported to Holcim Bulgaria the equipment manufactured in Serbia (Čelik Žitorađa and Metalotitan) for the new plant to burn waste of animal origin.

– In the last quarter of 2007, with the Danish company H & H, we agreed the job to supply complex and valuable equipment for two factories of civil engineering materials, in St. Petersburg in Russia and in Warsaw in Poland. Čelik would be the main contractor for production activities in these complex jobs and their implementation would last till the end of this year.

We have been having negotiations with several other distinguished companies and it is realistic to expect that the characteristic of 2008 shall be a true export boom. For the implementation of such ambitious commitments, the Group has the support by the banks.

Further strong orientation towards foreign markets shall be our absolute must in the current year and in the forthcoming period. We have made thorough preparations and, therefore, have all reasons to be optimistic.

Milan Kovačević



PR aktivnosti

Protekla godina bila je u znaku dve najmlađe članice »Delta inženjering Group«-e, fabrike betona »Delta inženjering beton« i fabrike za izradu čelične konstrukcije »Čelik« iz Žitorađe.

Obzirom da nam je većina poslova tzv. »green field« investicija, afirmacija svake firme u sastavu Grupe koja nas lišava zavisnosti od nepovoljnih uticaja tržišta i sezonskih uticaja je prioritet. U tu grupu spadaju naše dve proizvodne, u najužem smislu reči, fabrike, jedna koja proizvodi beton, a druga čeličnu konstrukciju.

Kada je reč o internom PR-u, polovinom juna je organizovan koktel u našim prostorijama u Zaplanjskoj ulici, a povodom promocije knjige profesora Martina Bognera »Priručnik za izradu projektne dokumentacije«, čiji je »Delta Inženjering« bio glavni sponzor, a generalni direktor Vojislav Todorović recenzent.

Promocija je bila povod a postignut je cilj da se svi zaposleni i saradnici okupe i druže.

Posledica ovakvih i sličnih aktivnosti »Delta Inženjering«-a je zahvalnica dobijena od Udruženja univerzitetskih profesora i naučnika Srbije kao znak priznanja za doprinos radu Udruženja, povodom proslave 140 godina postojanja.

Donatorstvo i sponzorstvo, kao deo poslovne politike jedne uspešne firme, prepoznaje se ne samo u tehničko-poslovnim krugovima, dobijanjem juna 2007. povelje Sekcije za procesnu tehniku, već i šire, pa je »Delta inženjering« stalni učesnik u dobrotvornim projektima fondacije Njenog Kraljevskog Visočanstva Princeze Katarine Karađorđević.

Aleksandra Todorović – Sučević

A. Sučević

PR Activities

The previous year was marked by two latest members of Delta Inženjering Group, Delta inženjering beton concrete factory and Čelik factory from Žitorađa for the manufacture of steel structure.

Since the majority of our jobs are of so-called green field investments, recognition of all companies within the Group, which spares us from dependency on unfavourable market and seasonal influences, is a priority. This group includes out two production units, in the widest sense, one than makes concrete and the other that makes steel structures.

As for the internal PR activities, we had a cocktail at our premises in Zaplanjska street in the middle of June last year, on the occasion of the promotion of a book by Prof. Martin Bogner under the title of A Booklet on How to Make Project Documentation, Delta Inženjering being its main sponsor, and Vojislav Todorović, Managing Director being its editor.

This book promotion was an opportunity for all the employees and expert associates to meet socially. The result of such and similar activities by Delta Inženjering is a Letter of Thanks granted to us by the Association of University Professors and Scientists of Serbia as an acknowledgement of our contribution to the activities of this Association, on the occasion of its 140th anniversary.

Donations and sponsorships, as a part of the business policy of a successful company, have not only been recognised in the technical-business circles, by the Section of Process Engineering awarding us its charter in June 2007, but in the broader sense as well, so that Delta inženjering has been a constant participant in charity projects by the Foundation of Her Royal Highness the Princess Katarina Karađorđević.

Aleksandra Todorović – Sučević

A. Sučević



INVESTITOR: VOLVO D.O.O., BEOGRAD
OBJEKAT: SERVISNO PRODAJNI CENTAR KAMIONA
 VOLVO U NOVIM BANOVCIMA
GENERALNI PROJEKTANT I IZVOĐAČ:
 DELTA INŽENJERING

INVESTOR: VOLVO D.O.O., BELGRADE
UNIT: VOLVO TRUCKS SERVICE AND SALES CENTRE
 IN NOVI BANOVCIMA
MAIN DESIGNER AND CONTRACTOR:
 DELTA INŽENJERING

Na međunarodnom putnom pravcu E 75 autoputa Beograd – Novi Sad , u zoni između stare i buduće, nove putne petlje Novi Banovci, počela je juna 2006. godine izgradnja Servisno prodajnog centra kamiona »VOLVO«. »Delta Inženjering« je, kao i u mnogim poslovima do sada, istovremeno projektant i glavni izvođač radova. Po završetku projekata i dobijanjem odobrenja za izgradnju, na placu veličine 3ha, počela je izgradnja objekta ukupne bruto površine 3100m², funkcionalno koncipiranog u četiri celine:

- administrativno – upravni deo
- skladišni deo s delom tehničkih prostorija
- servis 1
- servis 2

Delta inženjering i udružene snage njenih Sektora za projektovanje i Inženjering, poštujući preporuke i zahteve »Volvo« menadžmenta, gradi moderan objekat SC kamiona VOLVO koji ima preko 1000 m² poslovnog prostora (P+1) i regalno skladište rezervnih delova sa tehničkim blokom oko 750 m².

Along E 75 Belgrade – Novi Sad international motorway, in the zone between the existing and the future Novi Banovci traffic loop, the construction of Service and Sales Centre for VOLVO trucks started in June 2006.

Delta Inženjering, as in many other projects implemented so far, has been the designer and the main contractor for the works at the same time. Upon the completion of the design and after the building permit had been obtained, in the land lot of 3ha in size, the construction of the facility having the gross total surface of 3100 m² has started, which consists of four functional units:

- administrative unit;
- storage unit with a part technical premises;
- Service workshop 1;
- Service workshop 2;

Delta inženjering and the allied forces of its sectors for designing and engineering, meeting the requirements of the recommendations and standards of Volvo management, has been building a modern facility for SC of VOLVO trucks, which has over 1,000 m² of business area





Servisi 1 i 2 (1000 m²), naslanjaju se na administrativno – upravni deo, imaju pet servisnih blokova, dužine po 30 m, ulazno – izlazne rampe i dva servisna kanala za popravku kamiona i autobusa. Oni u svom sastavu imaju prateće objekte tehničke podrške - skladište ulja i kompresorsku stanicu.

Konstruktivno, objekat je koncipiran tako da se čelična krovna konstrukcija, preko montažne betonske, oslanja na livene armirano – betonske temelje. Pokrivanje i oblaganje objekta je izvedeno termoizolovanim panelima. Ugrađena je alu bravarija za prozore i vrata, a gipsane i alu pregrade između kancelarijskih prostora. Zidani zidovi se nalaze na granicama požarnih zona.

