



# COMSPAIN

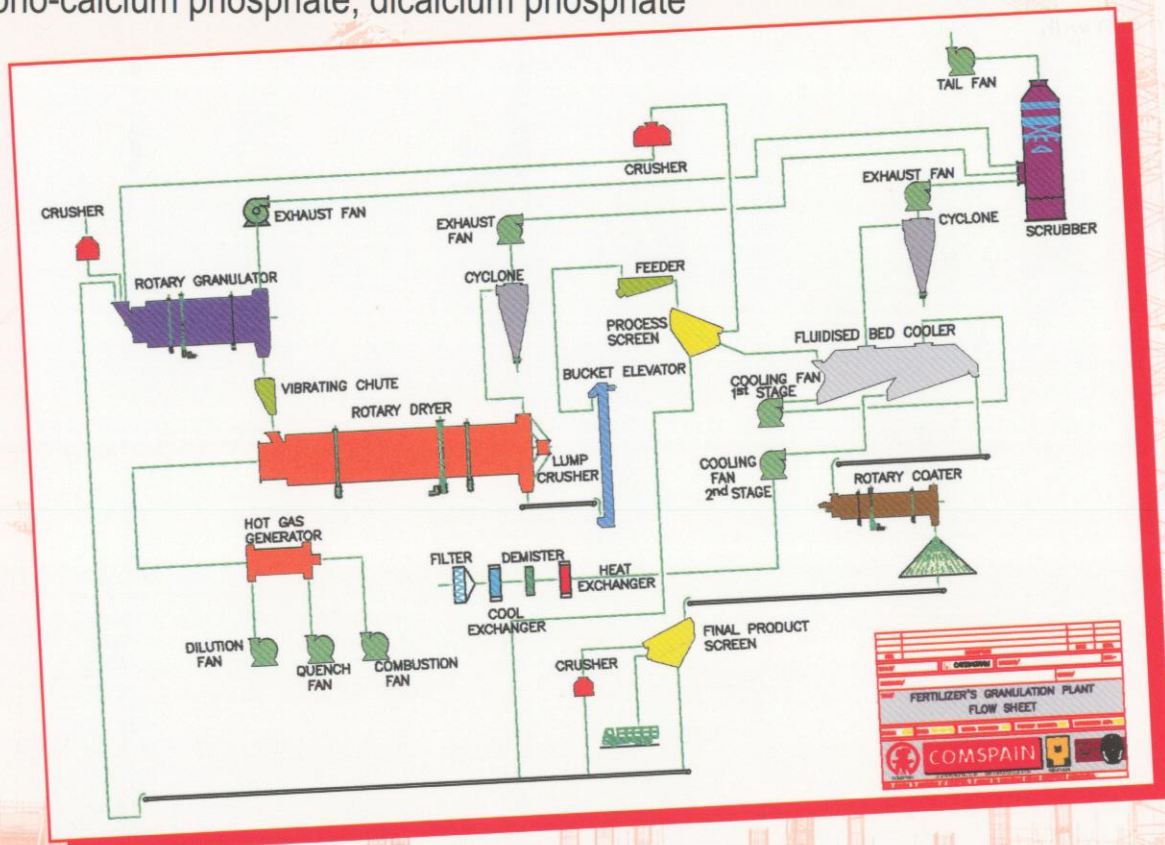


# FERTILIZERS

## EXPERTS IN PROCESSING FERTILIZER

NP • PK • NPK • SSP • GTSP • MAP • DAP • UREA • AMMONIUM NITRATE  
• CALCIUM AMMONIUM NITRATE • ORGANIC • ORGANO/MINERALS •  
MAGNESIUM • MAGNESIUM SULPHATE • AMMONIUM SULPHATE •  
PHOSPHATES • COMPOST

**OTHERS:** raw phosphate, washed phosphate, technical ammonium nitrate, mono-calcium phosphate, dicalcium phosphate



## COMPLETE EQUIPMENTS RANGE

- Reactors.
- Granulators (Rotary drums, screw granulators, fluid beds).
- Dryers (Rotary drums, vibrating fluid beds).
- Coolers (Rotary drum, static fluid beds).
- Feeders, distributors and vibrating screens.
- Oscillating screens for final products.
- Coating drums (single or double pass).
- Mixers, pug mills.
- Lump crushers.
- Mills or crushers.
- Bucket elevators.
- Screw conveyors.
- Hot gas generators.
- Belt, screw and chain conveyors.
- Stackers.
- Reclaimers.
- Gas dedusting units (cyclones, scrubbers, filters).
- Air conditioning units.
- Processing tanks.
- Composting units.
- Silos
- Vessels

**BASIC AND DETAILED ENGINEERING, MANUFACTURING,  
ERECTION, START UP, AFTER SALES SERVICE**

# ROTARY DRUMS

Drums which, in a fertilizer's plant, are used for very different functions:

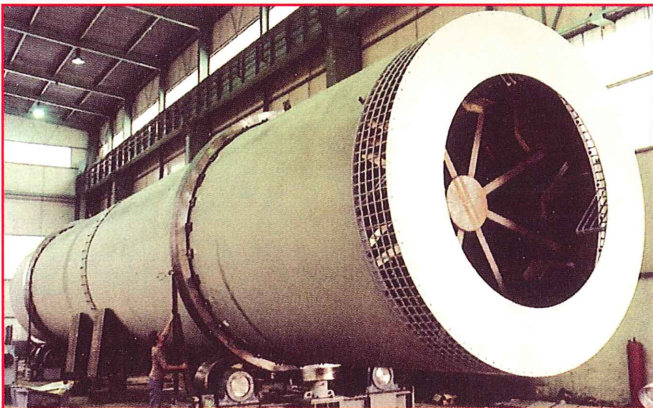
**DRYING  
GRANULATION  
COOLING  
COATING**

Weight: Up to 400 T.  
Thickness: Up to 50 mm.  
Production: Up to 4 x 650,000 kg/h.  
Diameter: Up to 5 m.  
Power: Up to 1,000 kw.

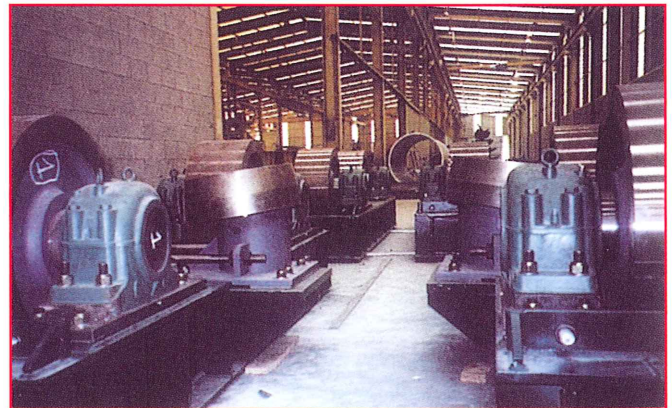
## Material:

Carbon steel, stainless steel, anti-wear steel, aluminium steel, "corten" steel, aluminium, etc.

Automatic lubrication, hammering, squirrel cage (grizzly), auxiliary drive system, reversibles, etc.



