



WATER AND WASTEWATER TREATMENT

Nº	Customer (Order)	City (State)	Supply Description	Year
1	Petrobras / RPBC Consortio Tomé / Technip (E-10267)	Cubatão (SP)	Equipment supply, engineering and erection supervision for the demineralization system by ion exchange with a flow rate of 200 m ³ /h using a compact heat exchangers bed type. The system consists of: - Cationic exchangers; - decarbonated tower; - Anionic exchanger; - Mixed beds; - Chemical dosing.	2011
2	Vale Alpa Paul Wurth (10111)	Marabá (PA)	Provision of basic engineering for "WTP", water treatment plant for blast furnace washing gas, including degassing tank, clarifier, vacuum filters, cooling tower and set of pumps, metering pumps and chemical set instrumentation / automation package.	2011
3	Vale Alpa Paul Wurth (10111)	Marabá (PA)	Provision of basic engineering from the detection system, alarm and fire fighting in the electrical rooms and local control rooms, as well as providing the basic engineering for the ventilation system and air conditioning for the Hydraulic rooms, electrical rooms and local control rooms for the blast furnace area.	2011
4	Vale Alpa SMS (11009)	Marabá (PA)	Provision of basic engineering for the supply of "Intensive Slab Cooling System", cooling plant for the slabs casting, separating the scale, conditioning the water with filters and cooling tower for reuse.	2011
5	ArcelorMittal Monlevade	Monlevade (MG)	Equipment Supply and Engineering for all water treatment systems in the duplication project to Usina João Monlevade with capacity ranging from 1.2 million tons of steel per year to 2.4 million tons of steel per year. Supply consists of: - Water recirculation system of gas washing from Steelmaking LD; - Recirculation water system of new contact circuit from continuous casting machine; - Recirculation water system of new contact circuit from wire rod mill ; - - Water recirculation system of gas washing from Blast Furnace gas B; - Water recirculation system of no contact circuit from LD Steelmaking; - Water recirculation system of no contact circuit from new continuous casting machine; - Water recirculation system of no contact circuit from wire rod mill; - LD secondary cooling system; - Make up system of demineralized water; - Water recovery Station; -Industrial Water supply system for sintering; - Make-up system of filtered water for all Steel Mill circuit's.	2010
6	Rio Turbio (E-10100)	Santa Cruz (Argentina)	Desmineralization Water Plant for boiler, consisting in Reversis Osmosis and Eletrodeionization and Industrial Waste Water Treatment Plant to Rio Turbio Power Plant (2 x 120 MW)	2010
7	MPX Geração de Energia S.A. (E-09280)	São Luis (MA)	Clarification of Seawater (700 ppm suspended solids) for thermal power plant (360 MW ITAQUI PORT) including: - 2 Clarifiers (total outflow capacity 2,500 m ³ /h); - 2 Centrifuges; - Screens; - Chemical Dosing.	2009



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8	Petrobras / Rnest (E-08239)	Ipojuca (PE)	Supply of Water and Condensate Treatment Plants for Refinery Abreu e Lima – RNEST under EPC (Engineering Procurement and Construction) contract (“turn key” job). Water Treatment Plant: - Flotofilter; - Sludge Dewatering System. Water Reuse - Clarifier; - Activated Carbon Filter System; - Electrolysis Reversal; - Demineralization System by Ion exchange. Condensate Treatment Plant - Coalescent filters; - Precoat filters; - Activated Carbon filters; - Mixed beds.	2009