Saobraćajnice u okviru kompleksa, kao i parkinzi za razne tipove vozila, površine preko 10 000 m², biće izvedeni u »behaton« pločama predviđenim za težak saobraćaj, saglasno savremenom pristupu obrade kolovoznih površina.

Ceo SPC biće snabdeven svim potrebnim instalacijama kao i najsavremenijom opremom za funkcionisanje objekta. Završetak objekta predviđen je za februar 2007.godine.

(P+1) and rack storage house for spare parts including a technical block of about 750 m².

Service workshops 1 and 2 (1000 m²) are the continuation of the administrative unit, they have five service blocks, in the length of 30 m each, inlet and outlet ramps and two service ducts for the repairs of trucks and buses. They include accompanying units of technical support – oil storage and compressor station.

In respect of its structure, the concept of the building is such that the steel roof structure, via the prefabricated concrete structure, leans against cast reinforced concrete foundations. The facility is covered and lined by means of heat insulating panels. Aluminium window and door frameworks are fitted in, and between offices there are gypsum and aluminium partitions. The walls are made of bricks at the borders of fire zones.

The roads within the complex, as well as the parking lots for various types of vehicles, having the surface of over 10,000 m², shall be made from »behaton« boards for heavy traffic, according to modern solutions for traffic surfaces. The entire Service Sales Centre shall have all necessary installations and the latest equipment required for its proper functioning.

It has been planned that the works shall be completed in February 2007.



INVESTITOR: HENKEL, SRBIJA
 OBJEKAT: FABRIKA GRAĐEVINSKIH ADHEZIVA
 HENKEL, INĐIJA
 GENERALNI PROJEKTANT I IZVOĐAČ:
 DELTA INŽENJERING

INVESTOR: HENKEL, SRBIJA
 UNIT: HENKEL, INĐIJA, FACTORY OF CIVIL
 ENGINEERING ADHESIVES
 MAIN DESIGNER AND CONTRACTOR:
 DELTA INŽENJERING

Izgradnja Fabrike građevinskih adheziva u Inđiji, »Henkel Inđija«, započeta krajem 2006, uspešno je završena u 2007. godini.

Delta Inženjering, glavni projektant, je izradila kompletnu projektnu dokumentaciju, od idejnih do glavnih projekata, a budući da je bila glavni izvođač radova, izgradila je fabriku i pustila u rad.

U prvoj fazi od planiranih 20.000 m² izgrađeno je 6.000 m² skladišnog, proizvodnog i administrativnog prostora sa kompletnom pratećom infrastrukturom.

Proizvodna i skladišna hala su izgrađene od čelika i obložene sendvič panelima dok je administrativni objekat zidan sa tipičnom Henkel fasadom.

Prilikom gradnje primenjivane su savremene tehnologije građevinarstva uz primenu novih domaćih i inostranih materijala.

Delta inženjering je kompletnu čeličnu konstrukciju izradila u svojoj fabrici Čelik Žitorađa.

Pored toga, proizvedeni su silosi i posude pod pritiskom kao i kompletan sistem cevovoda i kanala.

The construction of the factory of civil engineering adhesives in Inđija, Henkel Inđija, started at the end of 2006, was successfully completed in 2007.

Delta Inženjering, as the main designing company, had prepared the entire project documentation, from preliminary to main designs, and since it was the main contractor, it also built the factory and put it in operation.

6,000 m² of storage, production and administrative area were built in the first stage, out of the planned 20,000 m² together with complete accompanying infrastructure.

The production and storage halls are made from steel and lined with sandwich panels, while the administrative building was built with typical Henkel facade. Modern civil engineering technologies were applied during the construction and the latest domestic and foreign materials were used.

Delta inženjering had manufactured the entire steel structure at its factory Čelik in Žitorađa.

In addition, silos and pressure vessels were also manufactured as well as the entire system of pipelines and ducts.

Complete installations were fitted in, both heat technical





Montirane su kompletne instalacije kako termotehničke tako i one vezane za proizvodni proces, sistemi otpašivanja komprimovanog vazduha i gasa.

Poštujući planiranu dinamiku i zahteve Henkela, Delta inženjering je, za nepunih osam meseci, izgradila savremenu fabriku za proizvodnju građevinskih adheziva koju je HENKEL proglasio za najbrže izgrađenu fabriku ovog tipa u svetu.

Henkel je, nakon puštanja fabrike građevinskih adheziva, dobijanja upotrebne dozvole i dobre prodaje lepкова na tržištu odlučio da krene u II fazu izgradnje. Gradnja još jednog pogona u postojećem fabričkom krugu u Indiji je nastavak saradnje s Delta inženjeringom.

Poslednje nedelje decembra 2007.godine, Delta Inženjering je, kao glavni izvođač radova potpisao ugovor za projektovanje i gradnju postrojenja za proizvodnju tečnih proizvoda tzv. »WET production«.

Ovim projektom, saradnja započeta od samog dolaska Henkela na tržište Srbije, nastavlja se i u 2008. godini.

installations and those related to the production process, compressed air and gas de-dusting processes.

Wishing to meet the requirements of the delivery schedule and Henkel, in less than eight months Delta inženjering built a modern factory for the production of civil engineering adhesives, which HENKEL declared to be the factory of this type built in the shortest period in the world.

After the factory of civil engineering adhesives had been put in operation, the permit for its operation obtained and the glues had been sold in the market well, HENKEL decided to commence II stage of building. The construction of another plant in the existing factory complex in Indija is the continuation of co-operation with Delta inženjering.

In the last week of December 2007, Delta Inženjering, as the main contractor, signed another contract for designing and construction of a plant for the production of liquid products, the so-called WET production.

This project means the continuation of our co-operation in 2008 as well, which has started since the very appearance of Henkel in the market of Serbia.



INVESTITOR: HOLCIM SRBIJA A.D.
 PROJEKAT: POSTROJENJE ZA PREČIŠĆAVANJE
 OTPADNIH VODA
 GENERALNI PROJEKTANT I IZVOĐAČ:
 DELTA INŽENJERING

INVESTOR: HOLCIM SRBIJA A.D.
 UNIT: WASTE WATER TREATMENT PLANT
 DESIGNER AND CONTRACTOR:
 DELTA INŽENJERING

Postrojenje za prečišćavanje otpadnih voda sa ispuštanjem prečišćenog efluenta u potok Toplik, prečišćava otpadne vode sa dela fabrike sa POLYSIUS linijom proizvodnje cementa. Na postrojenju se prečišćavaju i sanitarno-fekalne otpadne vode kao i zagađene atmosferske vode.

Kanalizacioni sistem u ovom delu fabrike je separatan i gravitira prema Topliku. Zbog toga se obavljaju zasebni predtretmani navedenih otpadnih voda, a pre spajanja u zbirne otpadne vode, da bi se zatim zajednički prečišćavale na postrojenju.

Izgradnjom septičke jame na POLYSIUS liniji obezbeđuje se zadržavanje čvrstog sadržaja koji sa sobom nose sanitarno-fekalne otpadne vode, a samo se preliv (tečna faza) iz septičke jame odvodi na dalji tretman.