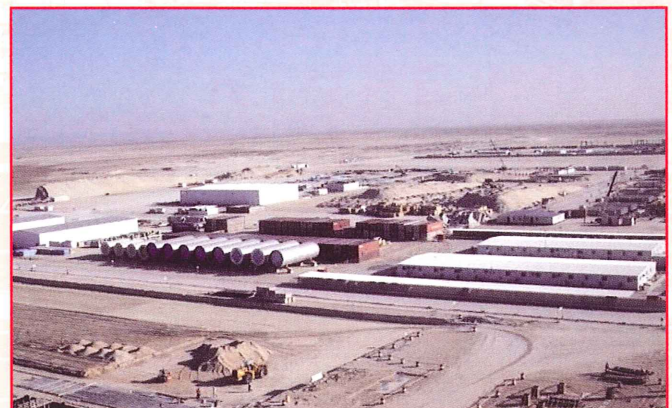
Dryer rotary drum, NPK-DAP,  $\varnothing$  4.6 x 30 m, 360,000 kg/h.  
Siape/Gabes (Tunisia).



Rolling system for a NPK plant, 310,000 T/h. Petrokimia  
(Indonesia)



Two Dryer Drums, TSP/MAP/DAP,  $\varnothing$  4 x 30 m, 375 T/h.  
BMP Bunge Maroc Phosphore (Morocco)



Four Dryer Drums, DAP/MAP,  $\varnothing$  4.75 x 35.2, 650 T/h.  
Ma'aden/Worley Parsons (Saudi Arabia)

## FLUID BEDS

**Static:** Coolers,  
Granulators

**Vibrating:** Dryers

## HIGH TRANSMISSION COEFFICIENT TECHNOLOGY AND GOOD PERFORMANCE

Easy maintenance.

## SPECIAL BEDS

With agitators.  
Inclinable.  
Product's double stage.  
Air double stage.  
Air triple stage.  
With air stage.

## SURFACE

Up to 2 x 35 m<sup>2</sup>.

## PRODUCTION

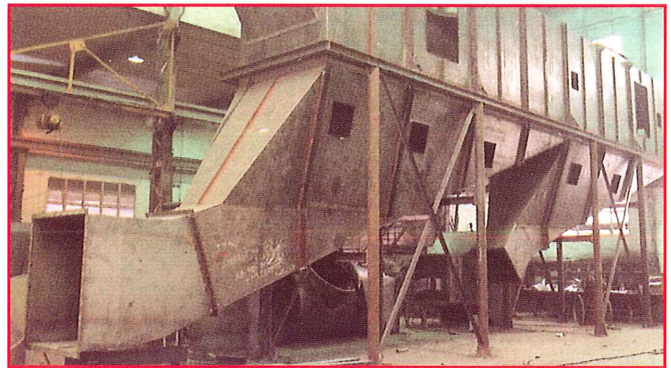
Up to 2 x 125,000 kg/h

## POWER

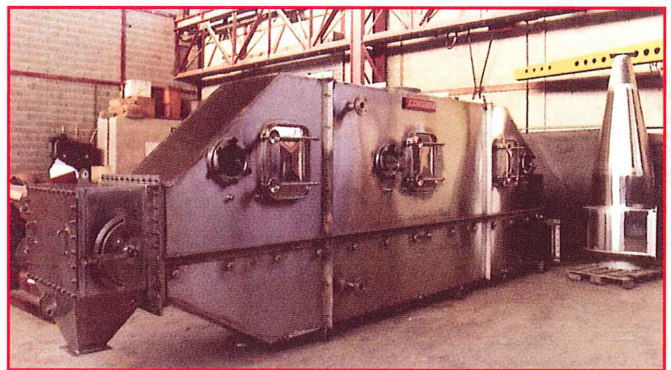
Up to 700 kW in blower fans.

## MATERIAL

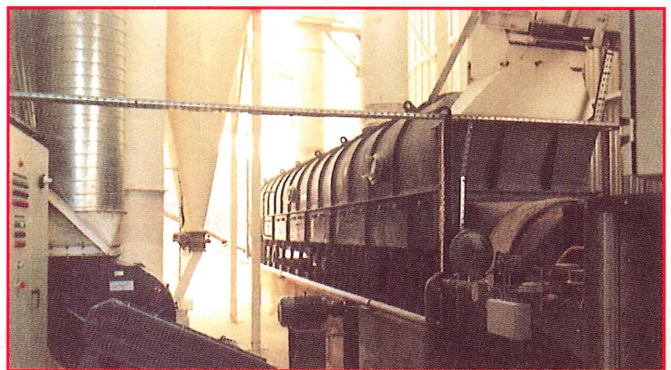
Carbon steel.  
Stainless steel.  
Aluminium steel.  
Aluminium.



Cooling fluid bed, AN, 32 m<sup>2</sup>, 75,000 kg/h. Fertimex (Mexico).



Cooling fluid bed, DAP, 12 m<sup>2</sup>, 25,000 kg/h. Tugzas/Samsun (Turkey).



Drying/cooling vibrating fluid bed, Organo-Minerals, 20 m<sup>2</sup>, 12,000 kg/h. Fertilizantes Oeste (Spain).

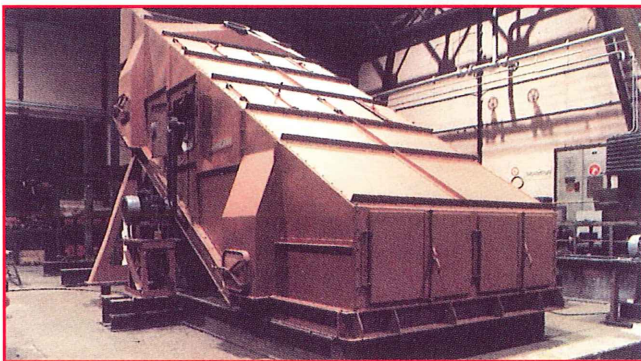


2 fluid bed coolers, NP, 2 x 34 m<sup>2</sup>, 150,000 kg/h. Toyo Engineering (China).

# FREEDERS AND SCREENS



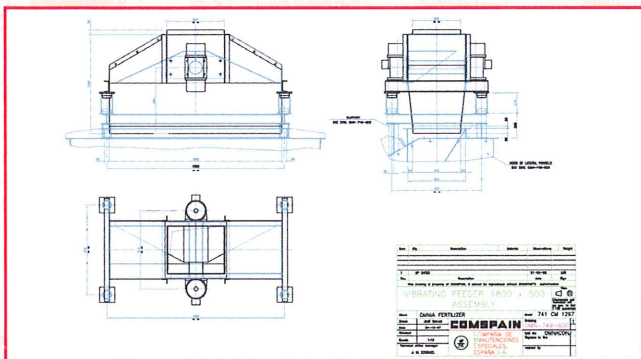
4 processing screens, NPK, 2,100 x 5,000 mm, 400,000 kg/h. Office Cherifien de Phosphates, Jorf Lasfar (Morocco).



2 processing screens, NPK, 2,000 x 5,000 mm, 200,000 kg/h. Namhae (Korea).



2 vibrating feeders, NPK, 1,500 x 3,500 mm, 190,000 kg/h. National Fertilizer Co. (Taiwan).



Vibrating distributor over screens, NPK/DAP, outlet flange 1,800 x 500 mm, 100,000 Kg/h. Omnia (South Africa).

