Reference List
Chemicals Business Unit

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1 Key to acronyms

FS	Feasibility study / Study
PDP	Process Design Package / Technology Package
BE	Basic Engineering
FEED	Extended Basic Engineering / Front End Engineering and Design
DE	Detailed Engineering
DEa	Assistance to detailed engineering
MTPD	Metric ton per day
MTPY	Metric ton per year
P	Procurement
Ps	Procurement services
C	Construction
Cm	Construction management
TA	Technical assistance

2 Phosphoric acid projects

Year of Award	Client	Project	Country	Licensor	Services
2024	NCIC (El Nasr Co for Intermediate Chemicals)	Merchant Grade Phosphoric Acid Production (2 x 600 MTPD)	Egypt	Prayon	BE DE P C TA
2023	Confidential	Phosphoric acid concentration unit	Jordan	Ballestra	BE DE P TA
2022	Confidential	400 MTPD concentration section for PA plant 1600 MTPD (WPA settling section)	Morocco	Ballestra	BE DE P TA
2022	Confidential	Revamp from 310.000 MTPY to 450.000 MTPY (PAP)	Russian Federation		BE
2021	Confidential	Re-engineering services Di Calcium Phosphate plant	Republic of Kazakhstan	Prayon	BE DE
2021	Confidential	Support to lab/pilot test performed by Prayon in Technophos plant (Bulgaria)	Russian Federation	Prayon	FS
2019	Confidential	Merchant Grade Phosphoric Acid Production (2 x 75.000 MTPY)	Republic of Kazakhstan	Prayon	BE DE Ps
2016	Confidential	Phosphoric Acid Production (670 MTPD - 1000TPD depending on feedstock)	Russian Federation	Prayon	BE
2016	NCIC (El Nasr Co for Intermediate Chemicals)	Merchant Grade Phosphoric Acid Production (2 x 600 MTPD)	Egypt	Prayon	BE DE P C TA
2016	NCIC (El Nasr Co for Intermediate Chemicals)	Technical Grade Phosphoric Acid Production (2 x 150 MTPD) (Solv. Extraction)	Egypt	Confidential	BE DE P C TA
2014	Confidential	General Revamp and expansion with capacity increase. (500 MTPD)	Poland	Prayon	BE DE P TA
2013	Toros Tarim (part of Tekfen group)	Merchant Grade Phosphoric Acid Production (700 MTPD)	Turkey	Prayon	BE DE P TA
2009	NCIC (El Nasr Co for Intermediate Chemicals) E	Merchant Grade Phosphoric Acid Production (150 MTPD)	Egypt	Prayon	BE DE P TA

3 Sulphuric acid projects

Year of Award	Client	Project	Country	Technology	Services
2024	Confidential	2,300 MTPD Sulphuric Acd Plant (early works)	Kazakhstan	MECS	BE
2024	NCIC (El Nasr Co for Intermediate Chemicals)	2 x 1,900 MTPD Sulphuric Acid Plant	Egypt	MECS	BE DE P C TA
2023	Confidential	Revamp to 2 x 1,100 MTPD Sulphuric Acid Plant (sulphur burning)	Greece	MECS	FS
2023	Confidential	25 MTPD SO2 Production Plant	South Africa	Ballestra	FS
2022	Confidential	expansion of the PUMA project	Niger	Ballestra	FS BE
2022	Confidential	400 MTPD Sulphuric Acid Plant -Capacity increase (Oleum section)	Italy	Ballestra	BE DE
2022	Confidential	2,400 MTPD Sulphuric Acid Plant	Kazakhstan	MECS	FS
2022	Confidential	Site Survey for 500 MTPD Sulphuric Acid Plant	Italy	MECS	FS
2022	Confidential	111,000 MTPY Sulfuric Acid plant	Paraguay	MECS	FS
2021	Confidential	3 x 2,300 MTPD Sulfuric Acid plant from metallurgical off gas	Russian Federation	MECS	BE DE TA
2022	Abu Zaabal	1,900 MTPD Sulphuric acid plant	Egypt	MECS	DE
2020	Confidential	2 x 120,000 Nm3/h of metallurgical gas cleaning plant for Sulphuric acid	Russian Federation	Ballestra	BE DE TA
2020	Confidential	400 MTPD Sulfuric Acid plant	Italy	MECS	BE DE
2020	Confidential	3 x 2,300 MTPD Sulfuric Acid plant from metallurgical off gas	Russian Federation	MECS	FEED
2020	Ekon (for Eti Maden)	1,061 MTPD Sulphuric Acid Plant	Turkey	MECS	BE DE P TA
2020	Prayon	Conceptual Study for converter replacement	Belgium	Outotec	FS
2018	Kuibyshevazot	420 MTPD Sulphuric Acid plant and 1,080 MTPD Oleum Production plant	Russian Federation	MECS	Cm
2018	Mopani Copper Mines	1,550 MTPD Sulphuric Acid plant revamping	Zambia	MECS	FS
2018	Neon Shades (Zimphos)	Upgrading of existing 250 MTPD Sulphuric Acid plant (from Single Absorption to Double Absorption)	Zimbawe	MECS	BE DE P TA