Zagađene atmosferske vode se, po istom principu, dovode do predtaložne komore na POLYSIUS liniji. U njoj se taloži čvrsti sadržaj iz vode: pesak, zemlja i ostali suspendovani materijal.

Navedene otpadne vode, nakon predtretmana se spajaju u zajedničkom sabirnom rezervoaru, a zatim pumpama

The waste water treatment plant with discharge of effluent into the Toplik stream treats waste water from the part of the factory with POLYSIUS line of the cement production. This plant also treats sanitary-sewage water and polluted atmospheric water.

The sewage system at this part of the factory is a separate one and it is oriented towards the Toplik stream. That is why separate pre-treatments of waste water are carried out, before it joins collective waste water, in order to treat them together afterwards in the plant.

The construction of sewage pit in POLYSIUS line provides that solid matter contained in sanitary-sewage water is kept, so that only the overlap water (liquid phase) from the sewage pit is lead to further treatment.

According to the same principle, the polluted atmospheric water is discharged to pre-settlement chamber on POLYSIUS line. Solid matter in water is settled in it: sand, soil and other suspended matter.

The above mentioned waste water, after they had been pre-treated, join the common collection tank and then



transportuju na postrojenje za prečišćavanje.

U sastavu postrojenja za prečišćavanje otpadnih voda sa ispustom u potok Toplik, nalaze se sledeći objekti i oprema:

- septička jama za zadržavanje čvrstog sadržaja iz sanitarno-fekalnih otpadnih voda,
- predtaložna komora za izbistravanje zagađenih atmosferskih voda,
- sabirni rezervoar zbirnih otpadnih voda,
- pumpna stanica za zahvatanje otpadnih voda iz sabirnog rezervoara i transport na postrojenje za prečišćavanje,
- kontejnersko postrojenje za prečišćavanje otpadnih voda u kome je smeštena sva potrebna hidro-mašinska i ostala procesna oprema, elektro-energetska, merno-

they are transported to the treatment plant by means of pumps.

The waste water treatment plant with the discharge into the Toplik stream consists of the following facilities and the equipment:

- Sewage pit to keep solid matter from sanitary-sewage water;
- Pre-settlement chamber to clear polluted atmospheric water;
- Collection tank for collective waste water;
- pumping station to take waste water from the collection tank and transport it to the treatment plant;
- container plant to treat waste water including all



regulaciona i upravljačka oprema za automatski rad postrojenja.

Kapacitet postrojenja za prečišćavanje otpadnih voda na POLYSIUS liniji: 3 l/s.

Postrojenje je pušteno u rad u martu 2007. godine. Kvalitet prečišćenih otpadnih voda, postignutih na postrojenju je sledeći:

- $BPK_5 = 3,1$ mg/l – biološka potrošnja kiseonika
- $HPK = 11,8$ mg/l – hemijska potrošnja kiseonika
- $SS = 4,8$ mg/l – suspendovane materije
- $UIM = 0,8$ mg/l – ukupna ulja i masti
- $pH = 7,8$ – pH broj
- Bez boje i mirisa
- fizičko-hemijske analize je radila Laboratorija 060 Instituta za nuklearne nauke VINČA.

necessary hydro-mechanical and other process equipment, electric power equipment, measuring-control equipment and control equipment for the automatic operation of the plant.

The capacity of the waste water treatment plant on POLYSIUS line is 3 l/s.

The plant was put into operation in March 2007.

The quality of treated water obtained in the plant is as follows:

- $BPK_5 = 3,1$ mg/l – biological oxygen consumption;
- $HPK = 11,8$ mg/l – chemical oxygen consumption;
- $SS = 4,8$ mg/l – suspended matter;
- $UIM = 0,8$ mg/l – total oil and grease;
- $pH = 7,8$ – pH value;
- No colour and odour;
- Physical and chemical analyses were carried out by the Laboratory 060 of the Vinča Institute of Nuclear Sciences.

INVESTITOR: MESSER GROUP
 PROJEKAT: FABRIKA ZA RAZLAGANJE VAZDUHA,
 KATOVICE, POLJSKA
 IDEJNI PROJEKAT: DELTA INŽENJERING

Delta inženjering je pouzdan i dugogodišnji partner velikih inostranih firmi u poslovima investicione izgradnje industrijskih objekata u Srbiji. Ove godine naša kuća je uspešno započela saradnju sa jednom od vodećih svetskih kompanija u proizvodnji tehničkih gasova Messer Group iz Nemačke.

Zahvaljujući iskustvu u oblasti gasne tehnike kao i kvalitetu svojih kadrova Delta inženjering je prihvatila da za Messer Group izradi idejni projekat novog postrojenja za razlaganje vazduha (ASU plant) u Katovicama u Republici Poljskoj. Proizvodni kapacitet novog postrojenja iznosi 8000 m³/h kiseonika i 7000 m³/h azota u tečnoj fazi kao i prateće količine argona, takođe u tečnoj fazi.

Projekat predstavlja Green Field investiciju.

Proizvodni objekti obuhvataju kompresorsku zgradu površine 600 m². Oprema u polju sadrži, pored ostalih, i opremu smeštenu u Hladni Blok (Cold Box) koji predstavlja čeličnu konstrukciju visine 58 m.

Kako je postrojenje definisano za proizvodnju tehničkih i medicinskih gasova u tečnoj fazi, to je bilo potrebno postaviti veliki skladišni deo za kriogene rezervoare, u skladu sa EIGA propisima i SEVESO direktivi. Trebalo je smestiti ih u vidu jedinstvene tankvane površine 1000 m² u kojoj su smešteni rezervoari za tečan kiseonik (3000 m³), azot (2000m³) i manji rezervoari za argon i azot.

Stručnjaci Delta inženjeringa su sa uspehom projektovali idejno rešenje nove fabrike, kao i idejna rešenja dispozicije i strukture svih objekata i njihovo fundiranje. Pored toga, Delta Inženjering je izradila i 3D model novog postrojenja kako bi se lokalnim firmama u Poljskoj, a i drugim zainteresovanim stranama, realno prikazala izgled nove fabrike.

Zahvaljujući uspešno odrađenom poslu u Poljskoj, a prepoznajući jasnu strukturu vođenja projekta od strane Delta inženjeringa, Messer Group Nemačka planira da u budućnosti proširi i obogati svoju saradnju s našom kompanijom.





INVESTOR: MESSER GROUP

UNIT: AIR DECOMPOSITION FACTORY, KATOWICE, POLAND

PRELIMINARY DESIGN: PREPARED BY DELTA INŽENJERING

Delta inženjering has been a reliable and long-term partner to large foreign companies in the projects of investment construction of industrial plants in Serbia. This year our company has successfully started the co-operation with Messer Group from Germany, one of the leading companies in the world in the production of technical gases.

Thanks to the experience in the field of gas engineering as well as thanks to the quality of its personnel, Delta inženjering has accepted to prepare for Messer Group a preliminary design of the new factory for air decomposition (ASU plant) in Katowice in the Republic of Poland.

The production capacity of the new plant amounts to 8,000 m³/h of oxygen and 7,000 m³/h of nitrogen in liquid phase as well as the accompanying quantities of argon, also in liquid phase.

