

# REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
1.	INA-Ind.nafte,d.d.Zagreb Naftaplin "Etilen" Zagreb, Žitnjak	Zagreb, Žitnjak	Ethane cracker	Process design - Reconstruction of deethanizer thermosyphon reboiler	1990
2.	INA-OKI Zagreb, Žitnjak	Zagreb, Žitnjak	Flare system	Process design - Reconstruction of existing flare system incl. k.o. drum, waterseal, steam injections for smokeless and flameless combustion	1991
3.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Mlaka	Rijeka Refinery Mlaka	07 Dewaxing and 08 Deoiling Section 400, Drying and recovery of solvent (MIBK)	Process design - Revamping and reconstruction of the Section 400 - Drying and recovery of solvent (MIBK) in Dewaxing and Deoiling unit of Lube oil plant	1992
4.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Mlaka	Rijeka Refinery Mlaka	07 Dewaxing and 08 Deoiling Section 100 Crystallization	Process design - Revamping and reconstruction of the Section 100 - Crystallization in Dewaxing and Deoiling unit of Lube oil plant	1992
5.	ENICO Lugano Switzerland	Kazakhstan	Topping unit 10 000 bpd - grass root refinery	Material and heat balances for 10 000 bpd topping unit Equipment sizing Facilities for production of utilities Off-site facilities (grass root refinery) Cost estimating Planning Consulting services	1993
6.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Mlaka	Rijeka Refinery Mlaka	02 Vacuum distillation for lubes	Feasibility study by comparing reasonable usage of two feed-stocks: atmospheric residue and vacuum flashed distillates	1993
7.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Mlaka	Rijeka Refinery Mlaka	02 Vacuum distillation for lubes	Process design - Revamping and reconstruction of whole 02 Vacuum distillation unit of Lube oil plant	1993

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8.	INA-Ind.nafte,d.d.Zagreb Rafinerija Zagreb	Zagreb Refinery Zagreb	22 Atmospheric distillation of Crude oil	Process design - Revamping and reconstruction of existing Atmospheric distillation unit	1994
9.	INA-Ind.nafte,d.d.Zagreb Naftaplin Radilište Etilen	Zagreb, Žitnjak	Interconnecting of liquefied ethylene systems from INA-Naftaplin to INA-OKI	Process design Detailed engineering: - instrumentation - piping - civil	1994
10.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21-Topping III	Process design - Reconstruction of preheat train using waste heats for crude preheating without crude flashing tower; capacity 600 t/day; new products slate; higher and new distillate yields, new debutanizer and gasoline splitter (dehexanizer instead of depentanizer) process requirements	1994
11.	INA-Ind.nafte,d.d.Zagreb Rafinerija Sisak	Sisak Refinery Sisak	6100 Atmospheric distillation Topping KP-6	Process design - variation of NTS and internal heat removal (pumparounds) to obtain new distillation characteristics of light and middle distillates. Basis for tower reconstruction. Crude oil capacity: 600 t/day	1994
12.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21-Topping III	Process design - Reconstruction of preheat train using waste heats for crude preheating using crude flashing tower; capacity 600 t/day; new products slate; higher and new distillate yields; new debutanizer and gasoline splitter (dehexanizer instead of depentanizer) process requirements caused by RFG regulations.	1994
13.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21-Topping III Process furnace 21-F-1	Process design for new furnace inlet conditions; heat transfer-process and flue gas side; two-phase hydraulic patterns including transfer line	1994