Year of Award	Client	Project	Country	Technology	Services
2017	Kamoto Copper Company (Glencore	2,200 MTPD Sulphuric Acid Plant including Liquid SO2 (200 MTPD) Production	Democratic Republic of Congo	MECS	BE DE P TA
2017	Kuibishevazot	420 MTPD Sulphuric Acid Plant and 1080 Oleum Production Plant	Russian Federation	MECS	BE DE P TA
2017	Neon Shades (Zimphos)	Revamp and Upgrade of the existing SAP units (1x250 Sulphur Burn + 1x250 MTPD Pyrite Burn)	Zimbabwe	Ballestra	FS
2017	Confidential	SAP and Liquid SO2 Plant	Democratic Republic of Congo	MECS	FS
2017	Arkema	Revamp of Sulphox unit (25 MTPD – 1,200 Nm3/h)	Malaysia	MECS	FS
2014 Ph1 2015 Ph2	Sonneborn	Oleum (695 kg/h @25% SO3 free) and SO3 (500 kg/h as gas 100%) Production	Netherlands	Ballestra	BE DE P TA
2014	Ineos (Befesa)	H2S scrubber (with H2O2) for melting unit vapours (3,500 Nm3/h)	Spain	Ballestra	BE DE P TA
2014	Confidential	2,640 MTPD Sulphuric Acid Plant	Republic of Kazakhstan	MECS	FEED P
2013	Mutanda Mining (Glencore)	500 MTPD Sulphuric Acid Plant including Liquid SO2	Democratic Republic of Congo	MECS	FS BE
2013	Pavlodar Oil Chemistry Refinery (PNHZ)	540 MTPD Sulphuric Acid Plant	Republic of Kazakhstan	MECS	FS BE
2012	Arkema	Sulfox unit (25 MTPD – 1,200 Nm3/h)	Malaysia	MECS / KVT	BE DE P TA
2012	Toros Tarim (part of Tekfen group)	2,200 MTPD Sulphuric Acid Plant with HRS™ unit	Turkey	MECS	BE DE P TA
2012	ENRC	900 MTPD Sulphuric Acid Plant with Liquid SO2 (100 MTPD)	Democratic Republic of Congo	MECS	BE DE P TA
2012	Areva	100 MTPD Sulphuric Acid Plant	Niger	Ballestra	BE DE P C TA
2012	Zaklady Azoty Tarnow (Grupa Azoty)	500 MTPD Sulphuric Acid Plant with Oleum Production	Poland	MECS	FEED DEa P TA
2012	Sumitomo Metal Mining	1,450 MTPD Sulphuric Acid Plant	Philippines	MECS	FS
2012	SQM	21 MTPD Liquid SO2	Chile	MECS	FS BE
2011	NCIC (El Nasr Co for Intermediate Chemicals)	450 MTPD Sulphuric Acid Plant	Egypt	MECS	BE DE P TA
2011	Fluorsid	400 MTPD Sulphuric Acid Plant with HRS™ unit	Italy	MECS	BE DE P TA
2011	Intertest (for ARMZ)	795 MTPD Sulphuric Acid Plant	Russian Federation	MECS	FS BE
2010	Mutanda Mining (Glencore)	500 MTPD Sulphuric Acid Plant including Liquid SO2 (73 MTPD as 100% SO_2)	Democratic Republic of Congo	MECS	BE DE P TA