This project is a Green Field investment.

The production units include a compression building having the surface of 600 m². The equipment in the field contains, among other things, the equipment placed Cold Box, which is a steel structure in the height of 58 m.

Since this plant has been foreseen for the production of technical and medical gases in liquid phases, it is necessary to provide a large storage area for cryogen tanks, in accordance with EIGA regulations and SEVESO Directive. It was necessary to place them within the uniformed tank surface of 1,000 m², which contains tanks for liquid oxygen (3,000 m³), nitrogen (2,000 m³) and a smaller tank for argon and nitrogen.

The experts of Delta inženjering have successfully designed the preliminary solution of this new plant, as well as the preliminary solutions of the lay-out and the structure of all units and their foundations. In addition, Delta inženjering has also made a 3D model of the new plant in order to show in real the appearance of this new factory to the local companies in Poland and to other interested parties.

Thanks to the successfully done job in Poland, and having recognized a clear structure of the project performance by Delta inženjering, Messer Group from Germany plans to expand and enrich its co-operation with our company in future.

INVESTITOR: XELLA SRBIJA A.D., VREOCI
OBJEKAT: POSTROJENJE ZA PROIZVODNJU
SUVOZASIĆENE PARE, VREOCI
GENERALNI PROJEKTANT I IZVOĐAČ:
DELTA INŽENJERING

INVESTOR: XELLA SRBIJA A.D., VREOCI
UNIT: DRY SATURATED STEAM GENERATION PLANT,
VREOCI
MAIN DESIGNER AND CONTRACTOR:
DELTA INŽENJERING

Po sistemu ključ u ruke u 2007 godini, kao generalni izvođač radova, Delta Inženjering, nastavio je saradnju sa investitorom Xella Vreoci na projektovanju, gradnji i isporuci opreme postrojenja za proizvodnju suvozasićene pare.

Kapacitet postrojenja je 16 tona pare na sat pritiska 16 bar i čini ga najsavremenija oprema uglavnom nemačkih proizvođača.

Nakon završene gradnje objekta kotlarnice sa pratećom infrastrukturom, Delta Inženjering je u prvoj nedelji decembra isporučio i namontirao kotao proizvođača Loos International Nemačka sa pratećim postrojenjima:

- Postrojenje za snabdevanje gorivom koje se sastoji od sezonskog rezervoara zapremine 100 m³, dnevnog rezervoara 4 m³ i pripadajućih pumpnih stanica. Kotlarnica je predviđena za rad sa mazutom kao osnovnim gorivom.
- Postrojenja za hemijsku pripremu vode. Postrojenje za proizvodnju suvozasićene pare snabdeva se sirovom bunarskom vodom. Iz tog razloga bilo je potrebno

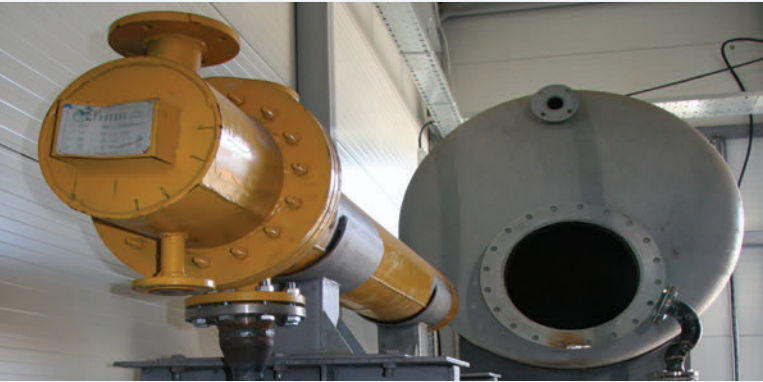
On turn-key basis and as the main contractor, in the course of 2007 Delta Inženjering continued to co-operate with Xella Vreoci, as the investor, on designing, construction and delivery of equipment for the dry saturated steam generation plant.

The capacity of the plant is 16 t of steam having the pressure of 16 bars per hour, which consists of the latest equipment mostly manufactured by the German companies.

Upon the completion of the construction of the boiler house building including the accompanying infrastructure, in the first week of December 2007 Delta Inženjering delivered and assembled a boiler manufactured by Loos International, Germany with the auxiliary units:

- Fuel supply unit, which consists of a seasonal tank having the capacity of 100 m³, a daily tank having the capacity of 4 m³ and the accompanying pumping stations. It has been planned that this boiler house shall use heavy fuel oil as the basic fuel for its operation;
- Chemical water preparation unit. The plant for the





obratiti pažnju na tretman vode jer su zahtevi za kvalitetom vode za parne kotlove veoma visoki. Ovo postrojenje je kompletno tehlološko-proizvodno realizovano u pogonima Delta Inženjeringa.

- Postrojenja za termičku pripremu vode – napojni rezervoar 16 m³ zapremine i degazator kapaciteta 20 t/h
- Postrojenja za iskorišćenje otpadne toplote. Svi kondenzati koji su se mogli koristiti kao napojna kotlovske voda su vraćeni u nepojni rezervoar a od onih koji nisu iskorišćena je toplotna energija hlađenjem i zagrevanjem napone vode

Ovakav objekat predstavlja još jednu granu razvoja Delta Inženjeringa, a to je polje termoeenergetike.

Puštanje kotlarnice u rad planirano je za 31.1.2008.

generation of dry saturated steam is supplied with raw well water. For this reason, it has been necessary to pay particular attention to water treatment because the requirements in respect of water quality for steam boilers are very strict. This entire plant has been technologically designed and manufactured by Delta Inženjering;

- Heat water treatment plant – a supply tank having the capacity of 16 m³ and a degasifying unit having the capacity of 20 t/h;
- Waste heat utilisation unit. All condensates that could have been used as the boiler supply water were returned to the supply tank and heat power was used from those that could not have used by cooling and heating of supply water.

This plant presents another branch of the development of Delta Inženjering, and it is the field of heat power engineering.

It has been planned that the boiler house shall be put in operation on January 31, 2008.



INVESTITOR: MONBAT SRBIJA
 OBJEKAT: FABRIKA ZA RECIKLAŽU KORIŠĆENIH
 AKUMULATORA
 GENERALNI IZVOĐAČ RADOVA: DELTA INŽENJERING

INVESTOR: MONBAT SRBIJA
 UNIT: FACTORY FOR RE-CYCLING OF
 ACCU-BATTERIES
 MAIN CONTRACTOR: DELTA INŽENJERING



Delta Inženjering je u 2007. godini, kao glavni izvođač radova, započeo saradnju i sa poznatim bugarskim proizvođačem akumulatora »Monbat« i njihovom firmom u Srbiji, »Monbat Indija«.

Kompleks, na kome se gradi fabrika za reciklažu korišćenih akumulatora, ima površinu od 20.000m². Početni korak bio je posao na uređenju terena sa zamenom tla, a izgradnja upravne zgrade površine 576m² sledeći, na kompleksnom putu realizacije svih sastavnih delova jedne fabrike. Uporedo sa montažom konstrukcije proizvodne hale, krenuo je i obiman posao izvođenja prateće infrastrukture i temelja opreme.

