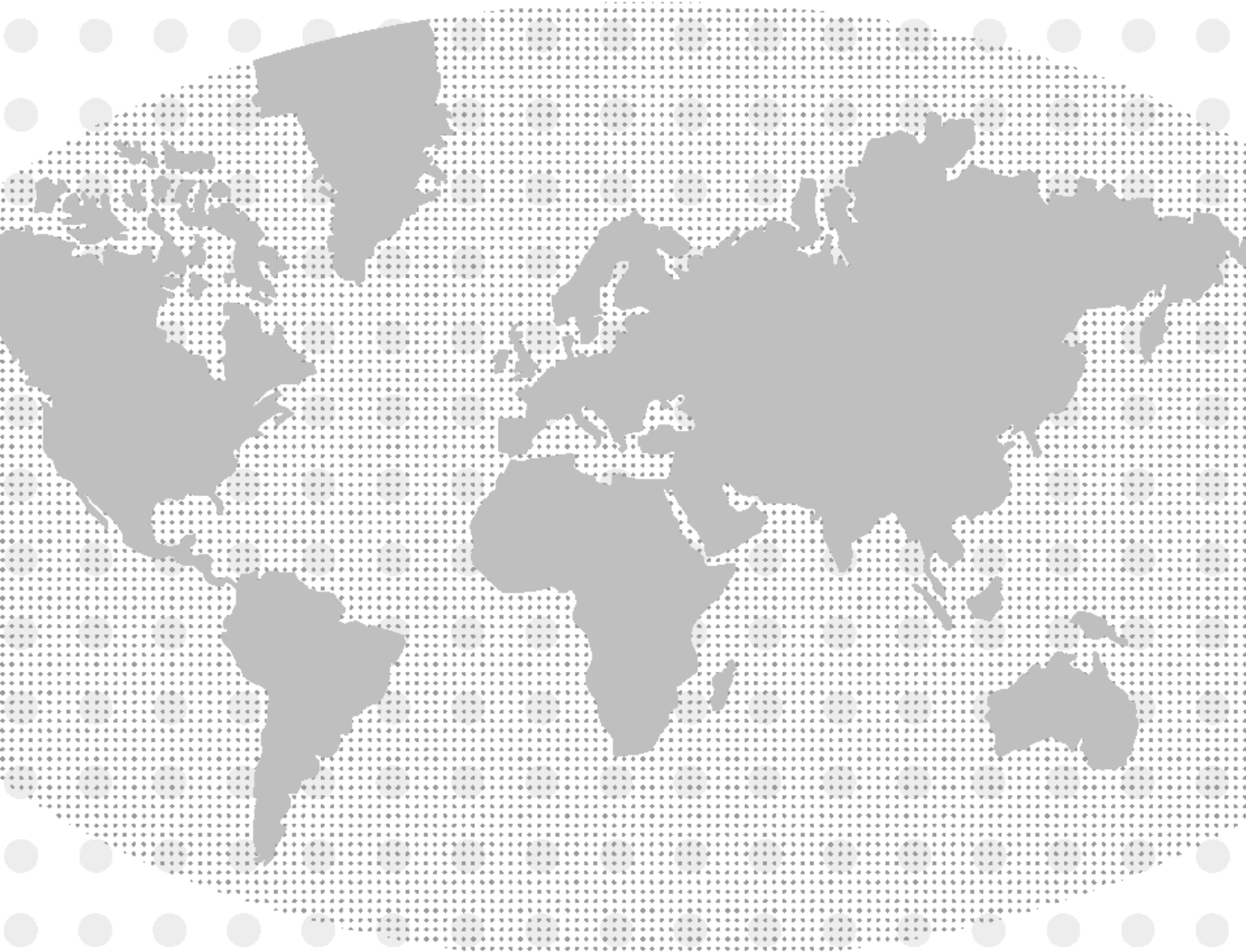


# Rectifier Equipment Reference List



FRIEM S.p.A. -  
Via Edison, 1 - 20090 Segrate - Milano - Italy  
Telephone: +39 02 213 33 41  
Telefax: +39 02 26 92 30 36  
E-mail: [info@friem.com](mailto:info@friem.com)  
Internet: [www.friem.com](http://www.friem.com)



**SINCE MORE THAN FIFTY YEARS IN**  
**THE DIRECT CURRENT ALL OVER THE**  
**WORLD**

***Total Number of Rectifiers Manufactured  
up to Job N° 421***

Country	INDUSTRY APPLICATIONS		TRACTION APPLICATIONS		TOTAL	
	Projects N°	Rectifiers N°	Projects N°	Rectifiers N°	Projects N°	Rectifiers N°
ITALY	103	186	17	45	120	231
EUROPE	88	148	1	2	89	150
EXTRAEUROPE	246	437	1	9	244	445
<b>TOTAL</b>	<b>435</b>	<b>768</b>	<b>19</b>	<b>56</b>	<b>454</b>	<b>824</b>



**LIST OF THE**  
**PROJECTS**  
**UP TO JOB**  
**N° 421**

In the next pages are listed all the projects with the indication of:

- Manufacturing Year
- Job Number (as per our records)
- Rectifier DC Voltage
- Rectifier DC Current
- Quantity of Rectifiers per Project
- Rectifier Type: (where: D = Diode Type Rectifiers; T = Thyristor Type Rectifiers)
- Application



## Rectifier Equipment Reference List

October 2005

### ITALY

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (* )	Application
1955	1	Minotti Milano / Italy	110	3.500	1	D	CopperNickel
	2	Chemioterapico Italiano Lodi / Italy	52	2.600	1	D	Hydrogen
1956	10	Industria Gas Tecnici Cuneo / Italy	120	2.500	1	D	Hydrogen
1957	11	Industrie Chimiche Sadaf Fino Mornasco, Como / Italy	70	2.100	1	D	Hydrogen
	22	S.M.I.C. Varallo Pombia, Novara / Italy	60	2.600	1	D	Hydrogen
1958	24	I.N.D.E.L. Barletta, Bari / Italy	50	1.500	1	D	Chlorine
1959	20	Industrie Chimiche Sadaf Fino Mornasco, Como / Italy	92	2.600	1	D	Hydrogen
	21	Industrie Chimiche Sadaf Fino Mornasco, Como / Italy	110	1.000	1	D	Hydrogen
1960	27	Van den Berg S.p.A. Crema, Cremona / Italy	60	4.500	1	D	Hydrogen
	29	S.A.F.A. Milano / Italy	130	2.500	1	D	Battery forming
	30	Terni S.p.A. Terni / Italy	120	2.500	1	D	Hydrogen
1961	38	Montefluos S.p.A. Bussi, Pescara / Italy	245	100.000	3	D	Chlorine
	42	Terni S.p.A. Terni / Italy	170	4.500	1	D	Hydrogen
	43	Falck S.p.A. Milano / Italy	50	2.500	1	D	Hydrogen
1962	48	Rumianca S.p.A.- Cagliari Assemini, Cagliari / Italy	210	110.000	2	D	Chlorine
	52	Siemens Telecomunicazioni Palermo / Italy	160	4.500	1	D	Hydrogen
	53	Industrie Chimiche Sadaf Fino Mornasco, Como / Italy	100	4.500	1	D	Hydrogen
	55	S.M.I.C. Varallo Pombia, Novara / Italy	60	3.000	1	D	Hydrogen
1963	60	Officine Elettromeccaniche Lombarde S.p.A. Legnano, Milano / Italy	630	1.750	1	D	Research
1964	68	Pechiney-St. Gobain - Paris for Soc. Idroel. di Borgofranco Torino / Italy	300	14.000	2	D	Chlorate