9	Petrobras / Repar (E-07170)	Araucária (PR)	Supply of Water / Condensate Treatment Plants and auxiliary systems for the Gasoline and Coke/HDT units for Refinery Presidente Getúlio Vargas - REPAR under EPC (Engineering Procurement and Construction) contract (“turn-key” job). Water Treatment Plant 1: - Flotofilter; - Sludge Dewatering System. Water Treatment Plant 2 and 3 (Reuse); - Flotofilter; - Activated carbon filter system; - Electrolysis Reversal; - Demineralization System by Ion exchange. Condensate Treatment Plant - Coalescent filters; - Precoat filters; - Activated Carbon filters; - Mixed beds.	2008
10	Petrobras / Revap (E-06147)	São José dos Campos (SP)	Detailing Project Engineering Services, supply of equipment and materials, construction, manufacturing, and electromechanical assembly, testing, pre-commissioning, assistance to commissioning, start-up and operation aiming to increase on the Modernization of Auxiliary Units from REVAP: WTP - Water Treatment Station (U-514): - Clarification by Dissolved Air Flotation System; - Filtration with Sand Filters and Activated Carbon Filters; - Ultrafiltration Unit; - Reverse Osmosis Demineralization System; - Mixed Beds Polishing System. UTC - Condensate Treatment Unit (U-530): - Condensate Cooling Heat Exchanger; - Filtration System with Pre-cover Filters, Activated Carbon Filter and Cartridge Filters; - Mixed Beds Polishing System.	2007
11	Petrobras / Reduc (E-07010)	Duque de Caxias (RJ)	Supply of water treatment plant (U-1326) for Refinery Duque de Caxias (PLANGÁS Unit) under EPC (Engineering Procurement and Construction) contract (“turn key” job) - Lamella Clarifier; - Ultra Filtration Unit; - Demineralization system by Ion exchange; - Electric substation 3,150 KVA.	2007
12	Thyssen Krupp CSA (E-06018)	Santa Cruz (RJ)	Water distribution system for Blast Furnaces # 1 & 2	2006



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13	Thyssen Krupp CSA (E-06018)	Santa Cruz (RJ)	Emergency water system for Blast Furnaces # 1 & 2 – Capacity: 2,000 m ³ /h	2006
14	Thyssen Krupp CSA (E-06018)	Santa Cruz (RJ)	Water treatment plant and recirculation system for Blast Furnaces # 1 & 2. Capacity: 2,000 m ³ /h	2006
15	Thyssen Krupp CSA (E-06018)	Santa Cruz (RJ)	Cooling water system for Blast Furnaces # 1 & 2: - cooling tower; - heat exchangers; - pumping station (medium voltage)	2006
16	Thyssen Krupp CSA (E-06018)	Santa Cruz (RJ)	Piping interconnection for the cooling systems of the: Blast Furnaces, Copper & Cast Iron Staves, Stoves, Melting Pot bottom and top.	2006
17	Petrobras/Refap UTE CANOAS (E-06012)	Canoas (RS)	Supply of a water treatment system including: - water intake pump station - clarifier for 520 m ³ /h - filtering station - 2 centrifuges for sludge dewatering - Demineralization unit for 150 m ³ /h	2006
18	ArcelorMittal (E-06052)	Juiz de Fora (MG)	Supply of UHR filter type for water treatment of the rolling mill – direct system.	2006
19	ArcelorMittal (E-06048)	Juiz de Fora (MG)	Supply of 01 (one) set of a primary classifier (coarse particles separator) for the revamping of the steel mill (130t).	2006
20	Petrobras / Reduc TERMORIO (E-05016)	Duque de Caxias (RJ)	Supply of water treatment plant with sludge dewatering and drying systems for Refinery Duque de Caxias under EPC (Engineering Procurement and Construction) contract (“turn key” job), including; - lamella clarifier; - ultra filtration unit; - centrifuge for sludge dewatering process; - sludge dryer (“Turbo Dryer”).	2005