Veliki deo kompleksa zauzima proizvodna hala. U njoj se odvija izuzetno složen tehnološki proces. Brojne temelje opreme Delta inženjering je uradio po strogim zahtevima proizvođača opreme. Raznovrsnost opreme može da ilustruje i podatak da čak tri različite celine čine kompletnu liniju proizvodnje, francuski, italijanski i bugarski deo. Ovako složena fabrika koristi deo iskustva Delta Inženjeringa na polju metalurgije, primenjenog na novom poslu i u novim uslovima.

In the course of 2007, Delta Inženjering, as the main contractor, also started co-operation with the recognized Bulgarian manufacturer of accu-batteries, company Monbat and its company in Serbia, company Monbat Indija.

The factory complex, where a factory for re-cycling of used accu-batteries is being built, has the surface of 20,000 m². The initial works were to prepare the terrain including the change of soil, and the following step was to build an administrative building having the surface of 576 m², as integral parts of the complex implementation of a factory construction.

The voluminous works related to the accompanying infrastructure and the foundations for the equipment started together with the erection of the production hall structure.

The production hall takes a large part of the complex. An extremely complex technological process is performed in it. Numerous foundations for the equipment have been made by Delta inženjering according to the strict requirements of the manufacturers of the equipment. To illustrate the diversity of the equipment, let us mention that the complete production line consists of even three different units, namely, the French, the Italian and the Bulgarian parts.

Such a complex factory shall use some of the experience of Delta Inženjeringa in the field of metallurgy, which is applied to a new job and under new conditions.



INVESTITOR: IKEA YU
 PROJEKAT: INFRASTRUKTURNO OPREMANJE
 KOMPLEKSA IKEA U NOVIM BANOVCIMA
 PROJEKTANT I GENERALNI IZVOĐAČ RADOVA:
 DELTA INŽENJERING

INVESTOR: IKEA YU
 UNIT: PROVISION OF INFRASTRUCTURE FOR IKEA
 COMPLEX IN NOVI BANOVCIMA
 DESIGNER AND CONTRACTOR:
 DELTA INŽENJERING

Novi Banovci, jedna od mnogih lokacija koje su početkom devedesetih godina imale lepu budućnost, a onda pale u zaborav, sada se vraćaju u život.

Delta Inženjering je »developer«, s ciljem da premosti skoro nespojive obale primarnog investitora i novog korisnika i da na 20 ha plodnih oranica ostvari ono što je bilo planirano pre 20 godina.

Pored već izgrađenog servisnog centra kamiona »VOLVO«, koji će biti pušten u rad u martu 2008. godine, preostalih 17 ha se infrastrukturno opremaju da dočekaju nove korisnike. To znači da se na lokaciju dovode struja, telefonske instalacije sa priključcima, gas, voda i priključci za fekalnu i kišnu kanalizaciju, u količini koja može da zadovolji potrebe budućih korisnika.

Poduhvat obuhvata:

- postavljanje 1300 m visokonaponskog kabla od 20 KV i izgradnju odgovarajuće trafo – stanice;
- dovođenje 4200m gasovoda visokog pritiska i izgradnju GMRS od $Q=1800 \text{ m}^3/\text{h}$
- izgradnju 650 m novog vodovoda Ø 150 sa priključnim šahtom
- izgradnju i postavljanje nove kanalizacije Ø 400 dužine 1200 m sa priključnim šahtom na jednoj strani i izlivnom građevinom dubine 15 m na drugoj
- izradu priključka na glavni optički kabl sa trasom dužine 300 m

Sve priključne građevine, uključujući i nadzemne objekte, smeštene su u Tehničkom bloku kompleksa.

Delta inženjering je projektant svih glavnih projekata i generalni izvođač svih radova. Izvođenje specifičnih instalacija je povereno specijalizovanim organizacijama:

»Elektro distribuciji« Ruma, »Feromont«-gasu itd.

Novi Banovci, as many other locations that had a prosperous future at the beginning of the nineties and then became forgotten, is now coming back to life.

Delta Inženjering is a developer, with the aim to bridge over the coasts of the primary investor and the new user almost impossible to bridge, so that it now accomplishes on 20 ha of fertile land what had been planned 20 years ago.

In addition to the already built service centre for VOLVO trucks, which is going to be opened in March 2008, the remaining 17 ha are being equipped in relation to infrastructure to meet new customers. It means that this location is being equipped with electricity installations, telephone installations with connections, gas installations, water installations and connections for waste water and rain sewage system, in quantity that may meet the requirements of future users.

This project includes:

- Laying of 1300 m long high voltage cable of 20 KV and construction of an adequate transformer station;
- Provision of 4200 m high pressure gas pipeline and construction of GMRS of $Q=1800 \text{ m}^3/\text{h}$;
- Construction of 650m long new water supply line of Ø 150 with manholes;
- Construction of new sewage system of Ø 400 in length of 1200 m with manhole on one side and outlet unit having the depth of 15 m on the other side;
- Manufacture of connections to the main optical cable having the route of 300 m in length.

All additional buildings, including the ground units as well, are located in the technical Block of the complex.

Delta inženjering has prepared the main designs and it is also the main contractor of all works. Fabrication of specific installations has been entrusted to specialized companies such as: Elektro distribucija Ruma, Feromont-gas, etc.

INVESTITOR: INTERLEMIND A.D.

OBJEKAT: STANICA N-PENTANA I ISPARIVAČKO MERN
REGULACIONA STANICA

GENERALNI PROJEKTANT I IZVOĐAČ:
DELTA INŽENJERING

INVESTOR: INTERLEMIND A.D.

UNIT: N-PENTANE STATION AND EVAPORATION
MEASURING CONTROL STATION

MAIN DESIGNER AND CONTRACTOR:
DELTA INŽENJERING



Tokom izgradnje fabrike za kontinualnu proizvodnju sendvič panela od poliuretana, čiji je Investitor INTERLEMIND A.D., Leskovac, ukazala se potreba za izgradnjom stanice n-pentana. »Delta inženjering«, kao stručna firma u oblasti tehničkih gasova, angažovana je za koncipiranje, projektovanje i izgradnju ove stanice. N-pentan se u tehnologiji koristi kao aditiv u cilju ekspandiranja sredstva za ispunu panela. Objekat stanice obuhvata podzemni rezervoar n-pentana zapremine $V=30 \text{ m}^3$, pretakalište i čelični laki objekat za smeštaj pumpi i podstanice sa bocama azota. Delta inženjering je izvršio i proširenje postojeće isparivačko merno regulacione stanice tečnog naftnog gasa ugradnjom toplovodnog isparivača TNG kapaciteta 1000 kg/h i odgovarajuće regulacione linije.

In the course of the construction of the factory for continual production of sandwich panels from polyurethane, which had been invested by INTERLEMIND A.D., Leskovac, a need had occurred to build n-pentane station. Delta inženjering, as an expert company in the field of technical gases, was engaged to make a concept, design and build this station. N-pentane is used in technology as an additive in order to expand the agents used to fill in panels.

The station unit includes an underground tank for n-pentane having the capacity of $V=30 \text{ m}^3$, decantation unit and light steel unit to store pumps and for sub-stations for nitrogen cylinders.

