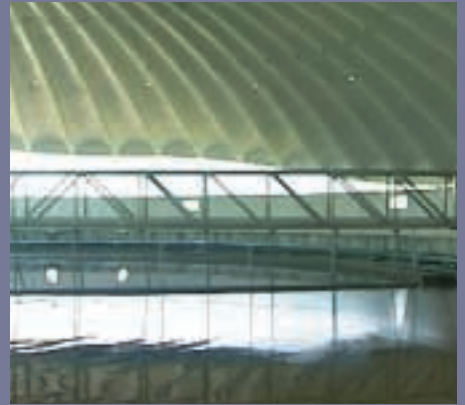






## COMPOSITES AND THERMOPLASTICS TO COMBAT CORROSION



PRACTICAL AND INNOVATIVE SOLUTIONS FOR A WIDE RANGE OF CORROSION PROBLEMS USING COMPOSITE AND DUAL LAMINATE PIPE SYSTEMS, PROCESS VESSELS AND LININGS

## I. COMPANY PROFIL

CTRA is a company with an authorised capital of 1.000.000,000 Tunisian Dinars, the principal shareholder being the **AMALTHEE Group**.

**CTRA** through the AMALTHEE Group, has access to the technical, financial and logistic power of a solid group rich in 35 years of experience in the commercialising and industrial manufacture of pipe systems, process vessels, tanks and site erection to various industries.

## II. ACTIVITY

- Conception and design of pipework systems, including
  - elaboration of isometrics
  - support drawings
  - process vessels and tank drawings
  - Conception and design using infinite element and 3D logiciels
- Manufacture of pipes and fittings to international standards
- Potable water and waste water systems and canalisations
- Manufacture of process vessels
- Construction of tanks and scrubbers
- Storage tank manufacture
- Deodorisation and tank covers for sludge treatment farms and installations
- Industrial linings of all types

## III. PRODUCTION CAPACITY

- Pipes and fittings from 15mm to 3000mm Diameter
- Process vessels and tanks from 500mm to 5000mm Diameter, or specials
- Lengths of individual items up to 12/20 meters
- Weekly producteur capacity :
  - Pipes : 3000 meters by week
  - Fittings : 500 by week
  - Vessels : following weight and dimensions/size

## IV. MATERIALS TRANSFORMED

Thermosetting resins, such as :

- Polyester
- Vinylester
- Bisphenols
- Epoxy

Thermoplastics, such as :

- Polychlorure of vinyl : PVC
- Polypropylene : PP
- High density polyethylene : Pe Hd
- PVDF

These products can be supplied/transformed with or without over wrapping of GRP

## V. AREAS OF APPLICATION

- 1- Chemical industry, transport and storage of acids or basic solutions
- 2- Paper industry, including bleaching plants
- 3- Oil and petrol industries :
  - Fire mains
  - Ballast lines
  - Well head injection
  - Dirty water transport
- 4- Pharmaceutical industry
- 5- Environmental protection
  - Gas scrubbers for the treatment after the incineration of household and industrial waste
  - Transport and transfer lines for the treatment and or, storage tips
  - Drainage pipework and systems
  - Water purification stations, pipework, equipments, ventilation ducts and tank covers (up to but not limited to 42m Diameter)
- 6- Power, thermal and nuclear stations
  - Cooling lines
  - Fire mains
  - Drain pipes
- 7- Water industries
  - Drinking water systems, transport and transfer
  - Desalination plants/units
  - Seawater pumping stations and units
- 8- Food and alimentation industries
  - Transport and storage of liquid foodstuffs
- 9- Metal industry/steel treatment
  - Pickling line, pipework and tanks.







## VI. NORMALISATION, SPECIFICATIONS AND MANUFACTURING STANDARDS

Production standards :

NFT 57-900  
DIN 16965 and 16966  
DVS  
ASTM  
AD MERKBLATT  
AWWA

Manufacturing procedures and standards :

NFT 57 900  
NFA 88800  
NFA 89803  
DVS 2212  
DVS 2221

Specifications :

Not limited to but including  
The union of chemical industry handbook (UIC N°7)

Others :

To clients specific requirements  
To request

## VII. QUALITY ASSURANCE

CTRA Tunisia is certified ISO 9001 : 2000 by the Lloyds register, certificate approval n°355393 and has had agreement since June 2000

## VIII. REFERENCES OF THE AMALTHEE GROUP

(List not limited to the following)

Engineering

ELF Atochem  
Rhone Poulenc  
Solvay  
CGT  
Roussel UCLAF (France)  
ALKIMIA (Tunisie)  
ICF. Industrie Chimique du Fluor  
AZFC (Egypte)  
GCCl (Lybie)  
SITEP (Tunisie)  
SONEDE (Tunisie)  
SNCPA (Tunisie)  
EDF (France)  
KRONENBOURG  
STIR (Tunisie)  
SOTULUB (Tunisie)  
ICS Industrie Chimique du Sénégal  
OCP Office Chérifien des Phosphates (Maroc)  
IMACID (Maroc)  
ENIP-SONATRACH (Algérie)  
WISCO (China)  
NANTAISE DES EAUX

KREBS  
LAB  
VAI-CLECIM  
SPEIC  
AOUSTIN  
TECHNIP LCI  
CADAGUA  
VATECH WABAG  
SIDEM  
INTECCA-UHDE  
TECI

1 Sea water suction, dia 1000mm, OCP Morocco

2 Design office

3 Quality control laboratory

4 Phosphoric acid pipe work, ICS Senegal

5 View of the CTRA Hergla fabrication unit

6 ISO 9001 Quality Assurance certificate



# MANUFACTURING



**1** One of the pipe production lines, using automatic filament winding technology, which replies to the highest level of European standards.