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (* )	Application
1965	70	Montedison S.p.A. Porto Marghera, Venezia / Italy	620	13.000	1	D	Chlorine
1966	80	ALCAN Allum. Canada for Alcan Allum. Italy Borgofranco d'Ivrea, Torino / Italy	540	32.000	1	D	Aluminium
1967	90	Montedison S.p.A. Porto Marghera, Venezia / Italy	620	13.000	1	D	Chlorine
	91	Caffaro S.p.A. Brescia / Italy	200	110.000	2	D	Chlorine
	92	Società Italiana Resine S.p.A. - Milano Porto Torres, Sassari / Italy	150/300	200.000	3	D	Chlorine
1969	105	Saibi S.p.A. Margherita di Savoia, Foggia / Italy	45	2.500	1	D	Hydrogen
	106	ANIC S.p.A. Gela, Caltanissetta / Italy	260	225.000	3	D	Chlorine
	107	S.I.A.D. - Società Italiana Acetilene Derivati Bergamo / Italy	220	4.400	1	T	Hydrogen
	108	Olivotto S.A.S. - Torino for Alitalia Roma Fiumicino / Italy	380 ac	3x2.200	5	T	Heating
	109	Montedison S.p.A. Merano, Bolzano / Italy	60	3.000	1	T	Hydrogen
	112	Rumianca S.p.A. - Cagliari Assemini, Cagliari / Italy	210	20.000	1	D	Chlorine
1970	113	FIAT S.p.A. - Torino Mirafiori, Torino / Italy	16	10.000	1	T	Plating
	114	FIAT S.p.A. - Torino Termini Imerese, Palermo / Italy	500	10	1	T	Research
	117-a	FIAT S.p.A. - Torino Modugno, Bari / Italy	9	2.000	2	T	Plating
	117-b	FIAT S.p.A. - Torino Modugno, Bari / Italy	16	5.500	3	T	Plating
	117-c	FIAT S.p.A. - Torino Modugno, Bari / Italy	20	20.000	2	T	Plating
	117-d	FIAT S.p.A. - Torino Modugno, Bari / Italy	80	2.000	4	T	Anodic coating
	118-a	FIAT S.p.A. - Torino Mirafiori, Torino / Italy	12	33.500	8	T	Plating
	118-b	FIAT S.p.A. - Torino Mirafiori, Torino / Italy	20	19.500	2	T	Plating
	120-a	FIAT S.p.A. - Torino Mirafiori, Torino / Italy	12	4.200	4	T	Plating
	121	FIAT S.p.A. - Torino Mirafiori, Torino / Italy	12	4.000	2	T	Plating



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1971	125	EniChem Fibre S.p.A. Ottana, Nuoro / Italy	110	4.500	1	T	Hydrogen
	127	Tonolli S.p.A. - Milano Torino / Italy	20	3.000	1	T	Pickling
1972	132	FIAT S.p.A. - Torino Cassino, Frosinone / Italy	300	50	1	T	Electrophoresi
1973	134	Rivoira S.p.A. - Torino S. Salvo, Chieti / Italy	160	4.500	1	T	Hydrogen
	135	Rumianca Sud - Cagliari Assemini, Cagliari / Italy	700	61.000	2	D	Chlorine
	137	Rumianca Sud - Cagliari (expansion) Assemini, Cagliari / Italy	210	100.000	1	D	Chlorine
	138	Euteco S.p.A. Porto Torres, Sassari / Italy	300	50.000	1	D	Chlorine
1974	142	Soc. Mineraria e Metallurgica di Pertusola Crotone, Catanzaro / Italy	60	600	1	D	Research
	143	AGI - Milano for Selenia Napoli / Italy	10	7.000	5	T	Plating
	146	Deltagalvano - Milano for Selenia Roma / Italy	10	750	3	T	Plating
	147-a	AGI - Milano for Selenia Napoli / Italy	80	1.000	1	T	Plating
	147-b	AGI - Milano for Selenia Napoli / Italy	30	3.500	2	T	Plating
	147-c	AGI - Milano for Selenia Napoli / Italy	10	6.800	15	T	Plating
	148	Deltagalvano - Milano for Selenia Roma / Italy	10	1.000	1	T	Plating
	149	AEM Azienda Energetica Municipale Milano / Italy	600	16.000	4	D	Traction
	150	SGS-ATES Agrate - Milano Catania / Italy	300	3.800	1	T	Hydrogen
	153	Oronzio De Nora S.p.A. Milano / Italy	10	300	1	T	Research
1975	155	Castagnetti - Grugliasco, Torino for ENEL Melilli, Siracusa / Italy	260	1.750	1	T	Sea Water
	156	Castagnetti - Grugliasco, Torino for ENEL Fiume Santo / Italy	195	800	1	T	Sea Water
	159	C.T.I.P. S.p.A for Liquichimica Biosintesi Reggio Calabria / Italy	180	48.000	6	T	Citric acid



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1976	162	Euteco S.p.A. - Milano Sant'Eufemia, Reggio Calabria / Italy	710	12.000	1	T	Hydrochloric Acid
1977	173	Alumetal S.p.A. Porto Marghera, Venezia / Italy	130	2.000	1	T	Sea Water
1979	188	Montedison S.p.A. - Milano Porto Marghera, Venezia / Italy	340	100.000	1	D	Chlorine
	189	Morgexcarbo S.p.A. - Milano Morgex, Aosta / Italy	140	50.000	1	D	Graphite
1980	198	Soc. Idroelettrica Borgofranco Borgofranco d'Ivrea, Torino / Italy	300	7.000	1	T	Chlorate
	203	Cassa del Mezzogiorno Saline Joniche, Reggio Calabria / Italy	135	2.700	1	T	Sea Water
	206	SGS-ATES - Agrate, Milano Catania / Italy	300	3.800	1	T	Hydrogen
1981	207	Caffaro S.p.A. - Milano (expansion) Brescia / Italy	120	77.000	1	D	Chlorine
	208	ENEL - Roma Torrevaldaliga, Roma / Italy	90	8.800	2	T	Sea Water
1982	213	AEM - Azienda Energetica Municipale Milano / Italy	575	2.000	1	D	Traction
	226-a	Samim S.p.A. - Roma Porto Marghera, Venezia / Italy	15	15.000	1	T	Copper
	226-b	Samim S.p.A. - Roma Porto Marghera, Venezia / Italy	40	12.000	1	T	Copper
1983	227	Snamprogetti - Milano for Aramco Zuluf / Saudi Arabia	70	520	2	T	Sea Water
	228	Italimpianti S.p.A. - Genova Sitra / Bahrain	130	2.700	3	T	Sea Water
	229	Enoxy Chimica S.p.A. - Milano Assemini, Cagliari / Italy	210	60.000	1	D	Chlorine
	230	Samim S.p.A. - Roma (expansion) Porto Vesme, Cagliari / Italy	275	200.000	2	D	Zinc
	234	Soc. Electrochimica Solfuri e Cloroderivati Tavazzano, Milano / Italy	380	10.000	1	T	Chlorine
	237	Van den Bergh S.p.A. - Milano Crema, Cremona / Italy	60	4.500	1	T	Hydrogen
	239-a	Biosint S.p.A. Sermoneta, Latina / Italy	180	3.500	1	T	Organic Products
	239-b	Biosint S.p.A. Sermoneta, Latina / Italy	72	3.500	1	T	Organic Products
1984	248	Dynamit Nobel Silicon S.p.A. - Novara Merano, Bolzano / Italy	400	40.000	4	T	Silicon monocristal

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: [info@friem.com](mailto:info@friem.com)



