



# Process, Construction and Performances

| SUGAR INDUSTRY | ALCOHOL | DRYING | ENVIRONMENT |

 **Maguin**  
A Moret Industries Company

P r o c e s s   &   C o n s t r u c t i o n

*Within a few years, MAGUINS.A.S., well known for its expertise in the Sugar industry, has been able to diversify and expand its activities.*

*Today, MAGUIN offers some industrial processes and equipment from from conception up to implementation and starting-up on 4 main activities:*

- Beet Sugar Industry*
- Drying and Screening of organic and mineral products*
- Alcohol and Fuel ethanol*
- Industrial and Hospital waste Incineration*

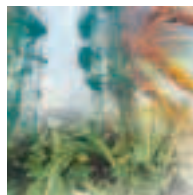
## Process, Construction and Performances

*These 4 operational departments, turned towards our customers, federate and organize process and construction know-how as well as experience and creativity of MAGUINS.A.S. teams.*

*MAGUINS.A.S. has developed for years a brand image of superior reference technologies, quality equipment and services. Our objective is to reinforce and develop this brand image on our markets, while adapting MAGUIN to its customers ever changing needs.*

*MAGUIN is one of the two poles of activities of the MORET INDUSTRIES Family Group located in St Quentin (02) in France, the second, ENSIVAL-MORET INTERNATIONAL, being dedicated to industrial pumps.*

The Board of Direction





# Sugar industry

## Processes

### Beet yard

hydraulic beet yards  
dry beet yards

### Beet washing

washing drums  
stone catchers  
belt weed catchers  
fork weed catchers  
finishing washers  
ballistic separators  
floating items  
catchers  
sand catchers  
stone washers  
weed washers  
weed crushers  
and presses

### Slicing

drum beet-slicers  
knife maintenance workshop  
knives and milling cutters  
(k-maguin)

### Pulp drying

triple-pass dryers  
low temperature dryers

### Lime production

coke fired lime kilns  
gas or oil fired lime kilns  
milk of lime workshops

### Screening

sugar screening  
water screening

### Miscellaneous

evaporator vessels  
vacuum pans  
mixers and crystallizers

## Our ambition

*To contribute to the future development of the sugar industry:*

- *by our creativity*
- *by responding to the various industrial needs*

MAGUIN history and the sugar industry in France are closely related. Even today, the company image and its industrial planning are greatly influenced by the development of the beet industry in Europe and in the world.



Substantial progress has been achieved by the sugar industry, especially in the European countries, with sugar production per hectare as well as factory output clearly improved.

MAGUIN S.A.S. is proud to have contributed to this development with a large number of new technological concepts: drum beet-slicers, wide range of innovating washing equipment, high performance pulp dryers.

Many challenges must still be highlighted: the pursuit of general improvement in competitiveness, increased environmental restrictions, the development of beet production in tropical and semi-dry areas.

To consolidate the future of the sugar beet industry, a constructive dialog between the various components of the industry is necessary. By the development of its products, MAGUIN S.A.S. will actively contribute to this goal.



**Leader in washing plants**

- With around 100 complete or partial washing plants in the last 30 years, MAGUIN S.A.S. offers a custom-made installation to each customer based on:
- the local conditions: type of soil
  - harvest conditions:
    - manual or mechanical
  - the type of yard:
    - hydraulic or dry
  - the customer requirements in:
    - separation of weeds and beet tails
    - stone processing
    - sand processing
    - separation of floating objects (wood, plastics)
  - possible future developments.

Owing to a constructive dialog with each customer, an optimal washing scheme can be defined associating:

- modular structure
- efficiency
- adaptability

**New techniques**

*The high-pressure jet washing drum.*  
 Fields of application:

- finishing washer: 0.5 cubic meter of water per ton
- main washing: 0.5 to 1 cubic meter of water per ton
- possible auxiliary function: weed catching



# Aiming to excellence

A wide network of representatives ensures a close link between our company and the industrial sugar manufacturers of the different beet producing countries. This worldwide presence has enabled us to adapt our schemes and techniques to the widely varying conditions found in the different countries, while seeking optimization of:

- technological performances,
- drivability and adjustment,
- simplicity and functionality,
- safety and reliability,
- improvement in competitiveness.