Year of Award	Client	Project	Country	Technology	Services
2009	Bunge	300 MTPD Sulphuric Acid Plant	Argentina	MECS	FS BE
2009	SKZ-U LLP (Kazatomprom)	1,500 MTPD Sulphuric Acid Plant	Republic of Kazakhstan	MECS	BE DE P Cm TA
2009	Ineos (Befesa)	940 MTPD Sulphuric Acid Plant including 250 MTPD Oleum Production	Spain	MECS	BE DE P C TA
2008	AEMEDSA	Recovery of Spent Acid and Sulphonates (25 MTPD)	Spain		FEED DEa P TA
2008	Al Biariq Ltd for Petrochemical Industries	Sulphuric Acid Production	Kingdom of Saudi Arabia	MECS	FS BE
2008	SGHK LLP (Kazatomprom)	540 MTPD Sulphuric Acid Plant	Republic of Kazakhstan	MECS	BE DE P TA
2008	Arava Mines	390 MTPD Sulphuric Acid Plant 73 MTPD Liquid SO2	Israel	MECS	FS BE
2008	Mosaic	1,500 MTPD Sulphuric Acid Plant	Argentina	MECS	FS BE
2008	Cargill S.A.C.I.	1,500 MTPD Sulphuric Acid Plant	Argentina	MECS	FS BE
2008	Akzo Nobel	150,000 MTPY Sulphuric Acid Plant	Argentina	MECS	FS BE
2007	ARMZ (Hiagda Mining Complex)	360 MTPD Sulphuric Acid Plant	Russian Federation	MECS	BE DE P TA
2006	ARMZ - PPGHO - TVEL	530 MTPD Sulphuric Acid Plant	Russian Federation	MECS	BE DE P TA
2005	NCIC (El Nasr Co for Intermediate Chemicals)	450 MTPD Sulphuric Acid Plant including 60 MTPD Oleum Production	Egypt	MECS	BE DE P TA
2005	Essemar (Esseco + Marchi)	400 MTPD Sulphuric Acid Plant including 160 MTPD Oleum Production	Italy	MECS	BE DE P C TA
2004	So.Ri.S	200 MTPD Sulphuric Acid Plant including Oleum production Revamp Including tail gas treatment	Italy	Ballestra	BE DE P TA
2004	Pilot Chemicals	20,000 MTPY Liquid SO3	USA	Ballestra	FS BE
2001	Al Raez Sulphates (previously National Chemical & Marketing Co.)	100 MTPD Sulphuric Acid Plant	Kingdom of Saudi Arabia	Ballestra	BE DE P TA
2001	NEAIS (National Establishment for Agricultural Sulphur)	100 MTPD Sulphuric Acid Plant and Subsequent capacity increase to 120TPD (in 2011)	Kingdom of Saudi Arabia	Ballestra	BE DE P TA
1999	Fluorsid	400 MTPD Sulphuric Acid Plant including Oleum Production (30TPD @25%)	Italy	MECS	BE DE P Cm TA
1991	Drury Industries	100 MTPD Sulphuric Acid Plant	Nigeria	Garbato	BE DE P TA
1988	Drury Industries	150 MTPD Sulphuric Acid Plant	Nigeria	Garbato	BE DE P TA