21	Petrobras / Regap (E-05133)	Betim (MG)	Electrodialysis Reversal (EDR) Treatment Plant Capacity: 60 m ³ /h per line.	2005
22	Klabin S/A (E-05062)	Telêmaco Borba (PR)	Supply of demineralized water and condensate polishing systems (“turn key” job without civil works), including: - filtration unit (3 filters, capacity 89 m ³ /h each); - reverse osmosis (3 skids, capacity 89 m ³ /h each); - mixed bed (2 sets, capacity 100 m ³ /h each); - condensate polishing unit (3 sets, capacity 140 m ³ /h each).	2005
23	ArcelorMittal Tubarão (E-04104)	Serra (ES)	Sludge Dewatering for the gas scrubbing system – revamping of the steel mill. Capacity: 42 m ³ /h	2004
24	ArcelorMittal Tubarão (E-04034)	Serra (ES)	Water treatment system for the steel plant (revamping). Steel production: 7.5 MTPY. Capacity: 700 m ³ /h	2004
25	Gerdau / Açominas SMS DEMAG (E-04158)	Ouro Branco (MG)	Water treatment plant for direct and indirect recirculation system of the continuous casting machine and beam blank. The direct system is composed by: - scale pit and pumping station; - filtration unit - cooling towers; - sludge treatment unit: thickener, chemical dosing and filter press The indirect system is composed by: - cooling tower and pumping station; - heat exchangers; - water softening unit; - storage tanks.	2004



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26	Petrobras / Repar (E-03049)	Araucária (PR)	Reverse osmosis demineralization system. Capacity: 60 m ³ /h	2003
27	Endesa (E-02033)	Fortaleza (CE)	Water treatment plant (WTP), demineralization, chemical dosing system, drinking water and sludge dewatering system.	2003
28	ArcelorMittal Tubarão Consortio Ferrostaal / Voest Alpine / Paul Wurth (E-03068)	Serra (ES)	Water treatment system for the gas scrubber of Blast Furnace # 3. Steel production: 7.5 MTPY. Capacity: 900 m ³ /h	2003
29	ArcelorMittal Tubarão (E-03043)	Serra (ES)	Conceptual study for the revamping of the sludge dewatering plant – Blast Furnace and steel plant. Steel production: 7.5 MTPY.	2003
30	ArcelorMittal Tubarão (E-03118)	Serra (ES)	Conceptual study for the revamping of the water treatment plant of the steel plant. Steel production: 7.5 MTPY.	2003
31	Rio Polímeros (E-01120)	Duque de Caxias (RJ)	Water demineralization unit (skid mounted), including: - activated carbon filter - ion exchange unit - mixed bed Condensate polishing unit (skid mounted), including: - mixed bed - activated carbon filter Capacity: 2 x 75 m ³ /h	2002
32	Rio Polímeros (E-02029)	Duque de Caxias (RJ)	Automatic potable water filter package, skid mounted. Capacity: 6 m ³ /h	2002
33	Rio Polímeros (E-02023)	Duque de Caxias (RJ)	Water treatment system, comprising: - clarifier - filtration units - chemical dosing. Capacity: 900 m ³ /h	2002
34	ArcelorMittal Tubarão (E-02098)	Serra (ES)	Conceptual study for sludge treatment of the continuous casting mill #1, #2 and #3; vacuum degaseificaton plant and condensate water from RH. Steel production: 7.5 MTPY.	2002
35	Petrobras / Refap (E-01058)	Canoas (RS)	Water treatment by microfiltration and reverse osmosis Capacity: 6 x 100 m ³ /h.	2001