**2** Filament wound pipe being produced

**3** Preliminary control and assembling of our "O" ring and mechanical key joint

**4** Filaments being wound to a controlled angle, 55°

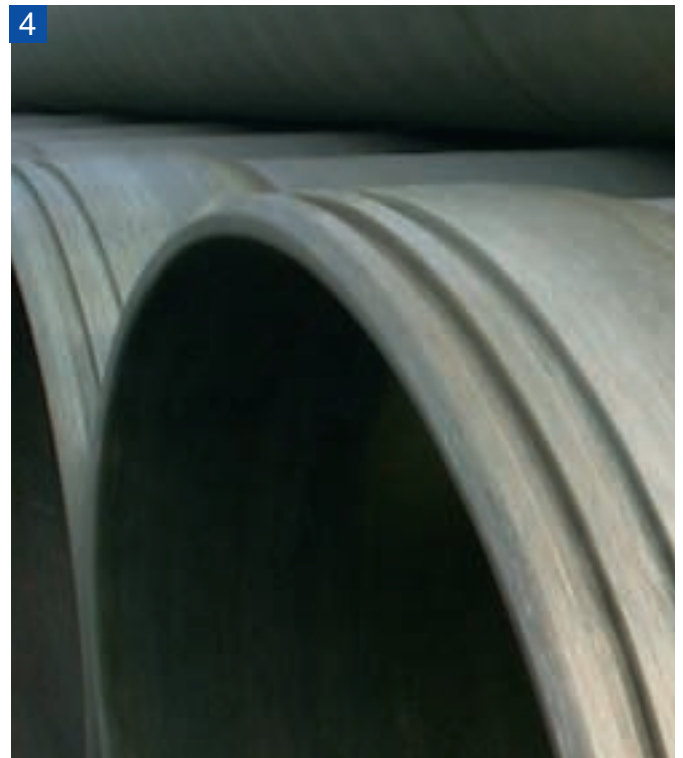
**5** Orthogonal winding

**6** Work station for elbows, tees and reducers, in both GRP and Thermoplastic over wrapped products.

**7** Work station, using compression moulding technology, for stub collars and flanges in both GRP and Thermoplastic over wrapped products



# CANALISATION MANUFACTURING



1 Mechanised liner application

2 Pipe being stripped from the mandrel.

3 Liner preparation and air bubble control

4 Machined male end for a double "O" ring and key joint



# CHEMICAL PLANTS INSTALLATION



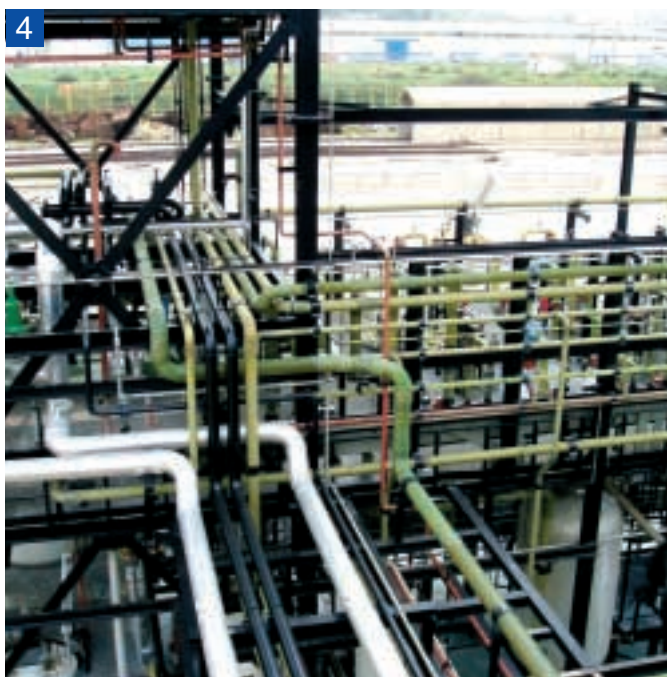
1 Concentrated Acid Phosphoric plant at IMACID, Morocco, GRP pipework