Delta inženjering has also expanded the existing evaporation measurement regulation station for liquid naphtha gas by installing TNG heat pipeline evaporator TNG of 1000 kg/h in capacity and adequate regulation lines.



INVESTITOR: HOLCIM SRBIJA

OBJEKAT: POSTROJENJE ZA TRANSPORT, PRETOVAR I VERTIKALNO SKLADIŠTENJE ADITIVA U FABRICI CEMENTA HOLCIM

IZVOĐAČ RADOVA: ALFA MONT D.O.O. BEOGRAD

INVESTOR: HOLCIM SRBIJA

UNIT: PLANT FOR TRANSPORT, TRANSLOADING AND VERTICAL STORAGE OF ADDITIVES AT HOLCIM CEMENT FACTORY

CONTRACTOR: ALFA MONT D.O.O., BELGRADE

Najznačajniji projekat u 2007. godini je izgradnja postrojenja za transport, pretovar i vertikalno skladištenje aditiva u fabrici cementa Holcim Srbija. Izgradnja objekata pomenutog projekta je počela februara 2007 a završeno je u junu 2007. U tom periodu montirano je:

- 480 t čelične konstrukcije zgrade aditiva,
- 240 t čelične konstrukcije transportnih mostova sa pretovarnom kulom,
- montaža 60 t (5 bunkera),
- 124 t mašinske opreme BEUMER kofičastih transportera
- 4 500 m² trapeznog lima za oblaganje i pokrivanje objekata.

Delta inženjering, uz svoje, ističe i zadovoljstvo investitora što su objekti parcijalno puštani u rad od 31.03.2007, rečju, prema planom ugovorenim terminima.

As the most important project in the course of 2007, we can distinguish the construction of a plant for transport, reloading and vertical storage of additives Holcim Srbija cement factory. The construction of this plant started in February 2007 and it was completed in June 2007. Within this period, the following approximate assembly in total was carried out:

- 480 t of steel structure of additive building;
- 240 t of steel structure of transport bridges including re-loading tower;
- Assembly of 60 t (5 bins),
- 124 t of BEUMER mechanical equipment of bucket type conveyors;
- 4,500 m² of buttress sheet metal to line and cover the buildings.

These units were partially put in operation as from March 31, 2007 on according to the contracted terms to the mutual satisfaction of the Investor and our company.



INVESTITOR: LINDE GAS SRBIJA A.D. INDUSTRIJA GASOVA
PREDMET: KONTROLISANJE PROIZVODNJE DOBOŠASTIH RAZMENJIVAČA TOPLOTE PROIZVOĐAČA REMMING D.O.O.
KONTROLNA ORGANIZACIJA: DELTA INŽENJERING

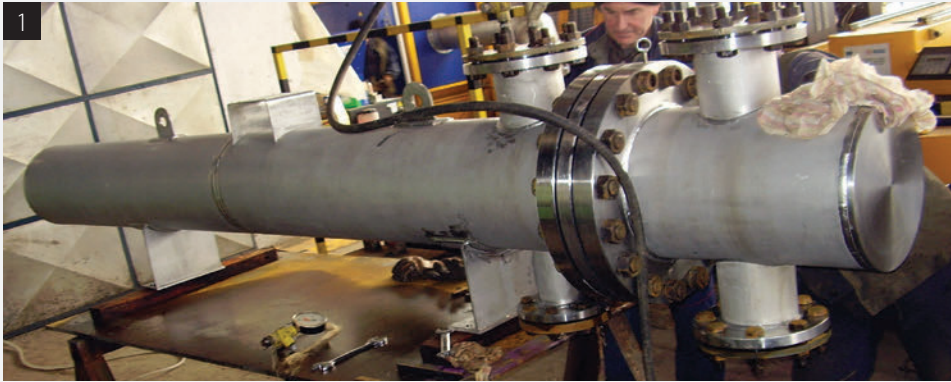
INVESTOR: LINDE GAS SRBIJA A.D. GAS INDUSTRY
SUBJECT: CONTROL OF MANUFACTURE OF DRUM TYPE HEAT EXCHANGERS BY REMMING D.O.O. SRBOBRAN
CONTROL: DELTA INŽENJERING

Sektor kontrole – Kontrolna organizacija Delta inženjering-a je, krajem 2007. godine izvršila proveru kvaliteta proizvodnje dobošastih razmenjivača toplote koji će biti ugrađeni u rekonstruisanu fabriku za proizvodnju ugljendioksida u okviru Industrije gasova LINDE GAS SRBIJA a.d. u Bečeju. Razmenjivači toplote su proizvedeni prema konstruktivno-tehničkoj dokumentaciji koju je izradio ProING d.o.o. iz Beograda. Kontrola kvaliteta proizvodnje obavljena je u pogonu proizvođača razmenjivača, privrednog društva REMMING, u Beočinu. Tehnički podaci o kontrolisanom proizvodu Dobošasti razmenjivač toplote je u obliku stabilne, horizontalne, cilindrične, dvodelne izolovane posude sa jednostrukim zidom za razmenu toplote između dve radne materije. Razmenjivači su izrađeni zavarivanjem čeličnih limova ili cevi. Sastavni delovi razmenjivača međusobno su spojeni vijcima. Cevni snopovi izrađeni su od savijenih cevi (U-cevi).

At the end of 2007 the Control Sector of the Control Institution Delta inženjering performed the control of the manufacture of drum type heat exchangers, which are to be installed in the reconstructed factory for the production of carbon dioxide within the framework of gas industry LINDE GAS SRBIJA a.d. in Bečej. The heat exchangers had been manufactured according to the design – technical documentation made by ProING d.o.o. from Belgrade. The control of the manufacture was carried out at the plant of the manufacturer of the heat exchangers, commercial entity REMMING in Beočin.

Technical Data about the Controlled Product Drum type heat exchangers are stationary, horizontal, cylindric insulated vessel of two parts, with single wall intended for heat exchange between two working media. Heat exchangers are manufactured by welding of steel sheet metals or pipes. The parts of heat exchangers which can be separated are connected by means of screws. Pipe bunches are made from bended pipes (U-pipes).





Slika 1 / Figure 1

Dobošasti razmenjivač toplote / Drum Type Heat Exchangers

Slika 2 / Figure 2

Cevni snop razmenjivača / Pipe bundle of heat exchanger

Slika 3 / Figure 3

Montaža razmenjivača / Assembly of heat exchanger

Slika 4 / Figure 4

Cevna ploča razmenjivača / Pipe plate of heat exchanger

Slika 5 / Figure 5

Tablica karakteristika / Name plate

Tehnički opis kontrolisanja

Kontrolisanje proizvodnje razmenjivača toplote, koje je obavio tim ovlašćenih kontrolora u pogonu proizvođača, obuhvatilo je sledeće aktivnosti:

- kontrola materijala predviđenih za izradu razmenjivača;
- kontrola izrade razmenjivača;
- predled konstrukcije;
- kontrola ispitivanja pritiskom;
- kontrola ispitivanja metodama bez razaranja i sa razaranjem;
- kontrola atestno-tehničke dokumentacije.