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (* )	Application
1985	251	EniChem - Milano Assemini, Cagliari / Italy	500	1.000	1	T	Electrolytic polarizing
	252	Samim Abrasivi S.p.A. - Milano S. Michele all'Adige, Trento / Italy	120	3.500	1	T	Carborundum
	253	AEM - Azienda Energetica Municipale Milano / Italy	575	20.000	5	D	Traction
1986	258	AEM - Azienda Energetica Municipale Milano / Italy	575	2.000	1	D	Traction
	260	SOL Industrie S.p.A. - Monza San Martino Buon Albergo, Verona / Italy	380 ac	120	1	T	Heater
	262	Soc. Idroelettrica Borgofranco Borgofranco d'Ivrea, Torino / Italy	300	7.000	1	T	Chlorate
	266	EL-CAR Paterson Candy – Milano for ENEL Montalto di Castro, Viterbo / Italy	150	8.000	4	T	Sea Water
	268	Castagnetti S.p.A. - Rivoli, Torino for ENEL Brindisi / Italy	95	8.000	4	T	Sea Water
1987	274	Ercole Marelli Trazione for Intermetro S.p.A. Roma / Italy	1.500	2.000	2	D	Traction
1988	282	C.E.I. - Milano for AEM Milano / Italy	575	8.000	2	D	Traction
1989	286	De Nora Technologies S.p.A. for EniChem Assemini, Cagliari / Italy	700	15.000	1	T	Chlorine
	288	Ercole Marelli Trazione for Intermetro S.p.A. Roma / Italy	1.500	11.700	5	D	Traction
	289	Ercole Marelli Trazione for Ansaldo Sistemi Industriali - Milano for Intermetro S.p.A. Roma / Italy	1.500	11.700	5	D	Traction
	291	AEM - Azienda Energetica Municipale Milano / Italy	575	2.000	1	D	Traction
	295	C.E.I.- Milano for SAVA Alluminio Veneto Fusina, Venezia / Italy	620	42.000	1	D	Aluminium
1990	299	AEM - Azienda Energetica Municipale Milano / Italy	575	8.000	2	D	Traction
	302	Nuova Samim S.p.A. - Roma San Gavino, Cagliari / Italy	±260	±7000	1	T	Lead
1991	310	Nuova Samim S.p.A. - Roma Porto Marghera, Venezia / Italy	30	18.000	1	T	Copper
	314	Nuova Samim S.p.A. - Roma Porto Marghera, Venezia / Italy	15	15.000	1	T	Copper
1992	315	Samatec S.p.A. Saline di Volterra, Pisa / Italy	135	30.000	1	T	Chlorine

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1993</b>	329	C.E.I. - Milano for A.T.M. - Metro Milan Milano / Italy	1.500	2.000	1	D	Traction
	331	Elektra S.p.A. - Roma for Metro Milan Milano / Italy	1.500	2.000	1	D	Traction
	332-a	Tecnimont S.p.A. - Milano for Ausimont Porto Marghera, Venezia / Italy	14	11.000	1	T	Fluor
	332-b	Tecnimont S.p.A. - Milano for Ausimont Porto Marghera, Venezia / Italy	60	3.300	1	T	Fluor
<b>1994</b>	342	EniChem S.p.A. - Milano Priolo, Siracusa / Italy	250	120.000	3	T	Chlorine
<b>1995</b>	350	EniChem S.p.A. - Milano (expansion) Priolo, Siracusa / Italy	250	80.000	2	T	Chlorine
	356	MEMC Electronics Materials S.p.A. - Novara Merano, Bolzano / Italy (expansion)	695 ac	4x(3x3500) ac	4	T	Silicon Polycrystal
<b>1996</b>	359	EniChem S.p.A. - Milano (expansion) Priolo, Siracusa / Italy	250	40.000	1	T	Chlorine
	360	Firema Trasporti/Ercole Marelli Trazione for Metro Roma / Italy	1.500	7.000	3	D	Traction
	363	Firema Trasporti/Ercole Marelli Trazione for Metro Roma / Italy	1.500	7.000	3	D	Traction
	366	MEMC Electronic Materials S.p.A. - Novara Merano, Bolzano / Italy (expansion)	695 ac	2x(3x3500)a c	2	T	Silicon Polycrystal
	370	MEMC Electronic Materials S.p.A. - Novara Merano, Bolzano / Italy (expansion)	695 ac	2x(3x3500) ac	2	T	Silicon Polycrystal
<b>1998</b>	377	EniChem S.p.A. - Milano (expansion) Priolo, Siracusa / Italy	265	60.000	1	T	Chlorine
<b>2000</b>	389	EniChem S.p.A. - Milano Priolo, Siracusa / Italy	265	120.000	2	T	Chlorine
<b>2001</b>	395	Firema trasporti S.p.A. - Milano per Metro Roma / Italy	1500	4.666	2	D	Traction
<b>2002</b>	398	Schneider Italy Stezzano - Bergamo for ALCOA Europe S.p.A Portoscuso/Italy	30	110.000	2	T	Aluminium Compensation
<b>2003</b>	407	Firema Trasporti S.p.A. for ATM - Metro Milan Milan / Italy	750	16.000	4	D	Traction
<b>2004</b>	409	A.E.M. Milan SS Gadio - Milan / Italy	750	12.000	3	D	Traction



**EUROPEAN COUNTRIES**

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1956	5	Fabrika Ulja Domaca Vrbas / Jugoslavia	81	4.100	1	D	Hydrogen
	6	Servo Mihali Zrenjanin / Jugoslavia	150	4.200	1	D	Hydrogen
1957	12	Fabrika Celuloze i Viskoze Banja Luka / Jugoslavia	55	26.000	4	D	Chlorine
1958	15	Palmafina S.A. Ertvelde Rieme / Belgium	75	2.500	1	D	Hydrogen
1959	19	Acíeries du Temple St. Michel de Maurienne / France	110	3.500	1	D	CopperNickel
1960	35	Tovarna Kemicnik Izdelkov Hrastnik / Jugoslavia	70	45.000	2	D	Chlorine
1961	39	Fabrika Celulose i Papira Sremska Mitrovica / Jugoslavia	55	27.500	1	D	Chlorine
1962	41	OHIS - Organsko Heminska Indutrija Skopje / Jugoslavia	150	45.000	2	D	Chlorine
	44	Alchisarda S.p.A. - Milano Plojesti / Romania	120	2.500	1	D	Hydrogen
	46	Elektrim - Warsaw Tarnów / Poland	500	50.000	3	D	Chlorine
	47	Elektrim - Warsaw Oswieçim / Poland	500	50.000	3	D	Chlorine
	49	Socel, Sociedade Industrial de Celuloses Setúbal / Portugal	80	27.500	1	D	Chlorine
	50	Masinimport - Bucharest Borzesti / Romania	210	100.000	3	D	Chlorine
	51	Koruma Tarim Ilaclari A.S Izmit / Turkey	110	60.000	2	D	Chlorine
1963	58	Misr Chemical Industries Alexandria / Egypt	240	2x2.880	2	D	Hydrogen Peroxide
	59	La Métallo Chimique Beerse,Turnhout / Belgium	100	12.000	1	D	Copper
	61	Elektrim - Warsaw Nowy Sacz / Poland	260	100.000	2	D	Graphite
1966	76	Masinimport - Bucharest Rimnicu Vilcea / Romania	220	220.000	4	D	Chlorine
	79	Electroquímica del Noroeste S.A. Pontevedra / Spain	120	77.000	2	D	Chlorine
	82	Electroquímica del Cinca S.A. Monzón / Spain	115	16.000	1	D	Chlorine



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1967</b>	87	EIASA Energia e Industrias Aragonesas S.A. Vilaseca, Tarragona / Spain	110	150.000	3	D	Chlorine
	88	Pechiney St. Gobain - Paris Wasquehal, Lille / France	450	14.000	1	D	Chlorine
	89	Industriysko Polyprivredni Kombinat Vrbas / Jugoslavia	115	4.500	1	D	Hydrogen
	93	La Métallo Chimique Beerse, Turnhout / Belgium	150	±2x24.000	1	T	Copper
<b>1968</b>	96	La Métallo Chimique Beerse, Turnhout / Belgium	200	1.600	1	T	Copper
	97	Metarom - Bucharest Slatina / Romania	132	160.000	2	D	Graphite
	100	Electroquímica Andaluza S.A. Ubeda / Spain	95	90.000	2	D	Chlorine
<b>1970</b>	115	Internazionale Holding FIAT - Torino Istanbul / Turkey	500	10	1	T	Research
	116	EIASA Energia e Industrias Aragonesas S.A. Vilaseca, Tarragona / Spain (expansion)	110	50.000	1	D	Chlorine
	119	Metarom - Bucharest (expansion) Slatina / Romania	132	80.000	1	D	Graphite
<b>1971</b>	123	EIASA Energia e Industrias Aragonesas S.A. Huelva / Spain	140	250.000	3	D	Chlorine
	124	SICOM S.p.A. - Milano for G.I.E., for TEK Seyitomer, Ankara / Turkey	20	2.200	1	D	Hydrogen
	126	Romchim - Bucharest for Grupul Industrial de Chimie Rimnicu Vilcea / Romania	240	440.000	4	D	Chlorine
<b>1972</b>	130	Technoexport - Praha Spolana Neratovice / Czechoslovakia	260	330.000	3	D	Chlorine
<b>1973</b>	133	Sociedad Anonima Cros Flix, Tarragona / Spain	135	220.000	2	D	Chlorine
	136	Romchim - Bucharest (expansion) Rimnicu Vilcea / Romania	220	55.000	1	D	Chlorine
	140	EIASA Energia e Industrias Aragonesas S.A. Vilaseca, Tarragona / Spain	150	250.000	3	D	Chlorine
	141	Electricité de France E.d.F. Le Havre / France	130	3.500	1	T	Hydrogen
<b>1974</b>	145	Metarom - Bucharest (expansion) Slatina / Romania	132	160.000	2	D	Graphite
	154	Akzo Engineering / Holland	35	800	1	T	Sea Water