2 Over all view of the chloring membrane cells (Electrodes CL<sup>2</sup>) at ENIP Algeria ( UHDE process )



3 Unit for the storage of Acid Phosphoric at ICS2 Senegal



4 Filtration unit (salt) ENIP/SONATRACH Algeria

5 Rack pipework ENIP/SONATRACH Algeria





# STORAGE



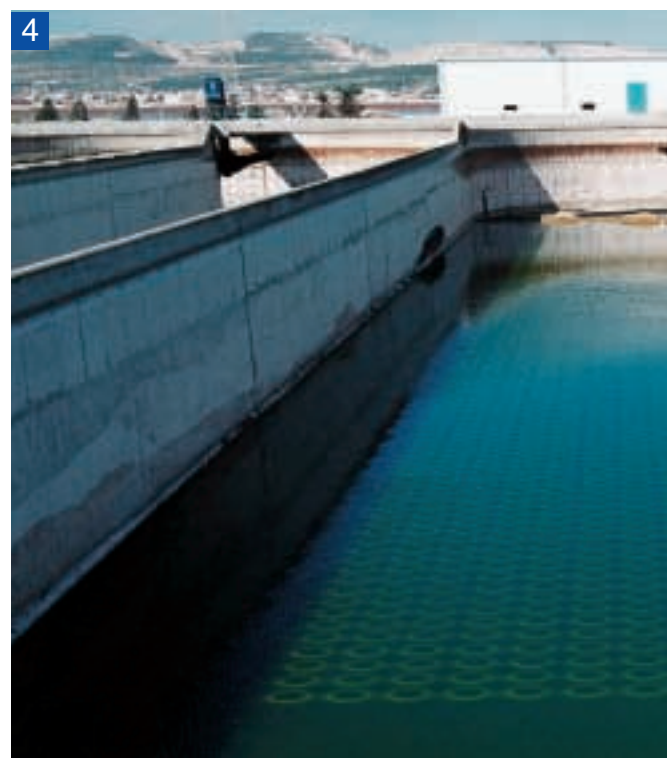
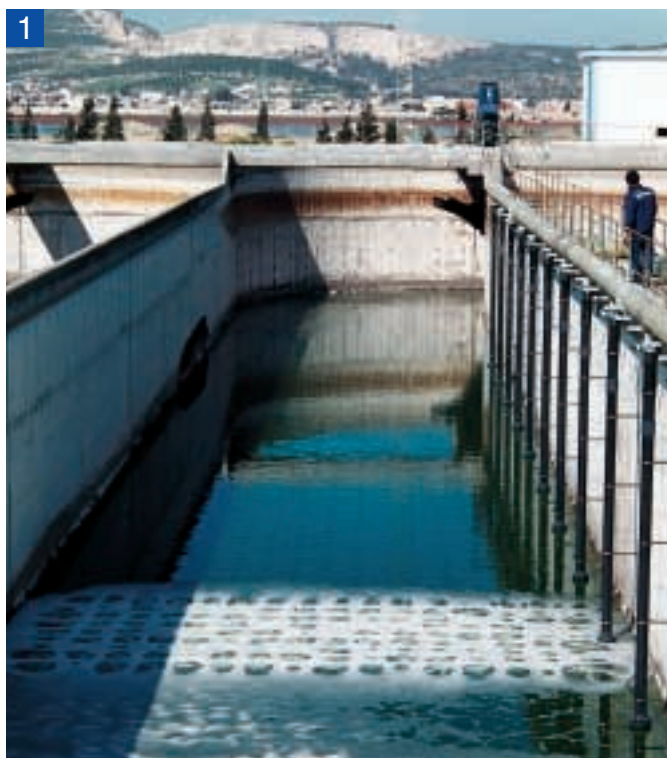
## FINISHED PRODUCTS



- 1 Storage of glass and veils, technical products
- 2 Drummed resin
- 3 Pipes in their storage cradles

- 4 Stub collar order, under preparation
- 5 Prefabricated, GRP, isometrics





**1** Membrane test on the diffusers for an aeration basin

**2** Suppressed air distribution in a pre treatment plant

**3** Pre-treatment unit : Suppressed air injectors and a tranquilisation curtain made in PeHd

**4** Overall view of the diffusion membranes and the resulting fine bubbles, aeration basin

# PROCESS VESSELS AND TANKS



**1** Chemical storage tank farm using plastic products, for tanks, ladders and handrails

**2** Assembling of the gas rotation veins in a gas scrubber of 4500 mmDiameter

**3** Mixing tang in polypropylene, PP

**4** Hydrochloric, 33% concentration, storage tank farm in PVC over wrapped with GRP, capacity of the each tank 100M<sup>3</sup>

**5** Injector nozzles in PVDF

**6** Gas scrubber in Polypropylene, PP



# WATER PURIFICATION STATIONS, DEODORISATION



**1** Erection of a 42 meter diameter primary decanter cover at the (ONAS) Chotrana step plant

**2** Endless screw cover at the (ONAS) Sousse Nord step plant

**3** Biofilter at the (ONAS) Sousse Nord step plant

## POLYURETHANE LINING IN A BIOGAS DIGESTER



- 1
- 2 Before lining
- 3

- 4 Support preparation
- 5 After lining