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14.	INA-Ind.nafte,d.d.Zagreb Naftaplin Sektor proizvodnje Ivanić Grad	Ivanić Grad	Natural gasoline depentanizing and splitting of pentane isomers (high quality)	Process design Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical: columns, heat exchangers, condensers, reboilers and coolers</li> <li><input type="checkbox"/> piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> utilities: hot oil system; cooling water system</li> <li><input type="checkbox"/> fire fighting including cooling tower</li> <li><input type="checkbox"/> off-site facilities: rearranging of product storage tanks and spheres</li> </ul>	1994
15.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	Mild hydrocracking/AGO hydrodesulfurization (MHC/HDS)	Study of environmental protection aspects of planned MHC/HDS unit; basis for state and local authorities approvals.	1994
16.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21-Topping III Process furnace 21-F-1	Basic design Reconstruction of furnace 21-F-1	1995
17.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	Unit 18 Isomerization Reformate splitting section	Process design of new section reformate splitter, requiring high degree of separated according to requirements for RFG. Detailed engineering planned for 1997.	1995
18.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	Unit 18 Isomerization Deisopentanizing section	Process design of new section deisopentanizing of reconstructed Isomerization unit for hexanes (fomerly for pentanes). Required high degree of separation according to catalyst requirements. Detailed engineering planned for 1997.	1995
19.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	101-Topping II	Process design - reconstruction of whole topping unit; capacity 275 t/day; new products slate; higher & new distillate yields; preheat train reconstruction using flashing tower; new debutanizer and gasoline splitter (dehexanizer instead of depentanizer) process requirements caused by RFG regulations.	1996

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20.	INA-Ind.nafte,d.d.Zagreb Naftaplin Sektor proizvodnje Ivanić Grad	Ivanić Grad	Superfractionation of butanes (deisobutanizer unit; high quality isomers)	Process design Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical: columns, heat exchangers, condenser,</li> <li><input type="checkbox"/> reboiler and cooler</li> <li><input type="checkbox"/> piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> utilities: LP steam and condensate distribution</li> <li><input type="checkbox"/> off-site facilities: rearranging of product storage tanks and spheres</li> </ul>	1996
21.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	101-Topping KP-5 Process heater 101-H-1 reconstruction and waste gas firing system	Process design - Reconstruction of convection section: studded tubes, soot blowing, steam injection into reduced crude in radiation zone coils, steam superheating coils, natural draft burners. Heat transfer and hydraulic calculations; two-phase flow in pipes and transfer lines. Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/heater</li> <li><input type="checkbox"/> piping</li> <li><input type="checkbox"/> vessels</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> </ul>	1996
22	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Mlaka	Rijeka Refinery Mlaka	02 Vacuum distillation for lubes	Process design - new tower D-101 filled in with structural packings; vapor/liquid loadings for optimum vacuum; consulting services during structured packing manufacturing new product (marine lube oil cut) and changed P&ID with equipment process specifications.	1996

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23.	INA-Ind.nafte, d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	6100 Atmospheric distillation; Topping KP-6 Atm.tower T-6101 reconstruction with structured packings	Process design - vapor/liquid loadings for higher overflash rates; OF recycling; OF draw-off; stripping steam rate reduction and distributor construction; consulting services during structured packings manufacturing and inspection during their installation. Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical, new nozzles and internals supporting</li> <li><input type="checkbox"/> piping</li> <li><input type="checkbox"/> bidding documentation</li> </ul>	1996
24.	INA-Ind.nafte, d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Installation of volumetric and/or mass flowmeters in measuring lines at tank car loading station; reconstruction	Process design Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> piping</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> fire fighting</li> </ul>	1996
25.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	101-Topping KP-5	Process design reconstruction of whole topping unit; capacity 275 t/day; new products slate; higher & new distillate yields; preheat train reconstruction using flashing tower; new debutanizer and gasoline splitter (dehexanizer instead of depentanizer) process requirements caused by RFG regulations.	1996
26.	PLIVA d.d. Zagreb Konzalting Jagićeva 31 Zagreb	Savski Marof	Pliva - Azithromycin Solvent recovery columns	Process design – <ul style="list-style-type: none"> <li><input type="checkbox"/> simulations of 2 strippers and 4 fractionators for high purity solvent distillates and waste waters;</li> <li><input type="checkbox"/> optimum reflux and appropriate NTS;</li> <li><input type="checkbox"/> sizing of columns for continuous operation;</li> <li><input type="checkbox"/> ethanol batch distillation; simulation for optimum reflux and NTS; sizing for batch operation</li> </ul>	1996