**Screens:** Vibrating  
Oscillating  
By phase shift

**Feeders  
Distributors**

## SPECIFIC TECHNOLOGY FOR FERTILIZERS

- Inclined
- Covered.
- With dedusting.
- In countermarch.
- Rectangular mesh (lengthwise tension).
- Anticaking systems.
  - Special mesh.
  - Knocking balls.

## SPECIAL SCREENS

Oscillating horizontal for final product.

## ONE OR SEVERAL CUTS

Two or three classifications.

## SURFACE

Up to 24 m<sup>2</sup>.

## PRODUCTION

Up to 200,000 kg/h per unit.

## VIBRATIONS

- Circular.
- Unidirectional.
- Phase shifted.
- Electromagnetic.

## DRIVING

- Electric.
- Hydraulic.

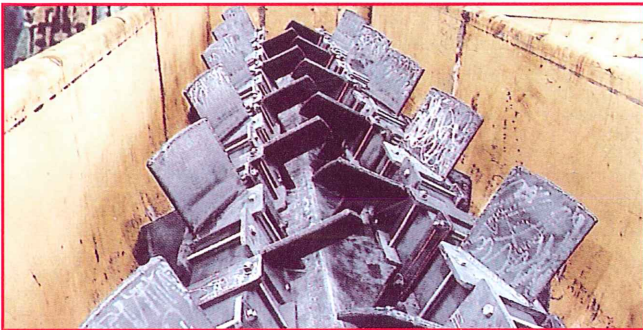
## CREASING

- Grease.
- Oil.
- Oil in circulation.
- Refrigerated oil.

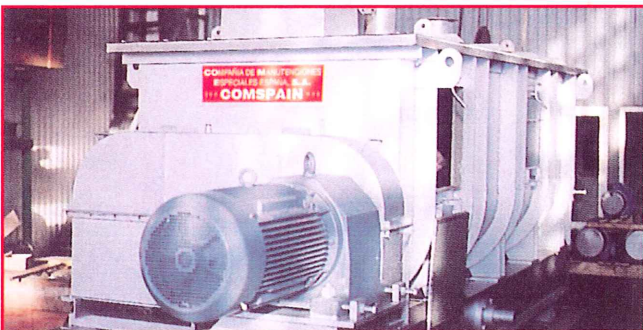
## PUG MILL/SCREW GRANULATOR



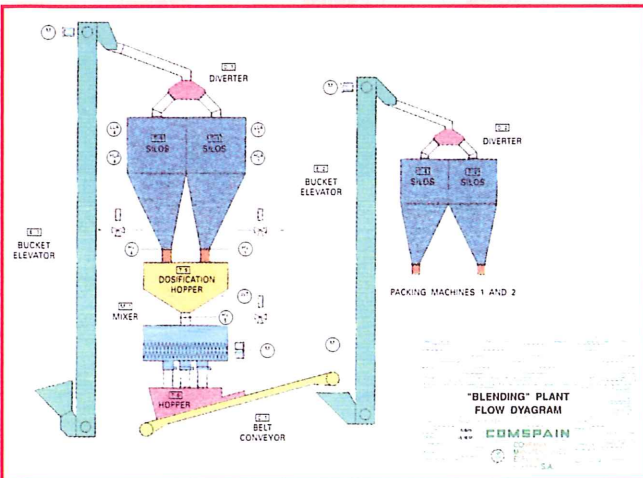
Double screw granulators for 240 T/h of NPK. Zorka Azotara Subótica NPK, NA. (Yugoslavia).



Dismountable type of paddles for granulator for 300 T/h, NPK, China Petroleum (CPMEC), (Urumqi, China)



Mixer for 100 T/h, smelted urea mixture, etc. (Korea Dongbu Chemical) NPK-DAP plant. (Korea).



“Blending” installation sketch.

**COMSPAIN** can offer its experience and good technology for the manufacturing of Double Screw Granulators and Mixer or Pug Mills, guaranteeing:

- Mixing efficiency.
- No degradation.

Adequate design for the incorporation of steam, sulphuric acid, ammonia, smelting urea and others.

The smelting urea entrance has steam jacket to avoid obstructions.

Paddles easily dismountable, built either in special steels or with hard coating.

Stainless steel or Alloy 20 injection tubes.

Special spray nozzles.

### PUG MILL

Capacity: up to 200/250 T/h.  
Power: up to 132 kw.

### SCREW GRANULATOR

Capacity: up to 400 T/h.  
Power: up to 300 kw.  
Variable speed. Frequency variator.

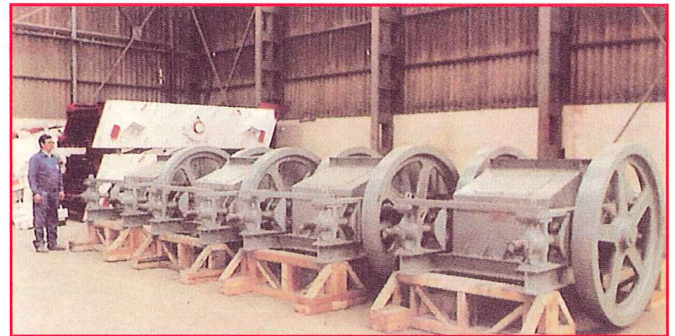
## BLENDING INSTALLATIONS

“Turn-key” installations for the intelligent blending of fertilizers, including silos, dosification, mixing, packing, etc.

# CRUSHERS

**Mills:** Hammers  
Chains, simple and double rotor  
Cylinders  
Pendular mill  
Squirrel cage mill  
Jaw crusher

**Lump crushers:** Hooks and combs  
Free lump crusher



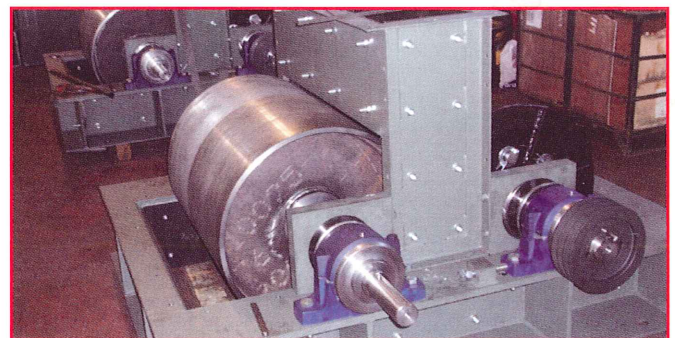
10 cylinder and hammer mills, GTSP, 256,000 kg/h (partial picture). General Fertilizer Co. (Syria).

## SPECIFIC TECHNOLOGY FOR FERTILIZERS

Particularly designed for Fertilizers, with attention to the caking problems, especially with the NPK of UREA high content.

Each model has a specific use:

- Raw materials: Hammers, squirrel cage and pendular
- Rejection from screen product: Cylinders, hammers, squirrel cage
- Dryer: Lump crusher
- Packing: Chains



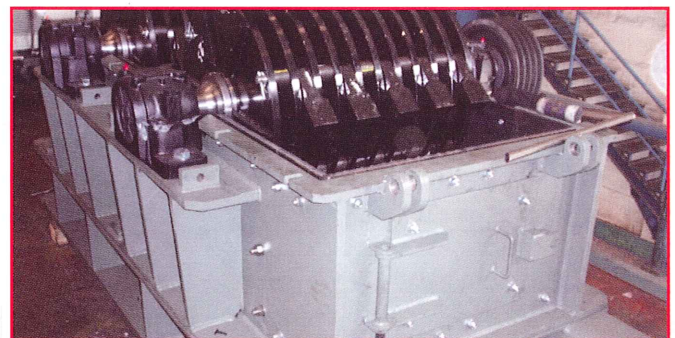
Hammer mill. Toyo Thai (Thailand).