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1975	158	Matroz, Fabrica Celuloze i Papira Sremska Mitrovica / Jugoslavia	55	79.000	2	T	Chlorine
1976	163	Statens Vattenfallsverk Vällingby Ringhals Nuclar Power Plant / Sweden	200	5.200	2	T	Sea Water
1977	169	Metarom - Bucharest Slatina / Romania	132	400.000	5	D	Graphite
	174	Elektrim - Warsaw (expansion) Nowy Sacz / Poland	260	50.000	1	D	Graphite
1978	177	Petkim Petrokimya A.S. Aliaga Complex, Izmir / Turkey	190	260.000	3	D	Chlorine
	179	Electroquímica de Hernani S.A. San Sebastian, Guipuzcoa / Spain	220	10.000	1	T	Chlorine
	182	ROMCHIM - Bucharest Borzesti / Romania	480	75.000	2	D	Chlorine
	183	ROMCHIM - Bucharest Rimnicu Vilcea / Romania	480	75.000	2	D	Chlorine
1979	191	The Electricity Supply Board Aghada Power Station / Ireland	100	4.400	2	T	Sea Water
1980	199	Koruma Tarim Ilaclari A.S. (expansion) Izmit / Turkey	80	100.000	1	D	Chlorine
	202	Degrémont - Bilbao for Cia Sevillana de Electricidad Algeciras / Spain	150	2.000	1	T	Sea Water
1982	216	Electricidade de Portugal Setubal / Portugal	95	7.400	4	T	Sea Water
	224	Degrémont S.A. for E.d.F. Gravelines / France	180	8.000	2	T	Sea Water
1983	232	Mannesman Ind. Iberica for Cia Sevillana de Electricidad Los Barrios / Spain	180	1.350	1	T	Sea Water
	233	Mannesman Ind. Iberica for Endesa Almeria / Spain	195	2.100	1	T	Sea Water
	236	Alby Klorat AB - Avesta Alby / Sweden	275	55.000	1	T	Chlorate
1984	245	Ansaldo Meccanica Nucleare - Genova Cernavoda / Romania	25	900	1	T	Hydrogen
1985	254	CROS S.A. - Barcelona (expansion) Flix, Tarragona / Spain	45	220.000	2	D	Chlorine
1986	264	Kema Nord Blekkemi for Eka Nobel Stockvik / Sweden	256	75.000	1	T	Chlorate
1987	271	S.I.A.T.E.M. - Padova for Hoechst - Germany Rothe Erde / Germany	880	2.000	1	T	Steel induct. hardening

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1988	280	SEIT S.A. for Electroquímica del Cinca Monzón / Spain	300	60.000	2	T	Chlorine
1989	287	3M Belgium S.A. Antwerp / Belgium		proprietary			Chemical Plant
	296	Panclor - Luganofor North Ireland Electr. Ltd. Ballylumford Power Station / North Ireland	200	4.800	4	T	Sea Water
	297	De Nora Perm.- Mi for Turkiye Elektrik Kurumu Kemerkooy / Turkey	180	6.900	3	T	Sea Water
1990	301	Donau Chemie A.G. - Wien Brückl / Austria	330	15.000	1	T	Chlorine
	308	Chemical Industry /	87	55.000	1	T	Chlorine
1991	311	Chemical Industry /	155	66.000	1	T	Chlorine
	312-a	E.I.A.S.A.-Energia e Industria Aragonesas S.A. Vilaseca, Tarragona / Spain	450	45.000	1	T	Chlorine
	312-b	E.I.A.S.A.-Energia e Industria Aragonesas S.A. Vilaseca, Tarragona / Spain	325	90	3	T	Polarizer
1993	327	Cuadrec S.A. for Electren - Madrid for RENFE Madrid / Spain	3.300	3.640	2	D	Traction
1994	339-a	De Nora Permelec S.p.A. - Milano for Tovarna Kemicnik Izdelkov Hrasnik / Slovenia	375	13.000	1	T	Chlorine
	339-b	De Nora Permelec S.p.A. - Milano for Tovarna Kemicnik Izdelkov Hrasnik / Slovenia	240	150	1	T	Polarizer
1996	367	Falconbridge Nikkelverk A.S. Kristiansand / Norway	600	30.000	1	T	Nickel
1998	374	Akzo Nobel for Eka Chemicals Rana A/S - Bohus, Sweden Mo i Rana / Norway	164	84.000	1	T	Sodium Chlorate
	380	Inverpower - Canada for Chemical Industry /	750	108.000	2	D	Chlorine
	382	De Nora S.p.A - Milano for Klor Alkali Izmit / Turkey	480	18.000	1	T	Chlorine
1999	384	Falconbridge Nikkelverk A.S. (expansion) Kristiansand / Norway	300	25.000	1	T	Cobalt
1996	367	Falconbridge Nikkelverk A.S. Kristiansand / Norway	600	30.000	1	T	Nickel
1998	374	Akzo Nobel for Eka Chemicals Rana A/S - Bohus, Sweden Mo i Rana / Norway	164	84.000	1	T	Sodium Chlorate

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## *Rectifier Equipment Reference List*

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (* )	Application
<b>1999</b>	386	Moltech S.A. Carouge, Geneve / Switzerland	20	20.000	1	T	Aluminium
<b>2000</b>	387	Ruhr Zink GmbH Datteln / Germany	415	80.000	1	T	Zinc
<b>2001</b>	391	Aragonesas Industrias y Energia, S.A. Sabiñanigo / Spain	30	20.000	1	T	Chlorine
	392	Electroquímica de Hernani, S.A. Hernani / Spain	250	2x10.800	1	T	Chlorine
	393	Termokimik Corporation - Milano Thermal Power Plant Iskenderun / Turkey	170	8.200	2	T	Chlorate
	394	UMICORE (ex Union Minière) M.V. Hoboken / Belgium	260	44.000	2	T	Copper electrowinning
<b>2002</b>	401	Tessengerlo Group Bruxelles / Belgium for Tessengerlo Plant /Belgium	270	100.000	2	D	Chlorine
<b>2003</b>	405	Falconbridge Nikkelverk A.S. (expansion) Kristiansand / Norway	600	12.000	1	T	Copper
<b>2004</b>	414	Norddeutsche Affinerie Lünen / Germany	450	30.000	1	T	Copper
	415	Tamini Trasformatori - Melegnano for UCAR - Lille / France	220	150.000	1	D	Graphite
<b>2005</b>	421	Timcal Ltd Bodio / Switzerland	150	20.000	1	T	Graphite