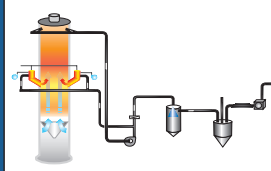
This drive for optimization is facilitated by MAGUIN S.A.S. specialization that brings together the following fields:

- mechanical design and steel works,
- workshops or complete facilities design,
- equipment manufacturing and construction,
- general contracting and offering services adapted to the requirements and each customer's problems.



**New techniques**

*Natural gas or fuel oil lime kilns*  
 Fields of application:  
 new kilns or transformation of existing units





# Alcohol

## Processes

The processes implemented are the proprietary know-how and property of MAGUIN S.A.S.

They cover all production stages:

- raw material preparation (crushing cereals, hydrolyzing starch, clarifying molasses)
- continuous fermentation
- distillation, rectification
- alcohol dehydration by molecular sieves process
- spent wash concentration with or without potassium salts extraction
- separation of draffs, drying and making pellets out of DDGS
- total or partial recycling of effluents
- CO<sub>2</sub> recovery

## Our experience and know-how

### Sectors of activity

*Beverage, industrial and pharmaceutical alcohol, phlegm, rectified, superfine, dehydrated alcohol...*



As a result of extensive industrial realization and years of development in the fields of alcohol and Engineering, MAGUIN-INTERIS has acquired a vast and ample

knowledge on processes, equipment designing and project management and implementation. The projects followed until now cover a range of 10,000 to 450,000 liters/day alcohol capacity. Presently, we are conducting studies on bioethanol production projects of more than 1,000,000 liters/day.

MAGUIN-INTERIS

is the Alcohol  
Department of

MAGUIN S.A.S.,

made up of  
a team of special-

ists who have

been actively working

in the alcohol

industry

for decades.

**Raw material treatment and valorization of by-products:** The mastering of raw materials, upstream the distillation step, is a key part in the success of a project. Our processes provide the ability of treating all traditional raw materials that are used in alcohol production, such as sugar and amylaceous raw products. The development of technologies where enzymes convert cellulosic biomass is a fundamental factor. The transformation of raw materials in alcohol generates by-products (CO<sub>2</sub>, DDGS) that must be valorized to ensure the highest yield from the investments. Our technologies incorporate the valorization of by-products.

# The industrial context



Many countries in the world are studying or have already launched programs aiming to the production of renewable energies based on the conversion of agricultural or biomass products.

MAGUIN-INTERIS is one of the main manufacturer for bioethanol, beverage and industrial alcohol. In the year 2000, INTERIS became a part of MAGUIN S.A.S. As a result, the MAGUIN-INTERIS Department enjoys necessary support and facilities for an ambitious policy, both for the French and export markets.

**MAGUIN-INTERIS offers the state-of-the-art in alcohol processing and engineering, including:**

- technical and economical studies and research,
- basic and detailed engineering services,
- equipment supply (from machines up to turnkey installations), some of those eventually made in our MAGUIN S.A.S. workshops,
- on-site technical assistance services (studies, assistance for erection, start-up, commissioning, training).

**These services may cover:**

- process standardization: possibly in joint partnership with some universities or other companies,
- pilot projects,
- new installations or existing plants revamping.

## Performances

- Alcohol yield: over 90 % of the theoretic yield depending on the raw material
- Minimizing stop periods
- Alcohol dehydration, actually: concentration over 99.9%
- Lowgrades very high extraction rate
- Very high organoleptic quality of superfine alcohol
- Optimized energy consumption

The required means for alcohol production are optimized according to the types of available energy on the site and their costs. The schemes are considered on case-by-case basis: multiple effect coupling, thermal-compression.

## MAGUIN-INTERIS and the environment

*MAGUIN-INTERIS considers a project as a whole and offers a number of solutions to help the customers in their environmental approach:*

- distillates and spent washes recycling
- concentration and possible drying (DDGS)
- biological and/or physical treatment
- by-products valorization

## Our resources

*Nowadays, the recognized experience and know-how of MAGUIN-INTERIS, based on a strategy with the structures and resources of MAGUIN S.A.S., allow the company to be present in the important projects. The acquisition of licenses on specific stages of production processes is an additional mean to its development.*

## Service and quality

*MAGUIN-INTERIS is a modern and forward-looking structure that uses advanced tools, means and facilities servicing its customers such as: AUTOCAD, ERP.*