Dokumentacija o kontrolisanju

Rezultati izvršenih kontrolnih aktivnosti zadovoljili su zahteve odgovarajućih pravilnika i standarda. O svakoj izvršenoj kontroli sačinjen je zapisnik, a na osnovu pozitivnih rezultata pojedinih kontrola, Sektor kontrole Delta Inženjering-a izdao je izveštaje o rezultatima ispitivanja i potvrde o usaglašenosti za sve kontrolisane razmenjivače, u skladu sa svojom akreditacijom od strane Akreditacionog tela Srbije (akreditacioni broj 06-009).

Control Technical Description

The control of the manufacture of heat exchangers, which was carried out by the team of licenced experts at the plant of the manufacturer, included the following activities:

- Control of the materials foreseen for the manufacture of heat exchangers;
- Control of manufacture of heat exchangers;
- Inspection of heat exchangers' bodies;
- Control of pressure tests;
- Control of testing without and with destruction;
- Control of test-technical documentation.

Control Related Documentation

The results of carried out control activities meet the requirements of the relevant books of rules and standards. The minutes of each control activity have been made, and the Control Sector of Delta Inženjering issued relevant reports and certificates on compliance of controlled heat exchangers based on the positive results of certain control activities, in accordance with its accreditation by the Accreditation Institution of Serbia (accreditation number 06-009).



INVESTITOR: LINDE GAS SRBIJA
 PREDMET: IZRADA KONSTRUKTIVNO TEHNIČKE
 DOKUMENTACIJE ZA DOBOŠASTE RAZMENJIVAČE
 TOPLOTE PROIZVOĐAČA REMMING D.O.O. SRBOBRAN
 PROJEKTANT: PRO-ING D.O.O. BEOGRAD

INVESTOR: LINDE GAS SRBIJA
 SUBJECT: PREPARATION OF DESIGN TECHNICAL
 DOCUMENTATION FOR DRUM TYPE HEAT
 EXCHANGERS
 DESIGNER: PRO-ING D.O.O. BEOGRAD

Pro-Ing d.o.o. je i toku 2007. godine izradio konstrukciono-tehničku dokumentaciju za izradu dobošastih razmenjivača toplote, kolona i drugih posuda pod pritiskom za potrebe Investitora – Linde Gas Srbija, Industrija gasova a.d. Bečej. Dokumentacija je izrađena u skladu sa nacionalnim pravilnicima, standardima i preporukama TEMA udruženja.

In the course of 2007, Pro-Ing d.o.o. took part in the preparation of the technical documentation for the manufacture of process equipment of the factory for the production of CO₂, submitted by Linde Gas Srbija – Industrija gasova a.d. Bečej.

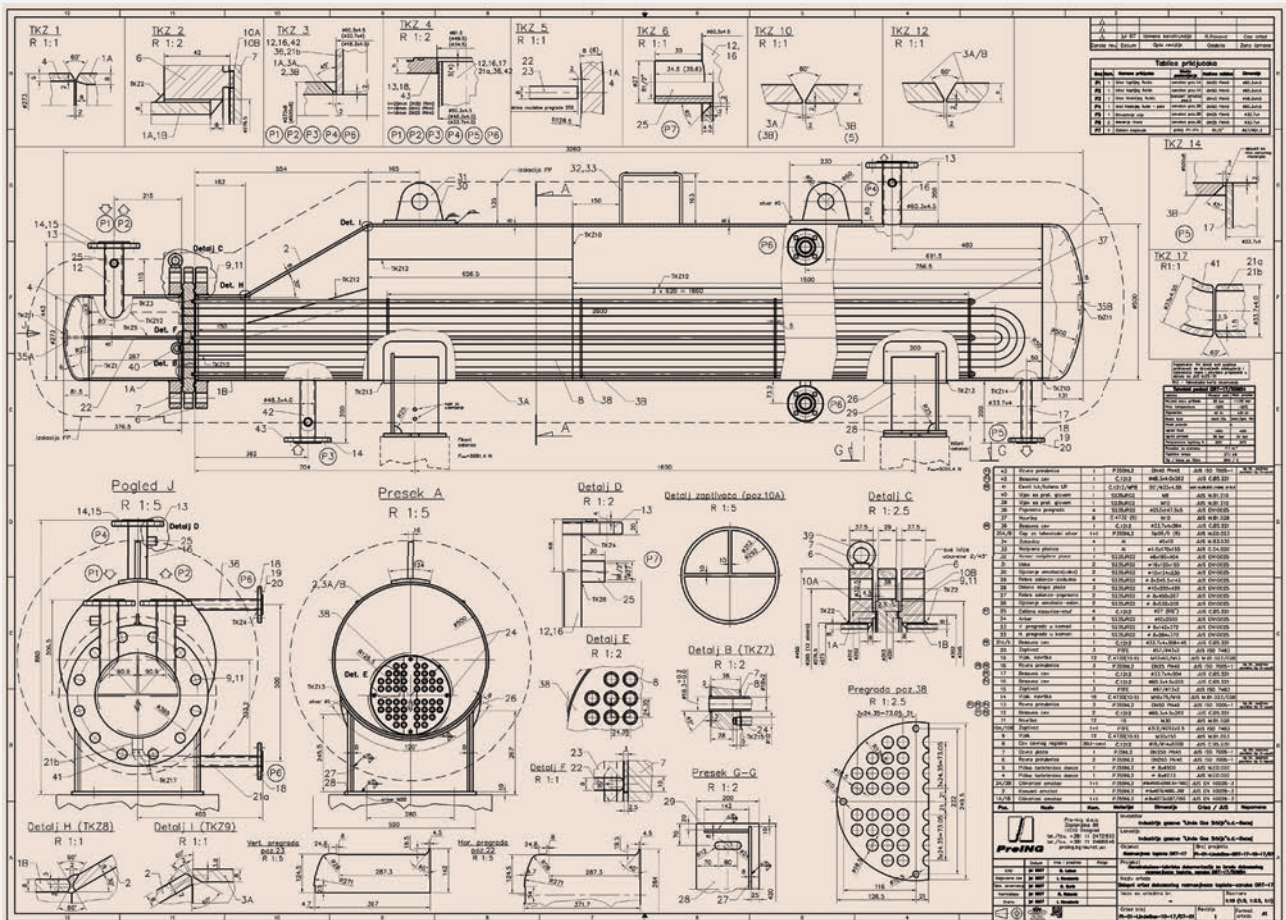
The documentation has been prepared in accordance with the relevant national regulations, standards and recommendations by TEMA Association.