**EXTRA-EUROPE COUNTRIES**

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (* )	Application
<b>1956</b>	3	Vegetable Oil Extraction Company Ltd. Baghdad / Iraq	75	2.500	1	D	Hydrogen
	4	Vegetable Oil Extraction Company Ltd. Baghdad / Iraq	220	2.500	1	D	Hydrogen
	7	Pennwalt S.A. Santa Clara / Mexico	120	50.000	4	D	Chlorine
	8	Borgonovo Hermanos Cia San Salvador / El Salvador	75	2.500	1	D	Hydrogen
	9	Extracted Oils & Derivatives Co. Alexandria / Egypt	75	2.500	1	D	Hydrogen
<b>1957</b>	13	Champion S.A. São Paulo / Brazil	35	40.000	4	D	Chlorine
	14	E.F.I.C.E. S.A. Montevideo / Uruguay	55	15.000	1	D	Chlorine
<b>1958</b>	16	Monsanto Andes Mendoza / Argentina	50	50.000	2	D	Chlorine
	17	Companhia Electroquímica de Osasco São Paulo / Brazil	285	1.200	1	D	Hydrogen
	18	Companhia Electroquímica de Osasco São Paulo / Brazil	285	1.200	1	D	Hydrogen
	23	Companhia Celulose Ultramar - Luanda Alto Cotumbela / Angola	50	25.000	1	D	Chlorine
	25	Aceites y Grasas Venezolanas c.a. Caracas / Venezuela	85	2.500	1	D	Hydrogen
<b>1960</b>	26	Misr Chemical Industries El Mex, Alexandria / Egypt	190	50.000	2	D	Chlorine
	28	Organoquímica Mexicana México D.F. / Mexico	150	2.500	1	D	Hydrogen
	31	Bataan Pulp and Paper Mills Bataan / Philippines	23	19.000	1	D	Chlorine
	32	Ittehad Chemicals Lahore / Pakistan	150	60.000	2	D	Chlorine
	33	International Chemicals Industries Inc. Manila / Philippines	150	60.000	2	D	Chlorine
	34	Société Nationale Tunisienne de Cellulose Kasserine / Tunisia	50	30.000	1	D	Chlorine
	36	Pazargad Chemical Co. Abadan / Iran	50	45.000	2	D	Chlorine



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1961	37	Morton Salt Company Puerto Rico / Puerto Rico	100	60.000	2	D	Chlorine
	40	Química del Pacifico S.A. Lima / Peru	140	50.000	2	D	Chlorine
1962	45	Carbocloro Industrias Químicas Ltd. Cubatão, São Paulo / Brazil	260	90.000	3	D	Chlorine
	45-1	Carbocloro Industrias Químicas Ltd. Cubatão, São Paulo / Brazil (expansion)	260	30.000	1	D	Chlorine
	54	Ledesma S.A. Buenos Aires / Argentina	90	60.000	2	D	Chlorine
1963	56	Vegetable Oil Extraction Co. Baghdad / Iraq	220	2.500	1	D	Hydrogen
	57	Grasas y Aceites Vegetales Ltda. Barranquilla / Colombia	150	4.500	1	D	Hydrogen
	58	Misr Chemical Industries Alexandria / Egypt	240	2x2.880	2	D	Hydrogen Peroxide
	62	Extracted Oils & Derivatives Co. Alexandria / Egypt	150	4.500	1	D	Hydrogen
	63	The Modern Food Co. Alexandria / Egypt	75	2.500	1	D	Hydrogen
	64	Industria Química del Istmo S.A. Coatzacoalcos, Veracruz / Mexico	150	100.000	3	D	Chlorine
1964	65	Chemical Industries (Far East) Ltd. / Singapore	140	60.000	2	D	Chlorine
	66	Grasas y Aceites S.A. Managua / Nicaragua	140	2.500	1	D	Hydrogen
	67	Borgonovo Hermanos Cia. San Salvador / El Salvador	70	2.050	1	D	Hydrogen
	69	Bechtel International Ltd. for F.M.C. Chemicals Ltd. Squamish, B.C. / Canada	120	220.000	4	D	Chlorine
1965	69-1	Companhia Quimica do Reconcavo Salvador, Bahia / Brazil	100	60.000	2	D	Chlorine
	71	F.lli Gianazza S.p.A. for Gen. Org. for Industry al-Mansurah / Egypt	75	2.500	1	D	Hydrogen
	72	F.lli Gianazza S.p.A. for The General Organization for Industry Kafr ash-Shaykh / Egypt	75	2.500	1	D	Hydrogen
	73	F.lli Gianazza S.p.A. for Gen. Org. for Industry Sawhaj / Egypt	75	2.500	1	D	Hydrogen



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1966</b>	74	The Standard Mills Co. Ltd. Bombay / India	140	132.000	3	D	Chlorine
	75	Industria Aceitera Hondureña S.A. San Lorenzo / Honduras	60	2.500	1	D	Hydrogen
	77	FMC Corporation – New York South Charleston, W. Va. / U.S.A.	650	37.500	3	D	Chlorine
	78	FMC Corporation – New York South Charleston, W. Va. / U.S.A.	650	25.000	2	D	Chlorine
	81	Grasas y Aceites Vegetales Ltda. Barranquilla / Colombia	150	4.500	1	D	Hydrogen
	83	Cozimmer S.r.l. - Milano for Prommashimport Moscow / U.S.S.R.	8	16.000	3	T	Zinc-plating
	84	Cozimmer S.r.l. - Milano for Prommashimport Moscow / U.S.S.R.	8	16.000	3	T	Zinc-plating
	85	Cozimmer S.r.l. - Milano for Prommashimport Moscow / U.S.S.R.	8	9.000	3	T	Zinc-plating
<b>1967</b>	86	Taiwan Alkali Co. Ltd. Kaohsiung / Taiwan	150	200.000	3	D	Chlorine
	94	Ittehad Chemicals Lahore / Pakistan	150	30.000	1	D	Chlorine
	95	G.I.E. Gruppo Industrie Elettromeccaniche for Esfahan Regional Power Authority Esfahan / Iran	20	2.200	1	D	Hydrogen
<b>1968</b>	99	Wazir Ali Industries Ltd. Hyderabad / Pakistan	360	1.250	1	D	Hydrogen
	100	Electroquímica Andaluza S.A. Ubeda / Spain	95	90.000	2	D	Chlorine
	101	Industria Química del Istmo S.A. (expansion) Coatzacoalcos, Veracruz / Mexico	150	60.000	1	D	Chlorine
	102	Chemicals Limited Charsadda / Pakistan	42	40.000	1	D	Chlorine
<b>1969</b>	103	Alcalis de Colombia - Bogotá Cartagena / Colombia	115	150.000	2	D	Chlorine
	104	Química del Pacifico S.A. (expansion) Lima / Peru	160	60.000	2	D	Chlorine
	110	Cozimmer S.r.l. - Milano for Prommashimport Moscow / U.S.S.R.	10	195.000	22	T	Cr-plating
	111	Chemico Metals Corporation Alton, Illinois / U.S.A.	120	±2x15.000	1	T	Copper



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1970	122	Industria Química del Istmo S.A. (expansion) Coatzacoalcos, Veracruz / Mexico	165	60.000	1	D	Chlorine
1972	128	Petroquímica de Venezuela S.A. Maracaibo / Venezuela	115	155.000	2	D	Chlorine
	129	International Chemical Industries Inc. Manila / Philippines (expansion)	150	30.000	1	D	Chlorine
	131	Química del Pacifico S.A. (expansion) Lima / Peru	160	30.000	1	D	Chlorine
1973	139	Sintesis Química S.A. Santa Catarina, N.L. / Mexico	90	7.000	1	T	Chlorine
1974	144	Techmashimport - Moscow Sterlitamak / U.S.S.R.	170	420.000	4	D	Chlorine
	151	SONIC Soc. Nationale Industries Cellulose Mostaganem / Algeria	90	75.000	2	D	Chlorine
	152	SONIC Soc. Nationale Industries Cellulose Mostaganem / Algeria	160	11.000	1	T	Chlorate
1975	157	Companhia Química do Reconcavo Salvador, Bahia / Brazil	150	40.000	1	D	Chlorine
1976	160	Technomashimport - Moscow Volgograd, Javan / U.S.S.R.	480	60.000	6	T	Hydrochloric Acid
	161	Pestalozza S.p.A. - Milano for The General Company for Paper Industry Dayr az-Zawr / Syria	50	35.000	1	T	Chlorine
	164	G.I.E. S.p.A. - Milano for Tawanir Bandar Abbas / Iran	200	8.000	2	T	Sea Water
1977	165	Techmashimport – Moscow Volgograd / U.S.S.R.	580	75.000	2	D	Chlorine
	166	Babcock & Wilcox – Oberhausen – Germany for Saline Water Conversion Corp. Jeddah / Saudi Arabia	180	13.600	4	T	Sea Water
	167	EFICE S.p.A. Montevideo / Uruguay	170	25.000	1	D	Chlorine
	168	W.P. System - Stockholm Bai Bang / Vietnam	500	6.000	2	T	Chlorine
	170	Pazargad Chemical Company Abadan / Iran	90	112.000	2	D	Chlorine
	171	Atomic Energy Organisation - Tehran Busher Power Plant / Iran	180	36.000	3	T	Sea Water
	172	Soc. Métallurgique Le Nickel Doniambo / New Caledonia	130	2.000	1	T	Sea Water
	175	Aracruz Celulose S.A. Vitória, Espírito Santo / Brazil	520	14.000	4	T	Chlorine