## Our references

TEREOS • CRISTANOL • SDHF • SUCRERIE DU MARQUENTERRE • DEULEP • AKWAWIT • LOKHVISTA • DEPAZ • ZILLO GROUP • AL-ABBAS • SPILIOPOULOS S.A. • IPCO SIBIU • NIESZAWA • GORZELNIA • C.I.M. MALAYSIA • POLMOS SIEDLCE • DISTILLERIE DU SIMON • CRYSTALLINE CHEMICALS • HABIB SUGAR MILLS • SHAKARGANG • CSK • FABRIKA WODEK GDANSKICH • SHAMURAD • DEWAN • MATOL • UNICOL • KHIMSYNTHES • THAI AGRO ENERGY • MITR PHOL • NORDZUCKER • TRIKEMED • TONELON • POLMOS BYALISTOK • POLMOSLUBLIN • TOURY



# Drying

Drying and rotary drums  
turnkey installations for

- Beet pulp in sugar factories
- Alfalfa
- Wood chips, flakes
- Distilling, brewing draffs
- Mud resulting from industrial or water treatment processes
- Fertilizers
- Minerals
- All wet products having variable density and size of grain

## Our services

- *An erection and commissioning team start-up service*
- *An after-sales service for expertise*
- *A control and automation service*

MAGUIN-PROMILL

provides  
a complete  
know-how  
on drying.

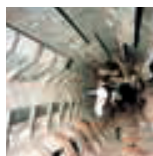
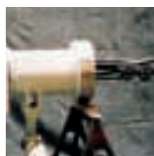
## A team of Process Engineers and a research office to meet your requirements



The Research Office and our team of energy specialists, at your service, will conceive your installation by considering all energy, implementation and environmental restrictions.

The thermal performances of our installations:

- the top performance obtained by drum drying: < 680 Kcal/kg of evaporated water,
- water evaporation: up to 90 t/h of water,
- dust emission < 50 mg/wet Nm<sup>3</sup> per scrubber especially conceived by MAGUIN-PROMILL.





## Our references

Sugar industry: BEGHIN-SAY • USDA • SAINT LOUIS SUCRE • CRISTAL UNION • SDHF • SUIKER UNIE • COSUMAR • EBRO AGRICOLAS • DAI • DOBROVICE • CUKROWNIA KRUSZWICA • S.I.I.C. • KOTCHOUBESKI • AMERICAN CRYSTAL  
 Alfalfa: ALF'ALLIANCE • DESIVAL • France LUZERNE • VIRIDIS • EUROLUZ • COOPERATIVE DE PUISIEULX • UNIDESHY • USINES COOPERATIVES DE DESHYDRATATION DU VEXIN  
 Wood industry: ISOROY SONAE • EGGER ROL • WILLAMETTE DARBO • KRONOFrance • COMPAGNIE FRANÇAISE DU PANNEAU • POLYREY • LINEX • SERIBO • BELIPA • COGRA • INTERBOIS • SPANO • BALKAN EXPORT • KUNZ • JOMAR • INTERSPAN • PG BISON  
 Distilleries: JAAKKO POYRY • SKW • ABENGOA • CIDRERIE DE VAL DE VIRE • SUCRERIES DISTILLERIES D'ORIGNY  
 Rotary drums: SOFERTI • CECA • SCGP • ZUID CHEMIE • KEMIRA • NORSE HYDRO • SPIE BATIGNOLLES • DUPONT DE NEMOURS • PEC-RHIN • PONT A MOUSSON • PRAYON RUPEL • RHONE POULENC • AMYLUM • SOLVAY • SYRAL • KREBS • MAROC PHOSPHORE • PLACOPLATRE • SAINT-GOBAIN  
 Some of the more than 250 references for crushers: MAROC CHIMIE • RHODIA • ROSIER • OCP • SEFANITRO • ALKIMIA • HYDRO AGRI • ATOCHEM • FOSFERTIL

### Processes

- Drying by triple pass, single-pass or indirect gas or steam drum
- Pre-drying or belt drying with water or steam exchangers
- Granulators
- Coating machines
- Calcinators
- Coolers
- Duo or trio fertilizer crushers
- Vibrating screening



## An efficient sheet metal shop

Our sheet metal shop is permanently equipped with flame cutting, rolling, 8 meters metal cutting and folding stations and a welding apparatus. This equipment results in high productivity and permits the manufacturing of:

- large capacity drums up to:
  - triple-pass: 10 meters diameter  
30 meters long
  - single-pass: 5.50 meters diameter  
50 meters long
- large foundry elements: cyclones, fans, scrubbers.