veličina	oznaka	jedinica	prostor	
			cevni	međucevni
			1	2
radni pritisak	p _r	[bar]	21	-1/16
najveći dozvoljeni radni pritisak	p _{rMAX}	[bar]	23	-1/16
proračunski pritisak	p	[bar]	23	-1/16
ispitni pritisak (gas)*	p _i	[bar]	25.3	17.6
ispitni pritisak (voda)	p _i	[bar]	30	24
raspon radnih temperature- ulaz	t _p	[°C]	-22.35	-35.91
raspon radnih temperature- izlaz	t _k	[°C]	-33.31	-35.91
proračunska temperatura	t	[°C]	-50...+20	-50...+20
temperatura ispitne materije	t _i	[°C]	+20	+20
radna materija			tečni CO ₂	teč./gas. NH ₃
ispitna materija			gas**/voda	gas**/voda
geometrijska zapremina	V	[m ³]	0.04	0.43
ukupna zapremina	V _{UK}	[m ³]	0.47	
masa posude – prazna	m ₁	[kg]	580 kg	
masa posude – u radu	m ₂	[kg]	~763 kg	
masa posude – pri ispitivanju	m ₃	[kg]	1038 kg	
klasa posude			III	

Tabelarni prikaz osnovnih tehničkih podataka

Parameter	Symbol	Unit of Measure	Space	
			Pipe	Inter-pipe
			1	2
Working pressure	p _r	[bar]	21	-1/16
Maximum permissible working pressure	p _{rMAX}	[bar]	23	-1/16
Calculated pressure	p	[bar]	23	-1/16
Test pressure (gas)*	p _i	[bar]	25.3	17.6
Test pressure (water)	p _i	[bar]	30	24
Working temperature range -inlet	t _p	[°C]	-22.35	-35.91
Working temperature range -outlet	t _k	[°C]	-33.31	-35.91
Calculated temperature	t	[°C]	-50...+20	-50...+20
Testing media temperature	t _i	[°C]	+20	+20
Working media			tečni CO ₂	teč./gas. NH ₃
Testing media			gas**/water	gas**/water
Geometric volume	V	[m ³]	0.04	0.43
Total volume	V _{UK}	[m ³]	0.47	
Vessel weight – empty	m ₁	[kg]	580 kg	
Vessel weight – in operation	m ₂	[kg]	~763 kg	
Vessel weight – during testing	m ₃	[kg]	1038 kg	
Vessel class			III	

Table of Basic Technical Data



Prikaz detalja, osnovnih i ugradnih mera razmenjivača je dat na sklopnom crtežu.

The assembly drawing includes details of basic and assembly measures of heat exchangers.

PREDSTAVLJAMO:

A.D. ČELIK
FABRIKA ZA PROIZVODNJU ČELIČNE KONSTRUKCIJE,
ŽITORAĐA

WE PRESENT:

A.D. ČELIK
FACTORY FOR MANUFACTURE OF STEEL
STRUCTURES, ŽITORAĐA



AD »Čelik« Žitorađa se bavi proizvodnjom čeličnih konstrukcija svih namena i vrsta, nestandardne opreme za procesnu industriju, energetiku, rudarstvo i ekologiju i opreme u šinskom saobraćaju.

»Čelik«, od 1960. godine kada je osnovan, prerastao je od radionice za popravku poljoprivredne opreme u savremenu fabriku. Ona danas ima 138 radnika, visokog inženjerskog kadra, kao i kvalifikovane zavarivače i bravare. U 8000 m² proizvodnog prostora, sa raznovrsnom i kvalitetnom opremom za mašinsku obradu, pripremu, zavarivanje i antikorozivnu zaštitu, »Čelik« ispunjava najstrože zapadne standarde kvaliteta.

Od 30. novembra 2006. godine »Čelik« posluje kao privatno akcionarsko društvo.

Danas je »Čelik« firma koja ima garantovani kvalitet proizvoda kao i organizovano praćenje sistema menadžmenta, što je potvrđeno sertifikatom avgusta 2007. godine, odnosno sertifikatom JUS ISO 9001:2001.

Poslovi zavarivanja su primarni u oblasti izrade čeličnih konstrukcija, pri čemu se se »Čelik« kvalifikovao i za

Share holding company Čelik from Žitorađa deals with the manufacture of steel structures of all types and for all purposes, with the manufacture of non-standard equipment for process industry, power industry, mining industry and ecology, with the manufacture of equipment required for rail traffic.

Since 1960, when it was founded, company Čelik has been transformed from a workshop for the repair of agricultural equipment to a modern company employing 138 people, consisting of envious potential made of engineers, welders and locksmiths, who can accomplish the strictest Western quality criteria at the plant having 8,000 m² of manufacture area with various and quality equipment for mechanical treatment, preparation, welding and protection against corrosion.

Since November 30, 2006 Čelik has been doing business as a privately owned share holding company.

Today, Čelik belongs to the group of companies that have guaranteed quality of their products and monitor the system of quality management, as certified by JUS ISO

sertifikat SLV GSV, odnosno TUV, čija je potvrda u praksi u toku.

Briga o kupcu, kontrolisana proizvodnja, primerena cena i poštovanje rokova, podiže ugled »Čelika« kod kupaca, tako da se u 2007. godini beleži rast proizvodnje čeličnih konstrukcija za ino-partnere. Tendencija rasta izvoza očekuje se i u 2008. godini.

Najvažniji kupci za koje je naša kuća proizvela čelične konstrukcije, opremu (pretovarni mostovi, transporteri, ...) i specijalne konstrukcije su u 2007. godini su:

- Holcim – Popovac, Srbija
- Holcim – Beli Izvor, Bugarska
- Henkel – Indija, Srbija

9001:2001 standard certificate in August 2007.

Welding jobs are of primary importance in the field of manufacture of steel structures, whereas Čelik has also qualified for SLV GSV certificate, namely TUV certificate, being proved in practice in progress.

Customer care, control of manufacture, reasonable prices and meeting the required delivery terms, improve the reputation of Čelik with the clients so that in 2007 Čelik had an increase in the manufacture of steel structures for foreign partners and this tendency of export increase is expected in 2008 as well.

Let us only mention some of the major customers the steel structures, equipment (bridges for loading and unloading,



- Kostroj – Slovenske Konjice, Slovenija
- Xella – Vreoci, Srbija
- Površinski kop Tamnava – zapadno polje – Kolubara, Lazarevac, Srbija
- Servisni centar kamiona Volvo – Novi Banovci, Srbija
- oprema u okviru projekata koje izводи Delta inženjering grupa.

Značajne investicije su u toku. Nabavka savremenih mašina i opreme omogućuje osvajanje liderske pozicije u okviru rada Delta inženjering grupe u 2008. godini.

conveyors, etc.) and special structures were made for in 2007:

- Holcim – Popovac, Serbia;
- Holcim – Beli Izvor, Bulgaria;
- Henkel – Indija, Serbia;
- Kostroj – Slovenske Konjice, Slovenia;
- Xella – Vreoci, Serbia;
- Tamnava – Zapadno polje open pit – Kolubara, Lazarevac, Serbia;
- Service Centre for Volvo Trucks – Novi Banovci, Serbia;
- And other equipment within the framework of projects performed by Delta inženjering Group.

Significant investments that have been in progress, namely, the procurement of modern machines and equipment provide conditions to get a leading position within this field of activities in 2008.



delta inženjering '07



Delta Inženjering, Beograd
Alfa mont, Beograd
PCE – 2004, Beograd
MG-Inženjering, Beograd
Delta Inženjering Beton, Stara Pazova
Đule sistem, Beograd
PRO-ING, Beograd
A.D. Čelik, Žitorađa