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1978</b>	178	Companhia Química do Reconcavo Salvador, Bahia / Brazil	150	80.000	2	D	Chlorine
	180	Degrémont S.A. - Paris Abu Qir / Egypt	130	12.000	4	T	Sea Water
	181	INCON - Germany for Saline Water Conv. Co. Jeddah / Saudi Arabia	180	17.000	5	T	Sea Water
<b>1979</b>	184	G.I.E. S.p.A. - Milano Sharjah / United Arab Emirates	90	2.000	1	T	Sea Water
	185	Kraftwerk Union AG Suez Power Station / Egypt	225	2.200	1	T	Sea Water
	186	SPIE Batignolles – Fr. for Jordan Fertilizer Ind. Aqaba / Jordan	50	5.000	2	T	Sea Water
	187	G.I.E. S.p.A. - Milano Mohammedia / Morocco	200	4.600	2	T	Sea Water
	190	Grasas y Aceites Vegetales Ltda Barranquilla / Colombia	150	4.500	1	D	Hydrogen
<b>1980</b>	192	Abu Dhabi National Oil Co. Abu Dhabi / United Arab Emirates	26	3.000	1	T	Sea Water
	193	Ansaldo Meccanica Nucleare - Genova Mers-el-Hadjadi / Algeria	170	4.200	2	T	Sea Water
	194	Azzawiya Oil Refining Co. Ras Lanuf / Libya	95	6.300	3	T	Sea Water
	195	Misir Chemical Industries (expansion) El Mex, Alexandria / Egypt	200	25.000	1	T	Chlorine
	196	Mitsubishi H.I. - Japan Doha West / Kuwait	140	90.000	6	T	Sea Water
	197	Pestalozza (Mi) for Ind. Electrochimique Dima La Marsa / Tunisia	40	3.300	1	T	Chlorine
	200	G.I.E. S.p.A. - Milano Sharjah / United Arab Emirates	90	2.200	1	T	Sea Water
	201	BRASMAG Cia Brasileira de Magnésio Belo Horizonte / Brazil	200	5.300	1	T	Magnesium
	204	Degrémont - Paris for Ind. Chim.Magrebine Gabes / Tunisia	80	2.700	1	T	Sea Water
	205	Ansaldo S.p.A. - Genova for Atlax S.A. / Mexico	250	4.500	1	D	DC Network
<b>1981</b>	209	G.I.E. S.p.A. - Milano for Electricité du Liban Zouk / Lebanon	135	2.700	1	T	Sea Water
	210	G.I.E. S.p.A. - Milano for Electricité du Liban Zouk / Lebanon	18	1.900	1	T	Hydrogen



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1981	211	Viscose Cons. - Austria for Perusahaan Negara Kertas Letjes Leces, Probolinggo / Indonesia	252	10.000	1	T	Chlorine
	212	Alexandria Salt & Soda Alexandria / Egypt	200	9.000	2	T	Hydrogen
1982	214	Misr Oils & Soap - Cairo al-Mansurah / Egypt	75	2.500	1	T	Hydrogen
	215	Sitara Chemical Industries Ltd. Faisalabad / Pakistan	60	73.000	2	T	Chlorine
	217	William Boby & Co. El. Trust of South Australia Northern Power Station / Australia	105	2.600	1	T	Sea Water
	218	SIDEM - Soc. Intern. Dessalement Umm al-Nar West / United Arab Emirates	180	7.500	2	T	Sea Water
	219	Italimpianti(Ge) for Sitra Pow. & Water Station Sitra / Bahrain	90	3.300	2	T	Sea Water
	220	Degrémont S.A. - Paris for Energoimport Matanzas / Cuba	90	3.400	2	T	Sea Water
	221	Degrémont S.A. - Paris for E.d.F. Belle Fontaine / Martinique	90	700	1	T	Sea Water
	222	Viscose Consult. - Austria for Basic Chem. Ind. Dammam / Saudi Arabia	280	10.000	1	T	Chlorine
	225	Dragados - Madrid Leyte / Philippines	130	1.800	1	T	Sea Water
1983	227	Snamprogetti - Milano for Aramco Zuluf / Saudi Arabia	70	520	2	T	Sea Water
	228	Italimpianti S.p.A. - Genova Sitra / Bahrain	130	2.700	3	T	Sea Water
	231	G.I.E. S.p.A. - Milano Sharjah / United Arab Emirates	90	2.000	1	T	Sea Water
	235	Idreco S.p.A. - Voghera Bahia Blanca / Argentina	130	4.200	3	T	Sea Water
	238	Costruzioni Meccaniche Bernardini - Roma Zanzibar / Tanzania	55	3.600	1	T	Hydrogen
	240	CTCI Saudi Arabia Ltd. Jeddah / Saudi Arabia	150	1.120	2	T	Sea Water
	241	SIDEM - Soc. Intern. Dessalement Al Taweelah / Saudi Arabia	135	7.200	2	T	Sea Water
	242	Portals Water Treatment - Hong Kong Marine Center / Singapore	90	2.100	2	T	Sea Water
1984	223	Titanor Pte. Ltd. - Singapore for Portals Water Treatment / Hong Kong	180	500	2	T	Sea Water
	243	Water and Electricity Dept. - Abu Dhabi Umm al-Nar East / United Arab Emirates	135	7.480	2	T	Sea Water

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1984</b>	244	Franco Tosi S.p.A. for Jordan Electr. Authority Aqaba / Jordan	185	3.600	2	T	Sea Water
	246	Sonelgaz - Alger Centrale de Ras Djinet / Algeria	180	6.800	2	T	Sea Water
	247	Ansaldo Meccanica Nucleare - Genova for Yemen General Electricity Corp. - Sanaa Al Mukha / Yemen Arab Republic	130	1.000	1	T	Sea Water
	249	Titanor Singapore Pte. for Publ. Utilities Board Senoko Power Station / Singapore	135	8.000	4	T	Sea Water
	250	EL-CAR Paterson Candy - Milano for Belleli S.p.A. - Mantova el Bouri Offshore Field / Libya	72	120	2	T	Sea Water
<b>1985</b>	255	UHDE GmbH - Dortmund - Germany for SEPP Faluja / Iraq	295	16.000	1	T	Chlorine
<b>1986</b>	256	Titanor Singapore Pte. for Taiwan Power Co. Lin Kou / Taiwan	185	2.700	1	T	Sea Water
	257	Filippo Fochi S.p.A. - Bologna Abu Dhabi / United Arab Emirates	135	6.250	5	T	Sea Water
	259	Pazargad Chemical Co. - Tehran Abadan / Iran	90	56.000	1	D	Chlorine
	261	G.I.E. S.p.a. - Milano for Electricité du Liban Zouk / Lebanon	135	2.700	1	T	Sea Water
	263	Alby Quimica Chilena Ltda. - Santiago Talcahuano / Chile	480	30.000	1	T	Chlorate
	265	Intech S.p.A. - Milano for G.I.E. S.p.A. Daura Power Station / Iraq	24	2.500	1	T	Hydrogen
	267	Panclor S.A. - Switzerland Pasir Gudang Power Station / Malaysia	100	1.700	1	T	Sea Water
	269	Saudi European Petrochemical Co. Ibn Zahr - MTB Complex Al Jubail / Saudi Arabia	72	2.500	1	T	Sea Water
<b>1987</b>	270	Titanor Singapore Pte Ltd. for Shell Refinery Tabangao / Philippines	108	300	1	T	Sea Water
	272	UHDE - Ger. for AECI Ltd. - Johannesburg Modderfontein / Rep. South Africa	306	34.600	2	T	Chlorine
	273	Ansaldo S.p.A. - Genova for K.E.S.C. Bin Qasim / Pakistan	105	10.600	2	T	Sea Water
	275	Ansaldo S.p.A. - Genova for Sonelgaz - Alger Mers el Hadjadj / Algeria	170	2.100	1	T	Sea Water
	276	De Nora Techn. - Milano for Chloran Iran Sem Nan / Iran	400	3.200	1	T	Chlorine