4 Fertilizer projects

Year of Award	Client	Project	Country	Technology	Services
2024	Confidential	Conversion of NPK plant to Ammonium Sulphate	Greece	Ballestra	PDP FS TA
2022	Confidential	20,000 MTPY Potassium Sulphate Plant Manheim Furnace	Uzbekistan	Ballestra	BE DE P TA
2022	Confidential	150,000 MTPY SSP plant and 300,000 MTPY	Paraguay	Ballestra	FS
2022	Abu Zaabal	SSP capacity increase from 400 MTPD to 1200 MTPD	Egypt	Ballestra	DE
2022	Abu Zaabal	TSP plant conversion to MAP production	Egypt	Ballestra	DE
2022	Confidential	Revamp (MAP-NP-DAP) / 500,000 MTPY (NPK)	Russia	INCRO	BE
2022	Confidential	75,000 MTPY (Liquid Fertilizers)	Russia	Ballestra	BE
2021	Confidential	Ammonium Nitrate 500 MTPD	Croatia	Ballestra	PDP BE DE TA
2020	Confidential	40,000 MTPY Potassium Sulphate Plant	United States	Ballestra	BE Ps
2018	Manaseer Chemicals	210,500 MTPD Potassium Sulphate Plant	Jordan	Ballestra	FEED
2016	Confidential	3 x 220,000 MTPY Di Calcium Phosphate	Kazakhstan	Prayon (Ecophos)	BE DE P
2015	Confidential	20,000 MTPY Potassium Sulphate	Saudi Arabia	Ballestra	BE DE P TA
2014	Confidential	3 x 200,000 MTPY Potassium Sulphate	Kazakhstan	Ballestra	BE DE P
2014	Confidential	3 x 120,000 MTPY Calcium Chloride Crystallization	Kazakhstan	Gea	BE DE P
2014	NCIC (El Nasr Co for Intermediate Chemicals)	735 MTPD - 30 t/h Single Super Phosphate Granulation Plant	Egypt	Ballestra	BE DE P TA
2014	NCIC (El Nasr Co for Intermediate Chemicals)	Scrubber for SOP unit	Egypt	Ballestra	BE DE P TA
2008	Al Biariq Ltd for Petrochemical Industries	Single/Triple Super Phosphate (production and granulation	Saudi Arabia	Ballestra	FS BE
2008	Al Biariq Ltd for Petrochemical Industries	Potassium Sulphate Production	Saudi Arabia	Ballestra	FS BE
2006	NCIC (El Nasr Co for Intermediate Chemicals)	20,000 MTPY Potassium Sulphate	Egypt	Ballestra	BE DE P TA
2006	Al Biariq Ltd for Petrochemical Industries	20,000 MTPY Potassium Sulphate	Saudi Arabia	Ballestra	BE DE P Cm TA
2006	Polyserve	Revamping of 490 MTPD Single Super Phosphate Granulation	Egypt	Ballestra	PDP TA
2005	NCIC (El Nasr Co for Intermediate Chemicals)	Single Super Phosphate 735 MTPD - 30 t/h Granulation	Egypt	Ballestra	BE DE P Cm TA

Year of Award	Client	Project	Country	Technology	Services
2004	NEAIS (National Establishment for Agricultural Sulphur)	10,000 MTPY Sodium Sulphate	Saudi Arabia	Ballestra	BE DE P TA
2003	Ike Lewis & Lewis Ind.	Single Super Phosphate Production and Granulation	Nigeria	Ballestra	FS BE TA
1974	Marchi Industriale	Expansion of existing Potassium Sulphate (+10,000 MTPY)	Italy	Ballestra	BE DE TA

5 Other technologies projects

Year of Award	Client	Project	Country	Technology	Services
2024	Fluoralpha	Aluminum Trifluoride Plant, 40000 MTPY	Morocco	Buss Chemtech	DE Ps Cm
2022	Confidential	Hydroformylation plant 90,000 MTPY	China	Buss Chemtech	BE
2017	Petrojet (for NCIC)	Port Facilities for storage and ship loading of Phosphoric Acid (30,000 MTPY) and Granular Fertilizers (40,000 MTPY)	Egypt	Ballestra	BE DE Ps TA
2014	Confidential	Infrastructures	Republic of Kazakhstan	Ballestra	BE DE P
2004	UJS (UCI Daaboul)	Linear Alkyl Benzene revamping	Syria	UOP	BE DE P C TA
2004	AB Foods	Sodium tripolyphosphate drying (5,000 kg/hr)	Turkey	Ballestra	FS BE
2003	Procter and Gamble Chemicals	Linear Alky Benzene (30,000 MTPY)	Russia	UOP	FS BE
2002	Emalab	Linear Alky Benzene (30,000 MTPY)	United Arab Emirates	UOP	BE DE P Cm TA
2001	Quimica Venoco	Linear Alky Benzene	Venezuela	UOP	FS BE
2001	Nizhnekamskneftekhim	Linear Alky Benzene (2,000 kg/h)	Russia	UOP	FS BE
2007	Acrilatos	Revamp of Sodium silicate 30.000 MTPY	Spain	Ballestra	BE DE P TA
2000	Masso y Carol	Sodium silicate 30,000 MTPY	Spain	Ballestra	BE DE P
1999	Daaboul & Son	Sodium silicate 8,000 MTPY	Syria	Ballestra	BE DE P TA
1996	OCI (Oman Chemical Industries)	Zeolite (25,000 MTPY)	Oman	Ballestra	BE DE P Cm TA