## PRODUCTION

Up to 80 T/h per Mill or Crusher.

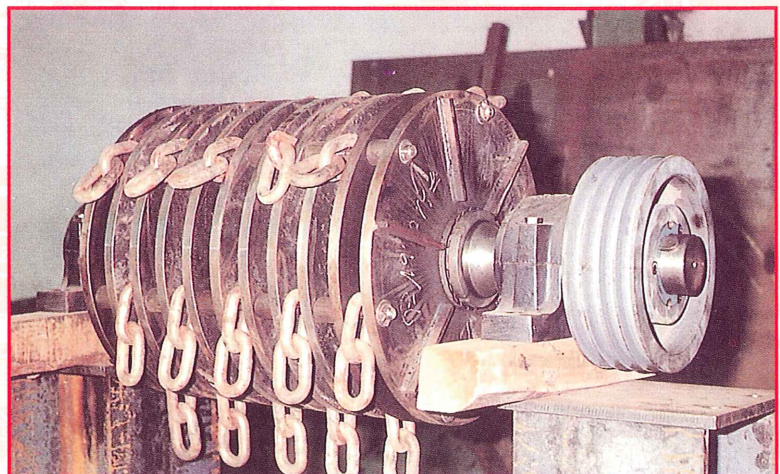
## HARDNESS

Up to 400 HB in Cylinder surface for GTSP.



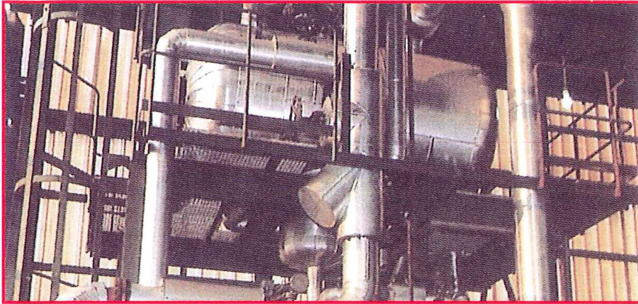
Double Rotor Hammer Crusher. Petrokimia Gresik (Indonesia).

**WE ADAPT  
EACH MACHINE  
TO YOUR  
NECESSITIES  
AND SPECIFIC  
PROBLEMS**

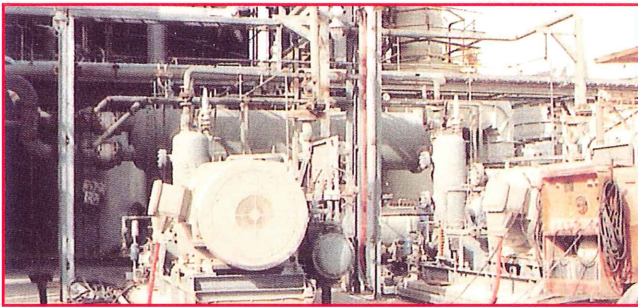


Rotor of chain crusher for 90,000 Kg/h of NPK, Toros Gubre (Turkey).

## AIR CONDITIONING



Air conditioning unit, 1,800,000 frig/h. NA,NAC cooling fluid bed. Sefanitro (Spain).



Air conditioning unit, in closed circuit, 2 x 1,800,000 frig/h. Sabic, NPK-NAP Al Jubail plant. (Saudi Arabia).



Compressor for an air conditioning unit in freon circuit, 600,000 frig/h. National Fertilizer Company – NPK plant. (Taiwan).

The fluid bed or the cooling drum and the air cooling (conditioning) unit have to be designed in common, forming an efficient interrelation.

**COMSPAIN** can offer:

- Open circuit by Ammonia evaporation.  
With circulation by gravity.  
Through forced circulation by means of a pumps.
- Close circuit with compressor and refrigerating gas: Ammonia, Freon, etc.

Including also separating tank, air heater, air chiller, demisters, filters, etc.

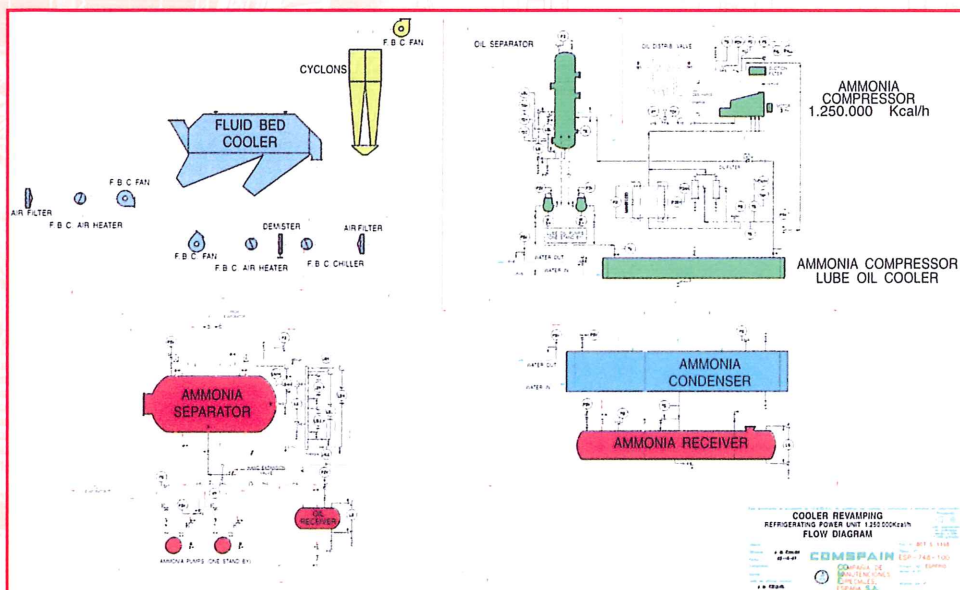
### FLOW

Up to 200,000 kg/h of air per unit.

### POWER

Up to 2,000,000 frig/h per unit.