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1988	277	Misr Chemical Industries (expansion) El Mex, Alexandria / Egypt	200	50.000	2	T	Chlorine
	278	Castagnetti S.p.A. - Rivoli, Torino for Sadelmi Suez IV / Egypt	185	4.300	1	T	Sea Water
	279	Intech for Italimpianti (Mi) for National Iranian Steel Co. Konarak / Iran	135	800	1	T	Sea Water
	281	CISE S.p.A. - Milano for BATAN - Serpong Java / Indonesia	127	25.200	1	T	Research
	283	De Nora Technologies S.p.A. - Milano for Sitara Chemical Industries Ltd. Faisalabad / Pakistan (expansion)	350	13.000	1	T	Chlorine
	284	Castagnetti S.p.A. (To) for Sonelgaz - Alger Jijel / Algeria	135	5.300	2	T	Sea Water
1989	285	Technipetrol - Milano for Edible Oil Complex Addis Abeba / Ethiopia	140	2.500	1	T	Hydrogen
	290	Titanor Singapore Pte. Ltd. for Chiyoda Corp. Yokohama for Shell East. Petroleum / Singapore	110	1.000	1	T	Sea Water
	292	De Nora Perm. - Mi for Malay Sino Chem. Ind. Ipoh, Perak / Malaysia	60	25.000	2	T	Chlorine
	293	BBT Industry Technologies - Bedfordview for A.E.C.I. Ltd. - Johannesburg Umbogintwini, Durban / Rep. South Africa	145	50.000	1	T	Chlorine
	294-a	De Nora Technologies S.p.A. - Milano for Tecnimont - Milano for Fitofarmaci N.C.I. Moshi / Tanzania	90	3.000	1	T	Chlorine
	294-b	De Nora Technologies S.p.A. - Milano for Tecnimont - Milano for Fitofarmaci N.C.I. Moshi / Tanzania	70	50	1	T	Polarizer
	298	Office National de L'Electricité - Casablanca Mohammedia / Morocco (expansion)	200	2.300	1	T	Sea Water
1990	300	De Nora Permelec (Far East) Ltd. - Singapore for PT Indo-chlor Prakarsa Industries Merak, Java / Indonesia <i>modified in 1996 into</i>	140	100.000	1	T	Chlorine
			280	50.000			
	303-a	De Nora Techn. S.p.A. - Milano for Malay Sino Ipoh, Perak / Malaysia	370	13.000	1	T	Chlorine
	303-b	De Nora Techn. S.p.A. - Milano for Malay Sino Ipoh, Perak / Malaysia	260	300	1	T	Polarizer
	304	Ercole Marelli Trazione - Milano for Metrolima Lima / Peru	1.500	21.060	9	D	Traction
305	Titanor Singapore Pte. for Publ. Utilities Board Senoko Power Station / Singapore (expansion)	135	4.000	2	T	Sea Water	

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1990	306	Sitara Chemical Industries (expansion) Faisalabad / Pakistan	72	40.000	1	T	Chlorine
	307	BBT Industrial Systems - Bedfordview for A.E.C.I. - Johannesburg (expansion) Umbogintwini, Durban / Rep. South Africa	145	50.000	1	T	Chlorine
1991	309	De Nora Permelec S.p.A. - Milano Abadan / Iran	100	35.000	1	D	Chlorine
	313	SESPI - Mi for Ansaldo G.I.E. - Milano for Tavanir - Tehran Bisotoun / Iran	48	1.000	1	T	Hydrogen
1992	316-a	Sitara Chemical Industries Ltd. Faisalabad / Pakistan	560	26.000	2	T	Chlorine
	316-b	Sitara Chemical Industries Ltd. Faisalabad / Pakistan	400	400	2	T	Polarizer
	317	De Nora Permelec Pte. Ltd. - Singapore for Siemens KWU - Erlangen for Dubai El. Co. Jebel Ali / Dubai	105	18.900	3	T	Sea Water
	318	P.T. Indochlor Prakarsa Industries (expansion) Merak, Java / Indonesia <i>modified in 1996 into</i>	140	100.000	1	T	Chlorine
			280	50.000			
	319	De Nora Perm. Pte. - Singapore for Aalborg Ciserv Intern. - Daenmark for Egypt El. Auth. Suez / Egypt	130	3.200	2	T	Sea Water
	320	Cuadrec S.A. - Madrid for Babcock & Wilcox Española for Office Nationale de L' Electricité Centrale Thermique de Jorf Lasfar / Morocco	185	12.800	4	T	Sea Water
	321	Snampromgetti - Milano for National Iran Oil Co. Bandar Abbas / Iran	190	2.500	1	T	Sea Water
322	De Nora Perm. - Mi for Basic Chemical Ind. Dammam / Saudi Arabia (expansion)	290	3.000	1	T	Chlorine	
1993	323	Société Industrielle d'Acide Phosphorique et d'Engrais (S.I.A.P.E.) Gabes / Tunisie	80	2.700	1	T	Sea Water
	324	De Nora Perm. - Mi for Ficetec S.p.A. - Milano for Shahid Modarres Phar. Ind. Co. Sorbitol Production Plant, Esfahan / Iran	155	5.000	1	T	Hydrogen
	325	Krebs Swiss & Co. Ltd. - Zürich for El Nasr Co. for Intermediate Chemicals Giza, Cairo / Egypt	80	50.000	1	T	Chlorine
	326	De Nora Perm. - Mi for Iritecna - Genova for Abu Dhabi Gov. Water & Electricity Dept. Al Taweelah / United Arab Emirates	130	57.000	6	T	Sea Water



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1993	328	De Nora Permelec Pte. Ltd. - Singapore for Saline Water Conversion Corp. Jeddah / Saudi Arabia	108	1.300	2	T	Sea Water
	330-a	De Nora Permelec S.p.A. - Milano for Novel-Shenyang Chemical Works Ltd. Shenyang / China	630	26.000	2	T	Chlorine
	330-b	De Nora Permelec S.p.A. - Milano for Novel-Shenyang Chemical Works Ltd. Shenyang / China	450	150	2	T	Polarizer
1994	333-a	De Nora Perm. S.p.A. - Mi for Nirou Chlor Co. Esfahan / Iran	400	6.400	2	T	Chlorine
	333-b	De Nora Perm. S.p.A. - Mi for Nirou Chlor Co. Esfahan / Iran	300	120	2	T	Polarizer
	334-a	De Nora Perm. S.p.A. - Mi for Chlor Pars Co. Tabriz / Iran	400	6.400	2	T	Chlorine
	334-b	De Nora Perm. S.p.A. - Mi for Chlor Pars Co. Tabriz / Iran	300	120	2	T	Polarizer
	335	ELIN Energieanwendung GmbH - Wien Milwaukee / Philippines	560	60.000	1	T	DC Furnace
	336	Klößner Ina Industrial Plant Ltd. - London Sar Cheshmeh / Iran	140	38.000	2	T	Copper Oxide Leach System
	337	De Nora Permelec Pte. Ltd. - Singapore for Siemens KWU - Erlangen Pasir Gudang / Malaysia	135	4.000	2	T	Sea Water
	338	De Nora Permelec Pte. Ltd. - Singapore for Siemens KWU - Erlangen Paka / Malaysia	180	6.000	2	T	Sea Water
	340	Sespi - Milano for Ansaldo S.p.A. - Milano Hab River / Pakistan	24	1.000	1	T	Hydrogen
	341	De Nora Permelec Pte. Ltd. - Singapore for ABB Sadelmi - Milano Jaih South Power Station / Lebanon	135	3.400	2	T	Sea Water
	343	De Nora Permelec Pte Ltd. - Singapore for KHIC - South Korea Shoaiba Desalination Plant / Saudi Arabia	180	9.000	3	T	Sea Water
	344	Electroquimicas Unidas S.A.C.I. Talcahuano / Chile	55	36.000	1	T	Chlorine
	345	De Nora Permelec - Singapore for TPL - Roma Qapco Petrochemical Complex / Qatar	108	1.100	1	T	Sea Water
	346	De Nora Permelec Pte Ltd. - Singapore for Filippo Fochi - Bologna for Mirfa Power and Desalination Plant Abu Dhabi / United Arab Emirates	135	7.000	2	T	Sea Water