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Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
27.	JEDINSTVO, d.d. Zagreb	Savski Marof	Pliva -Azithromycin Solvent recovery unit	Process design - two stripper columns, two fractionators - process specifications; <ul style="list-style-type: none"> <li>❑ thermal and hydraulic design calculations including mechanical specifications for:</li> <li>❑ 7 shell &amp; tube heat exchangers, condenser, thermo-syphon reboilers and coolers and</li> <li>❑ 10 double-pipe heat exchangers and coolers</li> </ul>	1996
28.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21-Topping III	Process design - reconstruction of process furnace firing, using low pressure waste CDU overhead gases. Detailed engineering	1996
29.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21 - Topping III Atmospheric tower 21-C-1 reconstruction with structured packings; debutanizer retraying with high capacity trays (NYE); new flashing column 21-C-6	Process design - vapor/liquid loadings for higher overflash rates; OF recycling; OF drawoff; stripping steam rate reduction and steam distributor construction; consulting services dewing structured packings manufacturing and inspection during their installation. Detailed engineering: <ul style="list-style-type: none"> <li>❑ mechanical, new nozzles</li> <li>❑ piping</li> <li>❑ bidding documentation</li> </ul>	1996
30.	INA-Ind. nafte,d.d., Zagreb Rafinerija Zagreb	Zagreb Refinery	Railway and tank car loading station	Installation of mass & volumetric flowmeters Detailed engineering	1996

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31.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka Rafinerija Urinj	Rijeka Refinery Urinj	21 - Topping III	Consulting Construction Supervision Precommissioning and commissioning Start up, capacity 600t/h	1997
32.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	LAGO + Coker naphta HDS	Process design - revamping and reconstruction of existing Unifining into LAGO + Coker naphta hydrodesulfurization, 50 m <sup>3</sup> /h	1998
33.	INA-Projekti, d.o.o. Zagreb	Refinery Jaslo Poland	Oil and paraffin rafination	Prefeasibility study for the erection of the deoiling plant in the refinery Jaslo-Poland	1998
34.	INA-Ind.nafte,d.d.Zagreb Naftaplin	Ivanic Grad	Natural gasoline stabilization unit	Reconstruction and revamping of natural gasoline stabilization unit Process design & detailed engineering	1998
35.	Petrokemija Kutina	Kutina	Fertilizer plant. Ammonia synthesis section;cryogenic H <sub>2</sub> & NH <sub>3</sub> recovery	Process design - reconstruction of cryogenic H <sub>2</sub> & NH <sub>3</sub> recovery.  Detailed engineering	1998
36.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Process design & advanced control Detailed engineering	1997/1998

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37.	INA-Ind.nafte,d.d.Zagreb Naftaplin	Ivanic Grad	Superfractionation of butanes and delivery to loading stations	Separating vapor equalizing lines from butane isomers storage lines and loading facilities Technical and process design Detailed engineering	1998
38.	INA-Ind.nafte,d.d.Zagreb Rafinerija Sisak	Sisak Refinery	6100 Atmospheric distillation Topping KP-6; 600 t/h	Study for maximum turndown unit operation; 300 t/h	1998
39.	INA-Ind.nafte,d.d.Zagreb Rafinerija Sisak	Sisak Refinery	6100 Atmospheric distillation Topping KP-6; 600 t/h	Process design and detailed engineering for reconstruction of CDU, for operating with turndown ratio 2. Retraying the atmospheric tower lower part with structured packings, new draw-off nozzles for LAGO stripper feed, atm.residue spill back to maintain minimum mass velocity in vertical tube cabin type heater, lowering the bottom level transmitter to achieve lower AR residence time, partially closing of valve trays, reference to minimum flood factor etc.	1998
40.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Process design for reconstruction of process control, instrumentation; control valves checking; P&ID	1998
41.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Detailed engineering of reconstructed control and instrumentation Connection to DCS (Fisher-Rosemount)	1998
42.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Consulting Construction Supervision Precommissioning and commissioning Start up with test run in cooperation with internals manufacturer (SULZER CHEMTECH's report enclosed)	1998