36	CSN – Cia. Siderúrgica Nacional (E-20006)	Volta Redonda (RJ)	Improvement of the wastewater treatment plant for Blast Furnace #3. Capacity: 1,200 m ³ /h. Physical-chemical treatment system of purging. Capacity: 60 m ³ /h	2001
37	Cesan (E-01066/01076/01078)	Vitória (ES)	Wastewater treatment plants for municipalities: Cariacica: 3,220 m ³ /h (323,160 inhabitants) Guarapari: 1,070 m ³ /h (127,245 inhabitants) Vila Velha: 6,955 m ³ /h (679,849 inhabitants) Vitória: 3,514 m ³ /h (261,119 inhabitants).	2001
38	Caema – Cia. Água Esgoto do Maranhão (E-20003)	São Luís (MA)	System for polishing and disinfection of domestic wastewater, comprising: - 4 x 156 kg/day Ozone generator (producing 6.5kg O3/h) - Pumping station - Supervisory/control system.	1999
39	Aracruz Celulose S.A. (E-01080)	Aracruz (ES)	Water treatment system for potable water Capacity: 60 m ³ /h	2001
40	Aracruz Celulose S.A. (E-01051)	Aracruz (ES)	Filtration system – sealing water. Capacity: 222 m ³ /h.	2001



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41	Aracruz Celulose S.A. (E-01009)	Aracruz (ES)	Water demineralization plant by reverse osmosis: - Capacity: 3 x 115 m ³ /h - Pretreatment (softening) - Filters - RO skids - Mixed bed (polishing).	2001
42	Alunorte (E-01068)	Barcarena (PA)	Duplication of clarification and filtration systems – industrial and drinking water. Capacity: 540 m ³ /h and 60 m ³ /h respectively	2001
43	Alunorte (E-01068)	Barcarena (PA)	Clarification and filtration systems – industrial and drinking water. Capacity: 540 m ³ /h and 60 m ³ /h respectively	2001
44	Sabesp – Saneamento Básico do Estado de SP (E-20005)	São Sebastião (SP)	Compact water treatment plant (WTP). Capacity: 180 m ³ /h	2000
45	Sabesp – Saneamento Básico do Estado de SP (E-20004)	Ilhabela (SP)	Compact water treatment plant (WTP). Capacity: 180 m ³ /h	2000
46	Gerdau / Açominas NSC – Nippon Steel Corporation (PRE-0040)	Ouro Branco (MG)	Cooling system for the stove cooler of Blast Furnace #1 Capacity: 2,000 m ³ /h	2000
47	ArcelorMittal Tubarão (PR-1023)	Vitória (ES)	Water filtration and cooling systems for the coke plant. Capacity: 550 m ³ /h	1997
48	Usiminas	Ipatinga (MG)	Water treatment system - continuous casting billet-mold. Capacity: 1,100 m ³ /h	Before 1994
49	Usiminas	Ipatinga (MG)	Treatment of cooling and recirculation water – steel mill #2. Capacity: 25,000 m ³ /h	Before 1994
50	Suzano	Suzano (SP)	Wastewater treatment through mechanical aeration – 36 units with 25 HP.	Before 1994
51	Solvay (F-3784)	Santo André (SP)	Physical-chemical treatment of wastewater for a PVC plant. Capacity: 6,000 m ³ /h	Before 1994
52	Siderúrgica Mendes Jr.	Juiz de Fora (MG)	Cooling, treatment and recirculation systems for treatment of the hot rolling mill water (ultra high rate filtration). Capacity: 3,000 m ³ /h Cooling, treatment and recirculation systems for treatment of the steel plant water (ultra high rate filtration). Capacity: 500 m ³ /h	Before 1994
53	Santa Terezinha	Gov. Valadares (SP)	Wastewater treatment through aeration lagoon, sedimentation. Capacity: 500 m ³ /h	Before 1994
54	Santa Terezinha	Bragança Paulista (SP)	Wastewater treatment through aeration and sedimentation. Capacity: 400m ³ /h	Before 1994
55	Ripasa (F-3622)	Embu (SP)	Biologic wastewater treatment. Capacity: 400 m ³ /h	Before 1994
56	Riocell	Guaíba (RS)	Water softening units. Capacity: 2 x 150 m ³ /h	Before 1994
57	Riocell (F-2919 / F-2920)	Guaíba (RS)	Automatic demineralization and chemical dosing. Capacity: 120 m ³ /h	Before 1994