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
1995	347-a	De Nora Perm. S.p.A. - Milano for Malay Sino Ipoh, Perak / Malaysia	440	13.000	1	T	Chlorine
	347-b	De Nora Perm. S.p.A. - Milano for Malay Sino Ipoh, Perak / Malaysia	310	150	1	T	Polarizer
	348	De Nora Permelec Pte. Ltd. - Singapore / Yemen	135	1.300	1	T	Sea Water
	349	Hind Rectifiers Ltd. - Bombay for Sterlite Ind. Ratnagiri / India	30	14.000	1	T	Chlorine
	351-a	De Nora Permelec S.p.A. - Milano / Thailand	231	14.000	1	T	Chlorine
	351-b	De Nora Permelec S.p.A. - Milano / Thailand	165	150	1	T	Polarizer
	352	De Nora Permelec Pte. Ltd. - Singapore Muara Tawar / Indonesia	108	12.800	2	T	Sea Water
	353	OxyTech Syst. Inc. - Chardon - USA for IKPP Perawang, Sumatra / Indonesia	130	126.000	2	T	Chlorine
	354	Korea Zinc Co. Ltd. - Seoul Onsan, Ulsan / Korea	420	180.000	2	D	Zinc
	355	Korea Zinc Co. Ltd. - Seoul Onsan, Ulsan / Korea	130	15.000	1	D	Copper
1996	357-a	De Nora S.p.A. - Milano for Taiko Occidental / Malaysia	500	13.000	1	T	Chlorine
	357-b	De Nora S.p.A. - Milano for Taiko Occidental / Malaysia	350	150	1	T	Polarizer
	358-a	De Nora S.p.A. - Milano for S.N.E.P. Mohammedia / Morocco	740	14.000	1	T	Chlorine
	358-b	De Nora S.p.A. - Milano for S.N.E.P. Mohammedia / Morocco	550	150	1	T	Polarizer
	364	Sespi S.r.l. - Milano for Snamprogetti - Milano for National Iranian Oil Co. Bandar Abbas / Iran	190	2.500	1	T	Sea Water
	365	Kobelco, Kobe Steel Ltd. - Osaka, Japan for PT Sulfindo Adiusaha (expansion) Merak, Java / Indonesia <b>and modification of previous</b> <i>Job N° 300 from 140 V – 100.000 A to:</i> <i>Job N° 318 from 140 V – 100.000 A to:</i>	478	90.720	2	T	Chlorine
			280	50.000	1	T	Chlorine
			280	50.000	1	T	Chlorine
	368	LG Metals Corporation Onsan, Ulsan / Korea	120	84.000	2	T	Copper
	369-a	Chemical Industries (Far East) Ltd. / Singapore	680	16.000	1	T	Chlorine
369-b	Chemical Industries (Far East) Ltd. / Singapore	350	150	1	T	Polarizer	

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
<b>1997</b>	362	Thai Organic Chemicals Co. Ltd. - Bombay Rayong / Thailand	220	70.000	1	T	Chlorine
	371	De Nora S.p.A. - Milano for Sinopec Plant Qilu / China	665	14.000	2	T	Chlorine
	372	Produits Chimiques de Loos Loos, Lille / France	170	25.000	1	T	Chlorine
	373-a	Chemical Industries (Far East) Ltd. / Singapore (expansion)	850	18.000	1	T	Chlorine
	373-b	Chemical Industries (Far East) Ltd. / Singapore	570	197	1	T	Polarizer
<b>1998</b>	374	Akzo Nobel for Eka Chemicals Rana A/S - Bohus, Sweden Mo i Rana / Norway	164	84.000	1	T	Sodium Chlorate
	375-a	De Nora S.p.A - Milano for Mitsubishi Heavy Ind.- Nagasaki, Japan / Saudi Arabia	200	96.000	4	T	Chlorine
	375-b	De Nora S.p.A - Milano for Mitsubishi Heavy Ind.- Nagasaki, Japan / Saudi Arabia	200	47.200	4	T	Chlorine
	376	Korea Zinc Co. Ltd. - Seoul Onsan, Ulsan / Korea	90	6.000	1	T	Cadmium
	378	Metallurgical Industry / Iran	187 ac	13.500 ac	1	T	
	379	De Nora (Mi) for Electroquímica Rio Tercero Rio Tercero / Argentina	210	18.000	1	T	Chlorine
	381	Korea Zinc Co. Ltd. - Seoul Onsan, Ulsan / Korea	350	22.000	2	D	Lead
<b>1999</b>	383	Alexandria Electricity Distr. Co. - Alexandria for Abu Qir Power Station (expansion) Abu Qir / Egypt	130	3.000	1	T	Sea Water
	384	Falconbridge Nikkelverk A.S. (expansion) Kristiansand / Norway	300	25.000	1	T	Cobalt
	385	De Nora S.p.A - Milano for ABB Sadelmi Shoaiba Power Plant / Saudi Arabia	190	24.800	4	T	Sea Water
<b>2000</b>	388	Yee Fong Chemicals & Industrial Co. Ltd. Taipei / Taiwan	365	2x16.000	1	T	Chlorine
	390	Korea Zinc Co. Ltd. - Seoul Onsan, Ulsan / Korea	420	40.000	1	D	Zinc
<b>2001</b>	396	De Nora Elettrodi S.p.A (Mi) for Alstom Power Shoaiba Power Plant / Saudi Arabia (exp.)	190	12.400	2	T	Sea Water
	397	Sitara Chemical Industries Ltd. Faisalabad / Pakistan (expansion)	380	49.500	3	T	Chlorine

FRIEM Via Edison, 1 - 20090 Segrate (MI) - ITALY

Phone +39 02 2133341 - Fax +39 02 26923036 - Email: info@friem.com



## Rectifier Equipment Reference List

October 2005

Year	Job N°	Customer Location	DC Voltage [V]	DC Current [A]	Q.ty	Type (*)	Application
2002	399	Uhdenora S.p.A. - Milano for S.N.E.P. Mohammedia/Morocco	410	56.000	2	T	Chlorine
	400	Trust Chemical Ind. or Sinai Plant - Egypt Cairo / Egypt	575	60.000	2	T	Chlorine
2003	402	Trust Chemical Ind. or Sinai Plant - Egypt Cairo / Egypt (expansion)	575	60.000	2	T	Chlorine
	403	QUIMPAC S.A. (expansion) Callao, Lima / Peru	171.5	60.000	1	T	Chlorine
	404	Chemical Industries (Far East) Ltd. / Singapore (expansion)	680	18.000	1	T	Chlorine
	406	Atanor S.A. Rio Tercero/ Argentina	407	40.000	2	T	Chlorine
2004	408	Sitara Chemical Industries Ltd. (expansion) Faisalabad / Pakistan	380	16.500	1	T	Chlorine
	410	Korea Zink Co. Ltd. - Seoul Onsan, Ulsan / Korea	150	1.000	1	T	Research
	411	Severn Trent De Nora - Milan (expansion) Shoaiba Power Plant / Saudi Arabia	140	19.200	2	T	Hypochlorite
	412-a	LG-Nikko - Korea Onsan, Ulsan / Korea	200	35.000	1	T	Copper
	412-b	LG-Nikko - Korea Onsan, Ulsan / Korea	150	35.000	1	T	Copper
	412-c	LG-Nikko - Korea Onsan, Ulsan / Korea	35	35.000	1	T	Copper
	413	Uhdenora - Milan for NCIC - Giza (expansion) Cairo / Egypt	190	2x14.000	1	T	Chlorine
2005	416	Ledesma S.A.A.I. Jujuy / Argentina	385	16.500	1	T	Chlorine
	417	Severn Trent De Nora - Milan (expansion) Shoaiba Power Plant / Saudi Arabia	140	19.200	2	T	Hypochlorite
	418	LG CHEM Co. Ltd. - Seoul Chengdu / China	570	165600	4	T	Chlorine
	419	Korea Zink Co. Ltd. - Seoul Onsan, Ulsan / Korea	40	1200	1	T	Research
	420	Sitara Chemical Industries Ltd. Faisalabad / Pakistan (expansion)	560	42.000	3	T	Chlorine