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43.	Petrokemija Kutina	Kutina	Ammonia & hydrogen separation from exhaust gases in ammonia synthesis plant	Process design Piping design	1999
44.	INA-Ind.nafte,d.d.Zagreb Rafinerija Sisak	Sisak Refinery	KP-4 Reconstruction of Unifinig Unit into HDS diesel fuel Unit	Process design	1999
45.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Vacuum heater 201 H-1; thermal & hydraulic design; detailed engineering for construction incl. soot blowing devices; connection to DCS	1999
46.	INA-Ind.nafte,d.d.Zagreb Rafinerija Sisak	Sisak Refinery	6100 Atmospheric distillation Topping KP-6; 600 t/h	Process design, calculation of low pressure fuel gas (noncondensable gases) supply for separate firing on main process heater H-6101; Process design package; Schedule "A" Detailed engineering for piping, reconstruction of burners, instrumentation, separator vessel-mechanical and civil works	1999
47	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	01 Vacuum distillation for lubes	Reconstruction of vacuum distillation for lubes using as feedstock severe hydrocracking residue-high viscosity index Process design-whole plant Process design for cooling products of vacuum distillation – tempered water system Design of water coolers (thermal and hydraulic design), dimensioning, construction, detailed engineering design, workshop drawings.	1999-2000
48.	INA-Ind.nafte,d.d.Zagreb Naftaplin	Ivanić Grad	Superfractionation of butanes	Prolongation of superfractionator deisobutanizer tower, i.d. butane isomers splitter; high product quality of both isomers (guaranted 99.8% purity). Process design Detailed engineering Procurement Construction Commissioning Start up	2000

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49.	DIOKI d.d. Zagreb, Žitnjak	Zagreb, Žitnjak	Ethane cracker	Propane vaporization section for propane copyrolysis in existing ethane cracker Process design Detailed engineering Construction supervision Commissioning Start up	2000
50.	INA-Ind.nafte,d.d.Zagreb Naftaplin Pogon ETAN	Ivanić Grad	Natural gas and natural gasoline processing plant	Amine wash section; UCARSOL-MDEA; regeneration/stripper reconstruction; substitution of heaters with steam reboiler Process design Detailed engineering Construction supervision Commissioning Start up	2000
51.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	321 Topping III 600 t/h	Test run, capacity 600 t/h	2000
52.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	321 Topping III 600 t/h	Reconstr. of atmosph. tower overhead condensing system Reconstruction of ALGO section; atmospheric tower C-1 and stripper C-2C Withdrawal of overflash (OF) with AHGO Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/pipe and equipment reconstruction</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> </ul>	2001
53.	INA-Ind. nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	321 Topping III 600 t/h	Installation of soot blower in process fire heater 321 F-001 Process design Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/soot blower and pipes</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> connection to DCS</li> </ul>	2001

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54.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	321 Topping III 600 t/h	Installation of two pipes rows in convection section of fire heater 321 F-001 Process design – calculation of heat transfer for various type of pipes with extended surfaces; Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/installation of two pipes rows and piping</li> </ul>	2001
55.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	LPG spheres	Process design – connection and manipulation Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/pipe</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> fire protection (safety design)</li> </ul>	2001/2002
56.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	322 Reformate fractionation	Process design – reformate fractionation with benzene separation; using existing equipment from Aromate plant Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/pipe and equipment reconstruction (columns, air coolers, heat exchangers, water coolers)</li> <li><input type="checkbox"/> instrumentation – connection to DCS</li> <li><input type="checkbox"/> electro</li> <li><input type="checkbox"/> civil</li> </ul>	2001/2002
57.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	C <sub>3</sub> /C <sub>4</sub> splitters	Study of possibility processing C <sub>3</sub> and C <sub>4</sub> hydrocarbons on C <sub>3</sub> /C <sub>4</sub> splitters Material and heat balance; checking all equipment capacity	2001/2002

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58.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	Isomerization DIP section reconstruction	Process calculation for separation iso-pentane from C <sub>5</sub> /C <sub>6</sub> fraction or C <sub>5</sub> -85°C; Checking available columns (316 Section) <ul style="list-style-type: none"> <li>□ capacity (diameter) and</li> <li>□ number of theoretical stages (column height)</li> </ul> Checking all another main equipment in Isomerization plant	2001/2002
59.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	Propane deasfaltung (PDA)	Calculation and construction of extraction column (feed-vacuum residue; diluent-propane) Process design – PDA section Detailed engineering: <ul style="list-style-type: none"> <li>□ mechanical/extraction column</li> </ul>	2002
60.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	Sour water stripper SWS	Process design (Schedule “A”) - SWS Detailed engineering <ul style="list-style-type: none"> <li>□ mechanical/equipment</li> </ul>	2002
61.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	KP-4 Section 500 Unifining	Detailed engineering – Reconstruction Unifining KP-2 in HDS for gas oil and coking naphtha <ul style="list-style-type: none"> <li>□ mechanical/equipment and piping</li> <li>□ electrical</li> <li>□ instrumentation</li> <li>□ civil</li> <li>□ fire protection</li> <li>□ (safety in design</li> </ul>	2002/2003
62.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	KP-4 Section 300 Platforming	Process design and detailed engineering (mechanical, electro, instrumentation and civil) for reconstruction and revamping of catalytic reforming in HDS for diesel fuel	2002/2003
63.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	KP-4 Section 500 Unifining	Temporary partial reconstruction of KP-4 Unifining in HDS for gas oil and coking naphtha Maximum capacity: 720t/day diesel fuel up to 100 ppm sulphur content (EURO 3 Diesel)	2002/2003