**WITH OUR AUXILIARY EQUIPMENT,  
WE GUARANTEE BEING THE SOLE  
RESPONSIBLE COMPANY FOR THE  
WHOLE PLANT.**



**INTELLIGENT  
SOLUTIONS FOR  
YOUR COOLING  
PROBLEMS**

**COMSPAIN** refrigeration installation, typical flow sheet in closed circuit.

## TECHNICAL AMMONIUM NITRATE

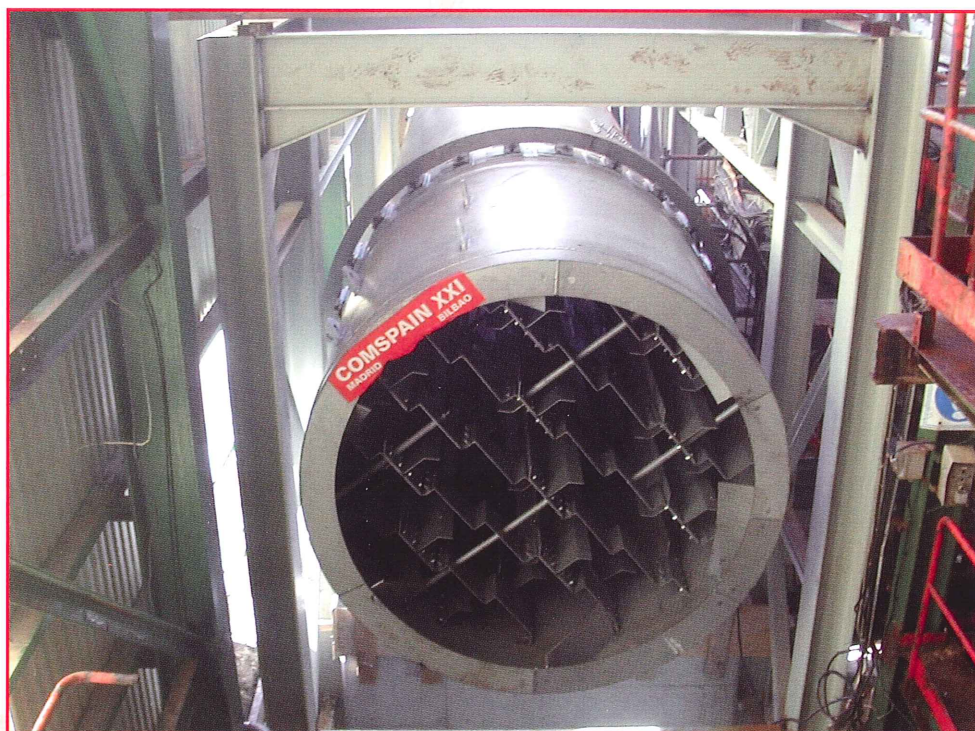
Among the approximately eighteen references in ammonium nitrate that **COMSPAIN** has, there are seven that are of technical ammonium nitrate, also called porous ammonium nitrate or ammonium nitrate of low density.

This ammonium nitrate is used as a base for the manufacturing of explosives, giving rise to the well-known "ANFO" through its mixture with fuel-oil. The grade of porosity facilitates the fuel impregnation.

Thirty years ago **COMSPAIN** started to work in this field, incorporating to the predryers/dryers special waffle cloth that allow its cleaning on both sides with access through the shell.

The product is treated at a quite low temperature and with a very long length of stay (50 minutes).

We can make three kind of dryers: predryers/dryers in only one piece, with intermediate gas outlet; independent predryer, situated over the dryer with common transfer box, or also predryer/dryer in fall with common transfer box and gas outlet.



In Fertiberia, at Puertollano (Spain), **COMSPAIN** made a plant with a production of 50 T/hour, using as base for granulation a prill tower. Taking into account that the installation was located within another of ammonium nitrate as fertilizer, the two predryer and dryer drums were placed one over the other, in order to gain space.

In this project, **COMSPAIN** supplied also the dedusting cyclones, the product transport, the solid and gases ducts and air heaters, all of this made in stainless steel AISI 304L.

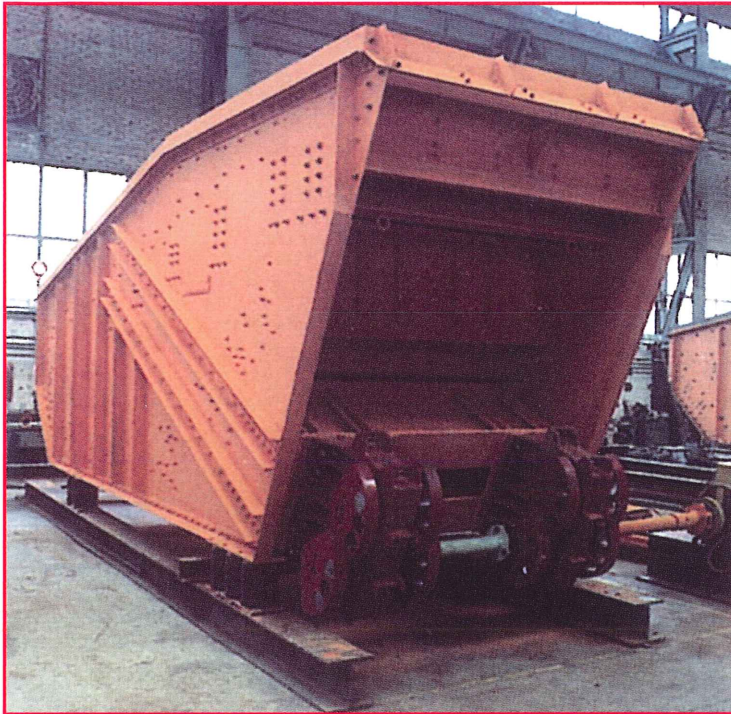
Another kind of dryer, more common, is the one formed by a single drum that works in its first part at cocurrent (predryer) and in its second part at countercurrent (dryer).

As mentioned, the common gases go out through the drum centre with a system of double shell, exhaust chimneys and covering hood.

These drums can be of very different sizes, as for a production of 15 T/h (Gaet Company, in Vietnam) up to 35 T/h (IGSAS, in Turkey).



## PHOSPHATE (PRE-SCREENING, WASHING AND DRYING)



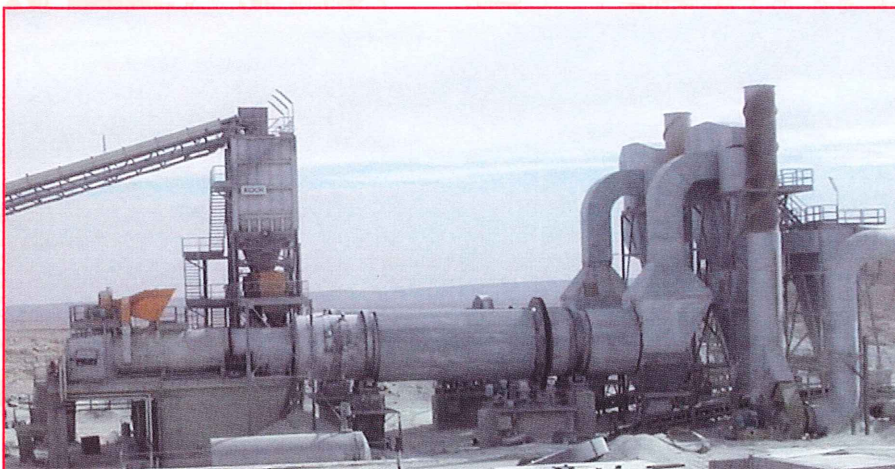
**COMSPAIN** experience in the phosphate field goes from the work in the mine, classifying and grinding the raw phosphate, until reaching, after the washing, the wet phosphate drying.

**COMSPAIN** has realised also some special projects of wet phosphate handling, in order to avoid the drying in the mine, designing rotary extractors under silos and overturning devices of new design.

For the primary stage we can offer apron feeders, pre-screeners that can reach up to 3,000 T/hour, jaw-crushers and conveyors.

For the secondary and tertiary stage we can make impact crushers, screens and conveyors.

After the washing and inverse flotation of the phosphate, **COMSPAIN** designs effective washing trommels (of attrition) and horizontal screens of fine classification and auxiliary irrigation.



We dry the phosphate in traditional rotary drums of special material using gases at high temperature, outlet decanting boxes and efficient dedusting systems, and without risk of working at high temperature as multi-cyclones and cyclones.