58	Petrobras / Reduc	Duque de Caxias (RJ)	Oily water treatment using lamella separator, pressurization and chemical dosing. Capacity: 500 m ³ /h	Before 1994



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59	Petrobras/ Reduc (F-2217)	Duque de Caxias (RJ)	Automatic gravity filtration. Capacity: 400 m ³ /h Automatic demineralization and dechlorination. Capacity: 300 m ³ /h Automatic final polishing. Capacity: 600 m ³ /h	Before 1994
60	Petrobras / Enchova	Campos (RJ)	Oily water treatment – Enchova platform using lamella separator, pressurization and chemical dosing (three units). Capacity: 3 x 197 m ³ /h	Before 1994
61	Petrobras / Cotebig	Angra dos Reis (RJ)	Oily water treatment through flotation. Capacity: 1,100 m ³ /h	Before 1994
62	Petrobras / Cofen	Araucária (PR)	Automatic demineralization. Capacity: 115 m ³ /h. Automatic condensate polishing. Capacity: 210 m ³ /h	Before 1994
63	Petrobras / Cherne	Campos (RJ)	Seawater treatment through chemical dosing and filtration. Capacity: 1,000 m ³ /h	Before 1994
64	Petrobras (F-3310)	Campos (RJ)	Seawater desalination through reverse osmosis, including chlorination system – Pargo I, Vermelho I, II and III and Carapeba I and II platforms. Capacity: 6 x 10 m ³ /h	Before 1994
65	Petrobras (F-3252)	Campos (RJ)	Injection-water treatment: three fine-particle filters, skid mounted – pargo I platform. Capacity: 217 m ³ /h	Before 1994
66	Petrobras (F-3231)	Vitória (ES)	Injection-water treatment, for coarse- and fine-particle filtration, desaeration, skid mounted – Cação III platform. Capacity: 250 m ³ /h	Before 1994
67	Klabin (IKPC)	Monte Alegre (PR)	Automatic demineralization units. Capacity: 3 x 150 m ³ /h. Condensate polishing. Capacity: 3 x 150 m ³ /h	Before 1994
68	Klabin (IKPC)	Monte Alegre (PR)	Clarification. Capacity: 5,000 m ³ /h	Before 1994
69	Inpacel (F-3704)	Arapoti (PR)	Wastewater treatment through activated sludge, double stage. Capacity: 470 m ³ /h	Before 1994
70	Inpacel (F-3705)	Arapoti (PR)	Dosing, clarification and filtration. Capacity: 800 m ³ /h	Before 1994
71	ArcelorMittal Tubarão	Vitória (ES)	Automatic demineralization units. Capacity: 2 x 140 m ³ /h	Before 1994
72	ArcelorMittal Tubarão	Vitória (ES)	Drinking water treatment. Capacity: 550 m ³ /h. Clarification and filtration. Capacity: 3,550 m ³ /h Sludge dewatering through vacuum and pressure filters. Capacity: 200 m ³ /h	Before 1994
73	CSN – Cia. Siderúrgica Nacional	Volta Redonda (RJ)	Treatment of recirculation water from hot-strip mill. Capacity: 4,400 m ³ /h	Before 1994
74	CSN – Cia. Siderúrgica Nacional	Volta Redonda (RJ)	Treatment of water for low pressure steam generator through demineralization. Capacity: 250 m ³ /h	Before 1994
75	Cosipa – Cia. Siderúrgica Paulista	Cubatão (SP)	Water treatment from blast furnaces 1 and 2, coarse-particle classification and removal, aeration, dosing, flocculation, vacuum dewatering. Capacity: 1,600 m ³ /h	Before 1994



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76	Cosipa – Cia. Siderúrgica Paulista	Cubatão (SP)	Water treatment and recirculation system of continuous casting billet-mold. Capacity: 12,000 m³/h	Before 1994
77	Cosipa – Cia. Siderúrgica Paulista	Cubatão (SP)	Cooling system, water treatment and recirculation of hot-strip mill. Capacity: 1,800 m³/h	Before 1994
78	Cosipa – Cia. Siderúrgica Paulista	Cubatão (SP)	Automatic demineralization, cation/anion/mixed bed. Capacity: 260 m³/h	Before 1994