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64.	DIOKI d.d Zagreb	Zagreb, Žitnjak	C <sub>3+</sub> fraction flashing and separate light gas hydrocarbons	Process design	2003
65.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	318 Isomerization Section 100 (DIP) Deisopentaniser	Process design <ul style="list-style-type: none"> <li><input type="checkbox"/> Detailed engineering</li> <li><input type="checkbox"/> mechanical reconstruction of equipment</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> </ul>	2003
66.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	KP-4; Section 500 Reconstruction of Unifinig Unit into HDS diesel fuel Unit Alternate feed: diesel fuel	Process design – mass and heat balance	2003
67.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Sizing of hydrogen gas piping from Platforming to HDS Sections 300, 500 and 400	Process design <ul style="list-style-type: none"> <li><input type="checkbox"/> rating of economically hydrogen delivery pipe diameter</li> </ul> Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation with connecting to DCS</li> </ul>	2003/2004
68.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Reconstruction and revamping fired heaters H-501, H-502 and H-503 Section 500; KP-4	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation with connecting to DCS</li> </ul>	2003/2004
69.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Interconnecting gases produced in HDS units; Sections 300&500, into the common refinery fuel gas system.  Reconstruction of two existing condensate knock-out drums of unique refinery fuel gas stream; old condensate separators D-1516 & D-1910.  Designing and installing new condensate separator D-309N.	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/equipment D-1516 &amp; D-1910 – reconstruction</li> <li><input type="checkbox"/> mechanical/equipment new D-309N</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> mechanical/piping of whole unit – process and utility piping</li> <li><input type="checkbox"/> instrumentation with connecting to DCS</li> <li><input type="checkbox"/> civil work</li> </ul>	2004

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70.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	318 Isomerization Section 900 Complete process unit-Deisohexanizer (DIH)	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/equipment and piping</li> <li><input type="checkbox"/> instrumentation</li> </ul>	2004
71.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Mlaka	Extraction column with perforated trays for PDA/ROSE processes: deasfaling of vacuum residues	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/equipment</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation with connecting to DCS</li> </ul>	2004
72.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Atmospheric distillation KP-6. Main atmospheric tower T-6101 reconstruction: - new draw-off nozzles for all side streams SF products; - changing of single center-downcomers' nozzles into double off-center downcomers nozzles	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/column reconstruction (new downcomers, nozzles and trays)</li> <li><input type="checkbox"/> mechanical/piping - interconnecting all stripper feeds</li> </ul>	2004
73.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Process unit: Coking Reconstruction of feeding compressors' system C-5401A,B,C. Eliminating of all drains and vents in process unit 5400, resulting in pure working atmosphere. Nitrogen purging/buffering for ten compressors. New stuffing boxes for ten compressors.	Process design (final solution) Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/new equipment D-5401N and D-5402N (final solution)</li> <li><input type="checkbox"/> mechanical/piping (final solution)</li> <li><input type="checkbox"/> civil (final solution)</li> <li><input type="checkbox"/> instrumentation (final solution)</li> </ul>	2005

# REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
74.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	KP-4; Section 300 Reconstruction of Platforming Unit into HDS diesel fuel Unit	Process design –as built documentation As built <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/equipment</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> civil</li> </ul>	2005
75.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	Unit 375 - Pressure Swing Adsorption (PSA) Installing PSA Unit and distribution of purified hydrogen	Process design	2005/2006
76.	INA-Ind. nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Unit 700 - PSA-1 (Pressure Swing Adsorption) Distribution of purified hydrogen to the existing consumers  Unit 800 – PSA 2	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> electrical</li> </ul> Process design	2005/2006
77.	Naftagas Rafinerija nafte Novi Sad	Refinery Novi Sad	Sour water stripper	Process design	2006
78.	INA-Ind. nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Aromatics complex;  Sections 8400 & 8500  Fractionation of FCC gasoline- reconstruction of existing equipment and new interconnecting	Process design of reconstructed part of idle Aromatics complex <ul style="list-style-type: none"> <li><input type="checkbox"/> reconstruction of column internals V-8408</li> <li><input type="checkbox"/> reconstruction of heater with two passes H-8501</li> </ul> Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/reconstr. of equipment internals</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> </ul>	2006

# REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
79.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	321 – Topping 3 Atmospheric distillation	As-built documentation	2006/2007
80.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	C <sub>3</sub> /C <sub>4</sub> splitter in KP-5 complex	Process design for revamping and reconstruction of equipment and instrumentation for existing C <sub>3</sub> /C <sub>4</sub> splitter unit	2006/2007
81.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Piping system for collecting sour fuel gases and their feeding to the amine wash unit, with returning purified sweet refinery fuel gases	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> </ul>	2006/2007
82.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Utilities at battery limit of Sulphur Recovery Unit  Increasing capacity of cooling water system	Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> civil</li> <li><input type="checkbox"/> electrical</li> </ul>	2006/2007
83.	MEBU d.o.o. Netretić bb	Netretić, Croatia	Factory for production of fatty acid methyl esters (FAME)	Main engineering for <ul style="list-style-type: none"> <li><input type="checkbox"/> interconnection facilities for utility production and off-site facilities,</li> <li><input type="checkbox"/> interconnecting tank storage for feed and products, and</li> <li><input type="checkbox"/> loading and unloading installation for tank cars:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> process design</li> <li><input type="checkbox"/> mechanical/equipment</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> civil</li> </ul> </li> </ul> (Nostrification of foreign process documentation)	2007./2008.



# REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
84.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	LPG sphere	Updating technical documentation (usage of TMCP steel, i.e. not ASME material).	2009./2010.
85.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Storage tanks for NHT feed and isopentane product for Isomerization process 2 x 3000m <sup>3</sup>	Conceptual design specified and required for NHT feed and isopentane product.  Process design Detailed engineering <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/equipment</li> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> civil works</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> fire protection</li> <li><input type="checkbox"/> safety in design</li> </ul>	2009./2010.
86.	INA-Ind.nafte, d.d. Zagreb Investicijski centar za modernizaciju rafinerija Savska cesta 41/XV	Rijeka Refinery Urinj		Conceptual design for vacuum residue conversion facilities by thermal cracking: <ul style="list-style-type: none"> <li>- Delayed Coker – DC</li> <li>- Residue Hydrocracker – LC Fining</li> </ul>	2009.
87.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	320-Refinery flare system Smokeless ground flare	Revamping and reconstruction Installation of antipulsation gas distributor	2009.

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Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
88.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Tie-in piping for supplying feedstock and products delivery from Isomerization unit Tie-in piping for utilities and connecting process unit to off-site facilities	Process design Detailed engineering: <ul style="list-style-type: none"> <li><input type="checkbox"/> mechanical/piping</li> <li><input type="checkbox"/> civil works</li> <li><input type="checkbox"/> electrical</li> <li><input type="checkbox"/> instrumentation</li> <li><input type="checkbox"/> fire protection</li> <li><input type="checkbox"/> safety in design; HAZOP</li> <li><input type="checkbox"/> tender documentation</li> </ul>	2009./2010.
89.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	318 Isomerization Section 100 Deisopentanization	Detailed engineering for building of liquid damper <ul style="list-style-type: none"> <li><input type="checkbox"/> nostrification of foreign process design documentation</li> <li><input type="checkbox"/> mechanical</li> <li><input type="checkbox"/> safety in design; HAZOP</li> </ul>	2010.
90.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	320-Refinery flare system Water seal drum 320-V-002	Detailed engineering for reconstruction of water seal drum 320-V-002 Detailed process-mechanical engineering for reconstruction of water seal drum 320-V-002 with installation of antipulsation distributor of vapor phase, delivered from John Zinc	2010.
91.	DIOKI d.d. Zagreb, Žitnjak	Zagreb, Žitnjak bb	Implementation of C <sub>3+</sub> fraction to fuel oil system, direct from bottom of deethanizer column	Process design	2010.
92.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Substitute spherical vessels D-20N, D-21N & D-22N, each 1300m <sup>3</sup>	A study on applicability (corrosion assesment) of TMCP corroded plate material of spherical vessels D-20N, D-21N & D-22N	2010.