## The mechanical workshop specifications

Our mechanical workshop is equipped with vertical mills up to 6.30 meters high, machining center, 8 meters wide automatic chamfering machine, for manufacturing and assembling geared rims as well as tyres and rings, driving units with rollers and controls.

The duo or trio MAGUIN fertilizer crusher, with a capacity of 50 t/h and the corresponding spare-parts can be manufactured in this workshop.





# Waste thermal treatment

Protecting the environment has become a major issue in order to safeguard our lifestyle. Thanks to their 35-year experience, MAGUIN SAS can give you a personalized, reliable and economical turnkey solution for waste / biomass treatment and energy recovery.

The thermal treatment process allows:

- To reduce the volume of waste
- To suppress pollution by optimizing the quality of the ashes from the furnace and the flue gases
- To recover energy (production of electricity, steam, hot water...)
- To recover material, in some cases, by recovering by-products

## Any kind of waste

**Solid waste:**  
*Industrial waste, clinical waste, pharmaceutical waste, household garbage, slaughterhouse waste, meat and bone meals, animals, sludge, high viscosity waste, tar & asphalt residue...*

**Liquid:**  
*Solvents, oil residue, animal fat, polluted water...*

**Gaseous:**  
*Vapour and steam from boilers and dryers, VOC, contaminated air...*

## From process to construction

- Engineering, design, studies
- R&D
- Possibility of conducting tests (filtration pilot)
- Manufacturing
- Erection, start-up, training
- Technical assistance, maintenance
- Unit updating or refurbishing

## Technologies

*Rotary kiln  
 (up to 20 MW per line)  
 APICC stepped kiln  
 (from 200 kg/h to 3T/h)  
 APICC static kiln  
 (from 10 kg/h to 300 kg/h)*



## MAGUIN-APICC

*A range of stepped kilns and static kilns  
 (from 10 kg/h to 3 T/h)*



## Our references

COOPERL • CIE CRETEIL • COLRUYT • SIPCAM • SPEICHIM • LITWIN • PARDIES ACETIQUE • SARP INDUSTRIES • CECA • ARF • ATOCHEM • DUPONT DE NEMOURS • GOUVERNEMENT ARABIE SAOUDITE • AT France • SFEH • 2 N INT • VARSANI DEWJI RAMJI • BOUYGUES • SERFI • CEDES • FM.M.

# Air pollution control

## Applications

- Chemical industry, petrochemical industry, pharmaceutical industry, agricultural and food industry, slaughterhouses, knackers, glass industry  
Electricity production units  
Supermarket logistic platforms  
Waste treatment experts
- Local communities  
Hospitals  
Local administrative units  
Towns, cities

MAGUIN SAS's know-how has developed in order to meet ever-growing environmental requirements and refuse standards which are becoming stricter and stricter.

We can offer the best adapted dry gas treatment process solution, from equipment design to erection, in the following fields :

- Dust removal
- Neutralization of acid gases SOx
- Destruction of dioxins and furans
- Heavy metals treatment
- NOx reduction

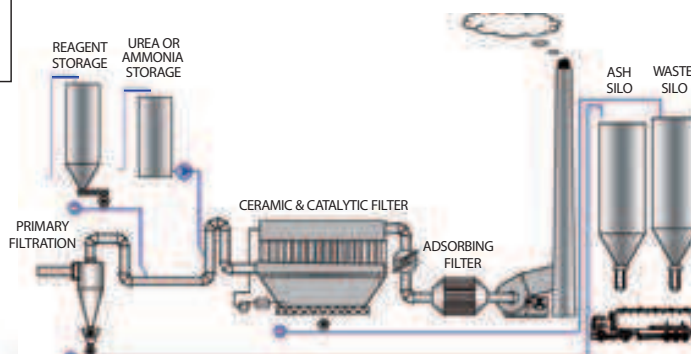
## Technologies

- Bag filter
- High temperature ceramic candles filter
- Ceramic catalytic candles filter CERCAT (De NOx + De Diox)
- Catalytic or non-catalytic De NOx
- Gas conditioning

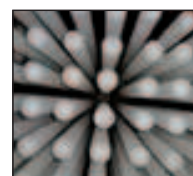
## CERCAT

Advantages compared to classical processes

- A more compact system
- Better energetic yields
- Reduced fuel consumption
- Decreased operating costs



Ceramic catalytic candles used in the CERCAT filter





Alcohol Champs-sur-Marne



Environment/Sugar industry Charmes/Head office



Drying Serville



A company implemented in the Aisne Department

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