The combustion chambers can be of fuel-oil (injection burner or rotating dome burner) or of natural gas, through direct fire of air vein.

# PHOSPHATE HANDLING

...And besides a complete plant of DAP granulation of 2,900,000 T/h, COMSPAIN has realised

## TWO REMARKABLE PROJECTS IN SAUDI ARABIA FOR MA'ADEN WITH WORLEY PARSONS AND LITWIN

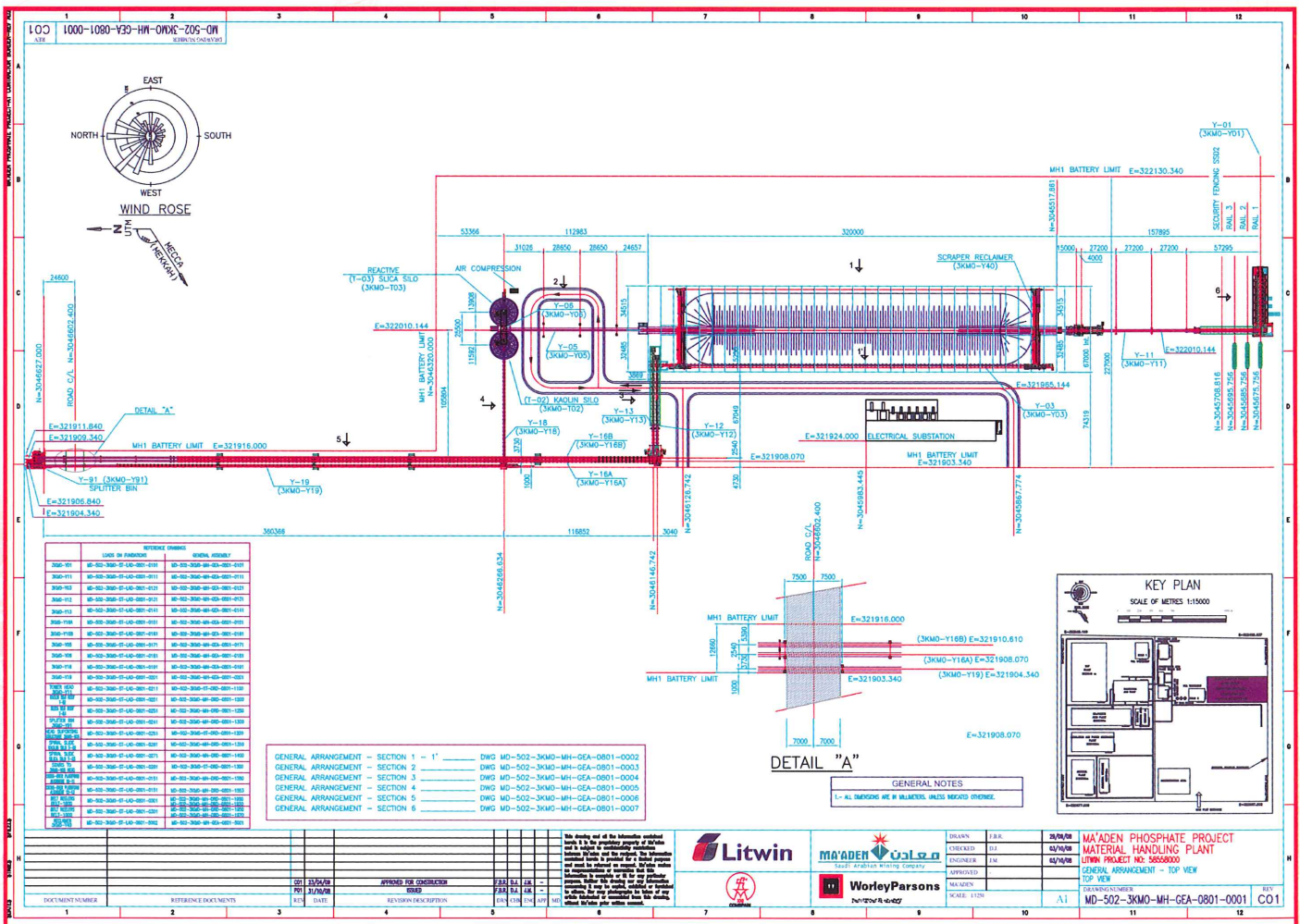
The so-called MH1 project ("Material Handling" no. 1) collects the washed phosphate from the Al Jalamid Mine and from the Beneficiation Plant, discharging it from the railroad at a rate of 4,400 t/h.

This phosphate is stored at an indoor park of 21,300 m<sup>2</sup> and 160,000 T and is distributed to the whole chemical complex of Ras Az Zawr, made up of factories for ammonia, sulphuric acid, phosphoric acid and complex fertilizers (DAP).

COMSPAIN is also in charge of the collection of additives (kaolin and silicate), of their storage in silos of up to 13,000 m<sup>3</sup> and of their distribution throughout the complex.

The so-called "PAP conveyors" project (transportation in the phosphoric acid plant) conveys the phosphate and the additives, by means of a gallery elevated at 25 m, with 4 belts, to the phosphoric acid factory, distributing it throughout each of the three production units.

The product fed amounts to 1,300 T/h and the longest belt has 466 m.



The Phosphate Park is fed by a tripper conveyor with a capacity of 4,400 t/h phosphoric rock. The extraction is carried out by a reclaimer or scraper framework with two arms and a 60 m span, with a capacity of 1,000 T/h.

Silos for additives (kaolin and silicate) – the silicate silo is fitted with a fluidization system, which guarantees a complete extraction by means of canyons and panels.

## MONOCALCIUM AND DICALCIUM PHOSPHATE

The problem of the so-called crazy cows (spongiform encephalopathy) gave rise to a new situation in the field of the animal feeding, practically disappearing the utilisation of the calcium obtained by rendering (from bones, etc.), and giving consequently importance to the mineral monocalcium and dicalcium phosphate, feeding quality.

**COMSPAIN** started from the beginning with this new technology, carrying out several plants for the most important manufacturers, such as Roullier, FMC, Foret, Ercros, Timab and Groupe Chimique Tunisien, etc.

We make turn-key complete plants if necessary, obtaining micro-granulates, as much for Dicalcium phosphate as for monocalcium phosphate, with a production that can reach the 100,000 T/year.



Dicalcium Phosphate, Timac-Roullier (France).

This exemplary plant is located in a tourist area in France (next to the Saint Malo "Intramuros"), and therefore submitted to aesthetic and environmental requirements. **COMSPAIN** plant realises a mixture of molasses and dicalcium phosphate to produce afterwards licking stones.



Dicalcium Phosphate and monocalcium phosphate production plant. For a production of 100,000 T/year. COMSPAIN has supplied the complete plant turn-key, thus including all production equipment, such as reactor, dryer, combustion chamber, coolers, screens, crushers, etc, as well as handling equipment and tanks, silos, building, civil works, electricity, regulation and control, erection and commissioning. Ercros (Escombreras, Spain).