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Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
93.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	Deisopentanizer 318-C-101 Section 100	Availability study of deisopentanizer column shell material thickness after sulfur corrosion action.	2011.
94.	INA-Ind.nafte, d.d. Zagreb Rafinerija nafte Sisak	Sisak Refinery	Spherical vessel for storage of isopentane product; volume 3000m <sup>3</sup>	Applicability study of ASME material SA-516 Grade 60 for building a sphere for isopentane product from Izomerization unit in Sisak Refinery instead of Rijeka Refinery	2011.
95.	MEBU d.o.o. Netretić bb	Netretić, Croatia	Factory for production of fatty acid methyl esters (FAME)	Detailed engineering for <ul style="list-style-type: none"> <li>❑ interconnection facilities for utility production and off-site facilities,</li> <li>❑ interconnecting tank storage for feed and products, and</li> <li>❑ loding and unloading installation for tank cars:                             <ul style="list-style-type: none"> <li>❑ process design</li> <li>❑ mechanical/equipment</li> <li>❑ mechanical/piping</li> <li>❑ electrical</li> <li>❑ civil</li> </ul> </li> </ul>	2012.
96.	NIS Rafinerija nafte Pančevo	Pančevo	S-1000 S-1700 S-2700 S-3700	Feasibility study Flare gas recovery system	2012./2013.

# REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
97.	NIS Rafinerija nafte Pančevo	Pančevo	S-2200 – Vacuum distillation unit (VDII)	Installation of VFD converters and installation of new type of electric motors (IE3 efficiency class) as drivers on vacuum tower bottoms (vacuum residue) pumps	2013.
98.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	Reconstruction of Refinery flare systems	Process Engineering & Mechanical Pipe Design <ul style="list-style-type: none"> <li>- Basic design</li> <li>- Main engineering</li> <li>- Detailed engineering</li> <li>- Safety at work (HSE) elaborate</li> </ul>	2013./2014.
99.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	Waste Water Treatment Plant Revitalization (WWTP)	Process Design Engineering and Mechanical Design for equipment & pipe <ol style="list-style-type: none"> <li>1. Sour Water Stripper</li> <li>2. Three phase separator replacement</li> <li>3. API separator cover system and skimmer renewal-                             <ul style="list-style-type: none"> <li>- Conceptual design</li> <li>- Main design</li> <li>- Detailed engineering</li> </ul> </li> </ol>	2014./2015.

## REFERENCES

Ord.No.	CUSTOMER	LOCATION	UNIT	CONTENT	YEAR
100.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Sisak	Sisak Refinery	API separator covering (Waste Water Treatment Plant)	Conceptual design, main and detailed engineering for API separator, sludge and oil basin covers <ul style="list-style-type: none"> <li>- Process design</li> <li>- Mechanical / pipe</li> <li>- Mechanical / equipment</li> <li>- Civil</li> <li>- Electrical</li> <li>- Instrumentation &amp; Automation</li> <li>- Fire protection elaborate</li> <li>- Safety at work (HSE) elaborate</li> <li>- Hazardous area classification – report</li> <li>- Plans for mounting of equipment</li> <li>- Getting permission from statal Ex Agency</li> <li>- Tender documentation for materials and labor</li> </ul>	2015.
101.	INA-Ind.nafte,d.d.Zagreb Rafinerija nafte Rijeka	Rijeka Refinery Urinj	Feasibility study for nitrogen production and evaluation of existing system in INA Rijeka Refinery	Feasibility Study for gaseous nitrogen production, which has to contain: Documentation for nitrogen balance in RR with analysis of all amounts; determination of needed nitrogen quantities & purities including installation of new plant/ units for gaseous nitrogen production (for tank farm).	2015.