



GLASSMAN EUROOP

CERCAT : A Technology for Air Pollution Control

Process, Construction & Performances

| SUGAR INDUSTRY | ALCOHOL | DRYING | ENVIRONMENT |



13th – 14th May 2009



PROGRAMME

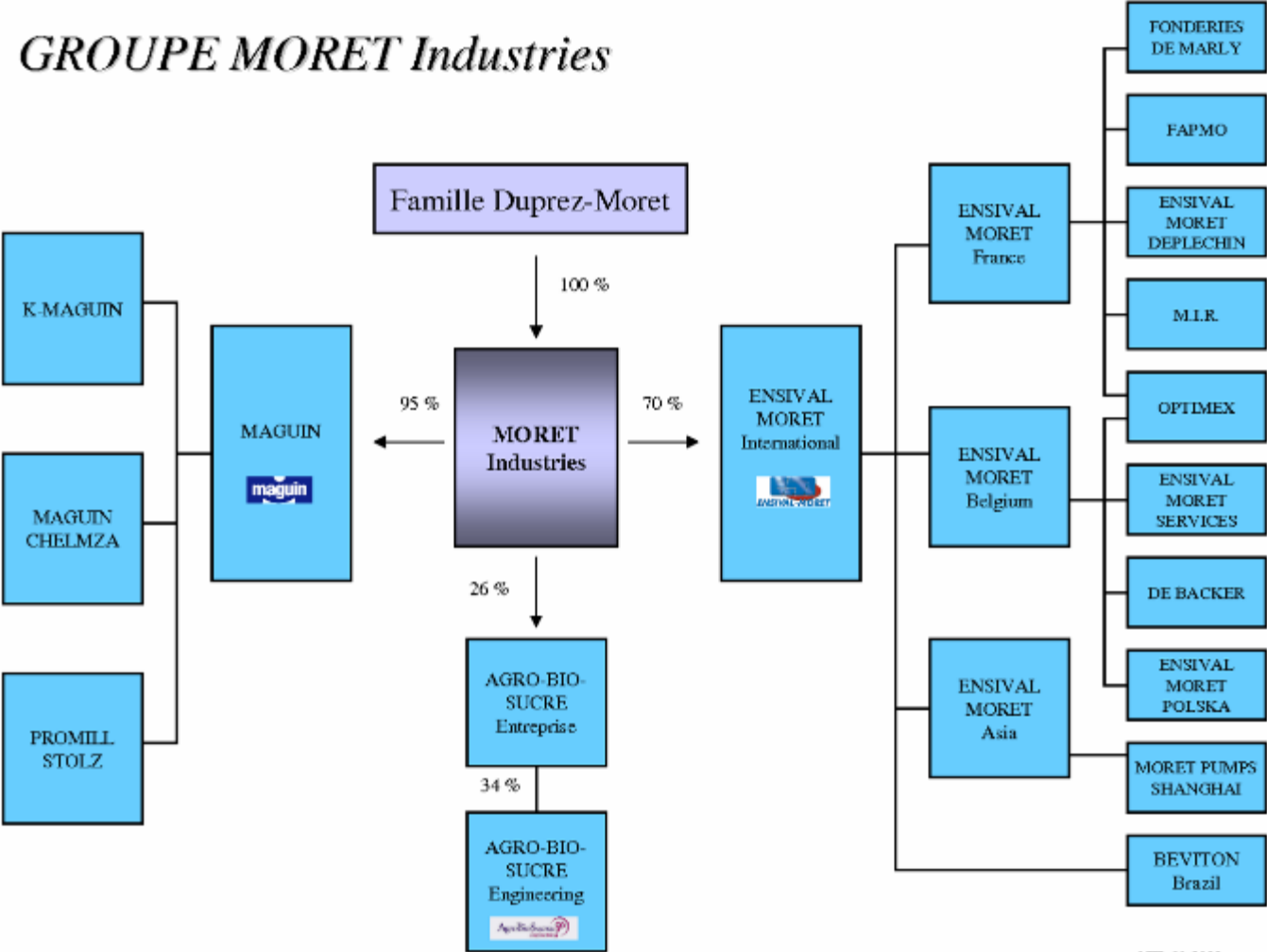
1. MAGUIN S.A.S. presentation
2. CERCAT process presentation
3. Pilot test in the glass industry
4. Cooperl results
5. Conclusions