# HANDLING

## BELT CONVEYORS

- Conveyor belts, extracting belts below hoppers, belts in galleries, special belts for organic waste, rigid elevating belts, portable belts, reversible belts, trippers, etc.
- Apron conveyors
- Horizontal chain conveyors, inclined chain conveyors (ashes draining, elevation, etc.)
- Screw conveyors
- Rotary extractors below silos
- Bucket elevators
  - Vertical
  - Vertical, special, without dredging
  - Z-shaped (vertical, horizontal)
- Loaders, stackers
- Dischargers, bucket wheels, scrapers
- Storage parks, indoors or outdoors
- Silos
- Mobile groups
- Gas filtration and purification



Conveyor belts, CAN. Fertil (Arzew, Algeria).

## CHAIN CONVEYORS

A traditional transportation system which does not damage the fertilizer grain.

Efficient use for flow distribution in several charges, for example for screens feeding.

### Length

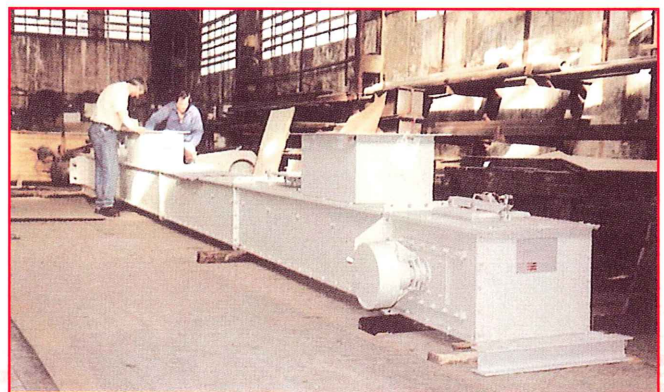
Up to 40 m.

### Width

Up to 900 mm.

### Power

Up to 75 kw.



Chain conveyor for 250 T/h, GTSP, General Fertilizet Co. Homs (Syria).



Stacker and reclaimer for Compost, composting plant. Dragados (Spain).

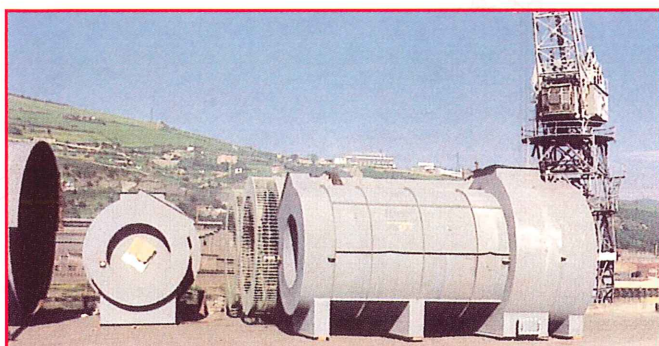


Silos and bucket elevators, Dolomite. Fertil (Annaba, Algeria).

## AUXILIARY EQUIPMENT



2 hot gas generators, 2 x 30,000 Th/h for TSP, PK. NPK dryers. Asmidal Annaba (Algeria).



Hot gas generators of 30,000 and 20,000 Th/h. Technipetrol for NPK/DAP/GTSP plant (Italy).



Dedusting by air-mix, 100,000 kg/h, air for ammonium sulphate dryer. E.I. Aragonesas (Huelva, Spain).



Bag filter jet 160-2L-10, Dryer + Granulator + Cooler of Fertilizer, NPK. Inabonos (Spain).

## HOT GAS GENERATORS

By supplying the hot gas generator with the dryer, there is one only company responsible for the whole process.

- Gas, gas-oil and fuel oil hot gas generators.
- Solid combustibles hot gas generator.
- Air vein hot gas generator.
- Rotary cup burner hot gas generator.
- Total automatism in accordance with the drying process.
- Safety systems.
- Regulation and control by PLC or PC.
- Quality lining refractory, with a high content in alumina.
- Clean, ecological combustion.
- Cogeneration gas exploitation.
- Capacity up to 2 x 40,000 Th/h.

## DEDUSTING

- The dedusting, caring for the environment, is an ecological and economic duty.
- **COMSPAIN** proposes several technologies suitable for each problem or requirement.
- High performance cyclones.
- Multicyclones.
- Hydrocyclones.
- Bag filters (mechanical cleaning).
- Bag filters (compressed air cleaning).
- Cartridge filters.

High and low gas temperature. Filtering surface from 6 m<sup>2</sup> up to more than 15,000 m<sup>2</sup>.

- Dry electrofilters. Flows up to >500,000 m<sup>3</sup>/h.
- Scrubbers, venturis: Medium and high efficiency.
- Dry, semidry and humid processes for acid gases uptake with: lime, bicarbonate, soda, etc...
- Desulphuration (SO<sub>x</sub>) by dry, semidry and wet way.
- Denitrification (NO<sub>x</sub>) by "SNCR", "SCR" processes with urea or ammonia.

## OTHER EQUIPMENT:

- SILOS
- BUCKET ELEVATORS
- VESSELS
- ETC.



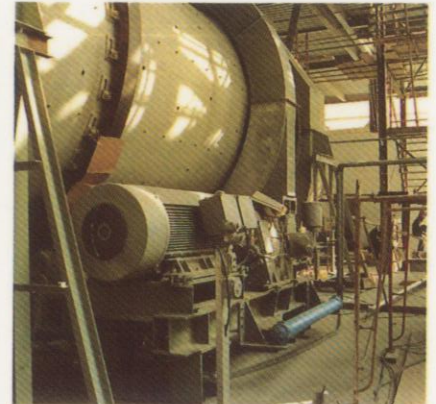
XXI  
COMSPAIN S.A.

# COMSPAIN

## EQUIPMENT AND INDUSTRIAL PLANTS



GTSP, NIK, DAP Ak Jubail, General Fertilizer Co. (Saudi Arabia).



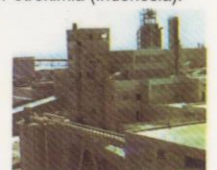
NPK, DAP, TSP Gresik Petrokimia (Indonesia).



Shipment, Maroc Phosphore, Jorf Lasfar, Office Cherifien des Phosphates (Morocco).



AN and CAN factory Sagunto, Fertiberia (Spain)



TSP, NPK, PK, DAP, Annaba's (Algeria)



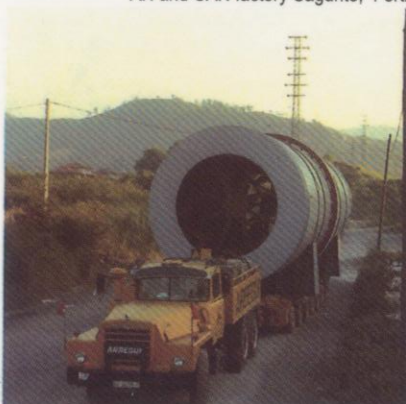
NPK DAP Fertilizes Gabes/Siapa Groupe Chimique Tunisien (Tunisia)



COMSPAIN testing Laboratory.



DAP/NPK TUGSAS (Turkey) Samsun.



Transport UDHE, Intecsa (Turkey)



NPK Fertilizer Plant, NAFAS-PETRONAS, (Malaysia).



Urea prills tower cooling Enfersa Cartagena (Spain)



NPK cooling 1,200,000 frig/h. Fertiberia Huelva Plant. (Spain).