79	Copesul	Triunfo (RS)	Treatment of organic wastewater from south petrochemical area, through equalization, mechanical aeration, sludge drying, dosing, tertiary treatment and land farming. Capacity: 1,230 m³/h	Before 1994
80	Copene – Petroquímica do Nordeste S.A. (F-3710)	Camaçari (BA)	Equipment for enlarging the water pretreatment unit, comprising of clarification, filtration, dosing and polishing. Capacity: 7,300 m³/h	Before 1994
81	Copene – Petroquímica do Nordeste S.A. (F-3500)	Camaçari (BA)	Enlargement of existing demineralization unit. Capacity: 600 m³/h	Before 1994
82	Cinal	Marechal Deodoro (AL)	Wastewater treatment through aeration, pumping, screening, sedimentation and thickening, including land farming. Capacity: 300 m³/h	Before 1994
83	Cia. Suzano de Papel	Suzano (SP)	Clarification and filtration. Capacity: 5,000 m³/h Demineralization. Capacity: 120 m³/h	Before 1994
84	ArcelorMittal	João Monlevade (MG)	Treatment of the water for scrubbing gases in the steel industry. Capacity: 600 m³/h	Before 1994
85	Champion (F-3988)	Mogi Guaçu (SP)	Wastewater treatment – aerated lagoon, 22 Aqua-jet aerators, 25 HP.	Before 1994
86	Champion	Mogi Guaçu (SP)	Traveling water screens (TWS), wastewater treatment through grit removal, sedimentation and mechanical aeration. Capacity: 4,800 m³/h	Before 1994
87	Cetrel (F-1983)	Camaçari (BA)	Industrial and domestic sewage treatment through mechanical aeration. Capacity: 2,592 m³/h	Before 1994
88	Cenibra (F-3316)	Belo Oriente (MG)	Clarification and filtration. Capacity: 9,000 m³/h Automatic demineralization. Capacity: 185 m³/h Primary wastewater treatment. Capacity: 8,330 m³/h Automatic softening. Capacity: 200 m³/h	Before 1994
89	Celpav – Cia. Celulose e Papel Votorantim	Luís Antônio (SP)	Dosing, clarification and filtration semiautomatic systems. Capacity: 3,000 m³/h	Before 1994
90	Celpav – Cia. Celulose e Papel Votorantim (F-3597)	Luís Antônio (SP)	Wastewater treatment through activated sludge, double stage. Capacity: 2,180 m³/h	Before 1994
91	Bahia Sul Celulose (F-4003)	Mucuri (BA)	Biological wastewater treatment through mechanical aeration. Capacity: 1,850 m³/h	Before 1994
92	Aracruz Celulose S.A. (F-3617)	Aracruz (ES)	Wastewater treatment through aerated lagoon – fourteen 40 HP filstar aerators and accessories. Capacity: 1,400 m³/h	Before 1994
93	Aracruz Celulose S.A.	Aracruz (ES)	Wastewater treatment, screening, sedimentation, sludge treatment. Capacity: 1,600 m³/h	Before 1994



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94	Aracruz Celulose S.A.	Aracruz (ES)	Clarification and filtration. Capacity: 6,900 m ³ /h Automatic demineralization. Capacity: 3 x 115 m ³ /h Condensate Polishing. Capacity: 2 x 250 m ³ /h	Before 1994
95	Alunorte (F-4229)	Barcarena (PA)	Desmineralization 2X70. Capacity: 140 m ³ /h	Before 1994
96	Alcoa / Alumar	São Luiz (MA)	Clarification and Filtration systems Capacity: 1,250 m ³ /h	Before 1994
97	Gerdau / Açominas	Ouro Branco (MG)	Recirculation system for coke plant water and biological treatment. Capacity: 2,400 m ³ /h	Before 1994
98	Gerdau / Açominas	Ouro Branco (MG)	Water treatment and recirculation system for coke plant and blast furnaces blasting. Capacity: 15,000 m ³ /h	Before 1994
99	ArcelorMittal	Timóteo (MG)	Treatment of blast furnace cooling water. Capacity: 120 m ³ /h	Before 1994