Ammonium sulphate Philphos Leyte Intecsa/UDHE Philippines



## REFERENCE

CUSTOMER	CITY, COUNTRY	PRODUCT
Abocol	Cartagena de I., Colombia	NPK
Asur	Cartagena, Spain	NPK
BCIC / Toyo Thai	Chittagong, Bangladesh	DAP
Bunge Maroc Phosphore	Jorf Lasfar, Morocco	DAP-MAP / GTSP
C.P.G.	Metlaoui, Tunisia	Phosphate
China Petroleum Material & Equipment Corp (CPMEC)	Urumqi, China	NPK
Chobi	Pulsan, Korea	NPK / DAP
CNCCC	Kunming, China	NPK
Comercial de Fosfatos	Castellón, Spain	MAP
Comercial de Nitratos	Alicante, España	MAP
Dongbu	Ulsan, Korea	NPK / DAP
Dragados Industrial / Saudi Arabian Mining Co. (Ma'aden)	Ras Az Zawr, Saudi Arabia	DAP
E.I. Aragonesas	Huelva, Spain	Ammonium sulphate
El Nasr Co. for Intermediate Chemicals (NCIC)	El Fayoum, Egypt	DAP / NPK
Enaex / Técnicas Reunidas	Mejillones, Chile	TAN
Enfersa	Cartagena, Spain	Urea
Enfersa	Huelva, Spain	DAP / NPK
Ercros	Escombreras, Spain	DCP / MCP
Fertial	Annaba, Algeria	AN, CAN
Fertial	Arzew, Algeria	AN, CAN
Fertiberia	Avilés, Spain	AN
Fertiberia	Bilbao, Spain	AN
Fertiberia	Puertollano, Spain	TAN
Fertiberia	Puertollano, Spain	Urea
Fertiberia	Sagunto, Spain	AN / CAN
Fertiberia	Seville, Spain	NPK
Fertiberia	Séville, Spain	TAN
Fertoes	Navalmoral, Spain	Organic-mineral
FMC Foret	Huelva, Spain	MCP
Fosfertil / Jaraguá	Brazil	NPK
Fosfórico Español	Huelva, Spain	AN-CAN-DAP
Gaet Company	Haiphong, Vietnam	TAN
Gecopham	Palmyra, Syria	Phosphate
GFC	Homs, Syria	GTSP
Granuphos	Sfax, Tunisia	TSP
Groupe Chimique Tunisien	Gabés, Tunisia	DCP
Groupe Chimique Tunisien	Gabés, Tunisia	NPK / DAP
Groupe Chimique Tunisien	Gabés, Tunisia	Phosphate
Hip Azotara	Pancevo, Serbia	NPK
Hubei	Datian, China	NPK
IFI	Arklow, Ireland	AN
IGSAS (Istanbul Gübre Sanayii AS)	Turkey	TAN

**S (SUMMARISED LIST)**

<b>CUSTOMER</b>	<b>CITY, COUNTRY</b>	<b>PRODUCT</b>
Inabonos / Roullier Groupe	Lodosa, Spain	NPK
Incro	Turkey	NPK
Jianxi	Guixi, China	DAP / NPK
Jordan Phosphate Mines Co.	Aqaba, Jordan	DAP
Labin	Igualada, Spain	Organic-mineral
Ma'aden / Litwin	Ras Az Zawr, Saudi Arabia	Additives
Ma'aden / Litwin	Ras Az Zawr, Saudi Arabia	Phosphate
Maxam U.E.E.	Chirchik, Uzbekistan	TAN
Nafas Petronas	Kedah, Malaysia	NPK
Namhae	Pulsan, Korea	NPK / DAP
NFC / King Politechnic	Taipei, Taiwan	NPK
NICAS	Valladolid, Spain	AN-NAC-DAP
Nitrastur	Avilés, Spain	TAN
Nitrogen Muvek R.T. / Prochem	Petfurdo, Hungary	AN, CAN
OCP	Jorf Lasfar, Morocco	NPK
OCP	Safi, Morocco	GTSP
OCP	Safi, Morocco	NPK
OCP / Precismeca	Sidi Chenanne, Morocco	Phosphate
OCP / Smessi	Safi, Morocco	NPK / DAP
Omnia Fertilizer	Sasolbourg, South Africa	NPK / DAP
Pequiven	Valence, Venezuela	DAP
PHB Weserhütte	Ras Az Zawr, Saudi Arabia	DAP / MAP
Philphos	Isabel, Philippines	NPK
Philphos / Dragados	Isabel, Philippines	Ammonium sulphate / NPK
PT Asean Aceh	Indonesia	NPK / DAP
PT Petrokimia Gresik	Surabaya, Indonesia	DAP
PT Petrokimia Gresik	Surabaya, Indonesia	KCI
PT Petrokimia Gresik	Surabaya, Indonesia	NPK
PT Petrokimia Gresik	Surabaya, Indonesia	ROP (SP 36)
PT Petrokimia Gresik	Surabaya, Indonesia	SP 36
PT Petrokimia Gresik	Surabaya, Indonesia	Urea
PT Petrokimia Gresik / Rekayasa	Gresik, Indonesia	NPK
Repsol-Proquimed / Techplant Ingest	Castellon, Spain	Ammonium sulphate
S, Gubre Sanayii	Turkey	DAP
Sabic / Technipetrol	Al Jubail, Saudi Arabia	GTSP / NPK / DAP
Sasol / SNC Lavalin	Secunda, South Africa	CAN
Sogama	La Coruña, Spain	Compost
Timab (Roullier)	Gabés, Tunisia	MCP
Timac	Saint Malo, France	DCP
Tirmadrid / Dragados	Madrid, Spain	Compost
Toros Gubre	Adana, Turkey	NPK
Toyo Tec	Luzhai, China	DAP
Tugsas / Sereland	Istanbul, Turkey	NPK
Zakłady AV	Wloclawek, Poland	AN

# GRANULATION PLANT

Country	Saudi Arabia
City	Ras Az Zawr (Persian Gulf)
Customer	Ma'aden / Worley Parsons
Engineering	Intecsa Industrial
Processing	INCRO
Products	DAP/MAP
Production	4 x 105 T/h each unit
(4 units)	4 x 725,000 T/year

COMSPAIN supplied the following equipment:

#### 4 Granulation lines:

- 4 Rotary dryers  $\varnothing$  4.75 x 35.2 m
- 4 Granulator drums  $\varnothing$  4.5 x 10 m
- 4 Fluid bed coolers 32.4 m<sup>2</sup>. Two Stages
- 4 Coating drum  $\varnothing$  2.6 x 8 m
- 4 Hot gas generators 10,000,000 Kcal/h
- 4 Air conditioning units in open circuit  
4 x 2,500,000 kcal/h
- 4 Dedusting Heater Package

## COMSPAIN XXI, S.A.

### HEAD OFFICE

Bravo Murillo, 23 - 28015 Madrid (Spain)  
Phone (+34) 91 448 99 55 - Fax (+34) 91 447 54 77 / 31 39

### MANUFACTURING DEPARTMENT

Polígono Leguizamón  
C/ Araba, 4 - 48450 Echevarri, Vizcaya (Spain)  
Phone (+34) 94 440 44 50 - Fax (+34) 94 440 09 50

E-mail: [comspain@comspain.com](mailto:comspain@comspain.com)  
Web: <http://www.comspain.com>



COMSPAIN S.A.

ISO 9001

BUREAU VERITAS  
Certification