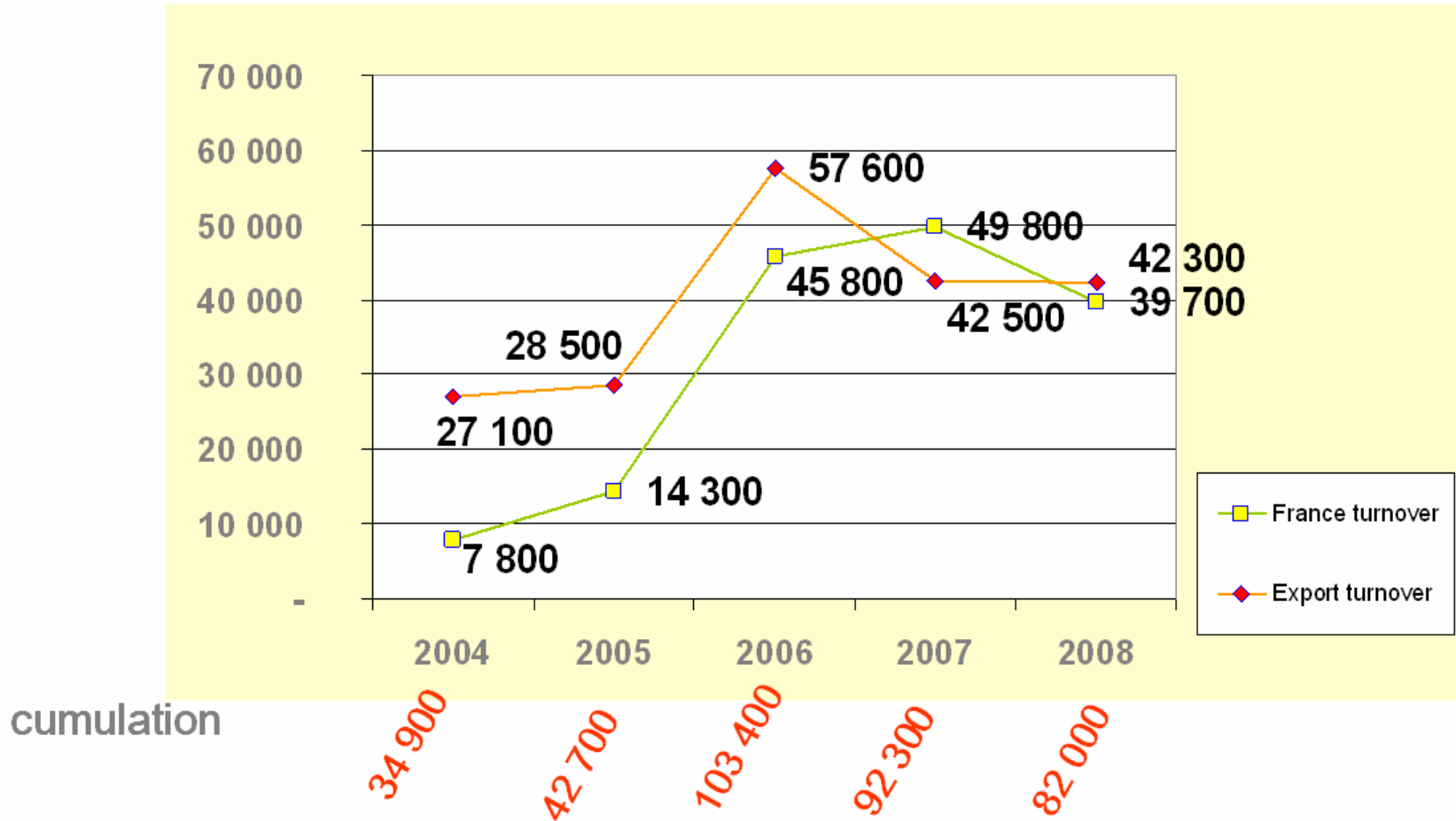
1. MAGUIN S.A.S PRESENTATION

THE ASSETS OF AN INDUSTRIAL GROUP

GROUPE MORET Industries



TURNOVER – VALUES IN K.€



A collage of industrial images including a factory interior, a large storage tank, and a worker in a hard hat.

4 DEPARTMENTS

SUGAR INDUSTRY

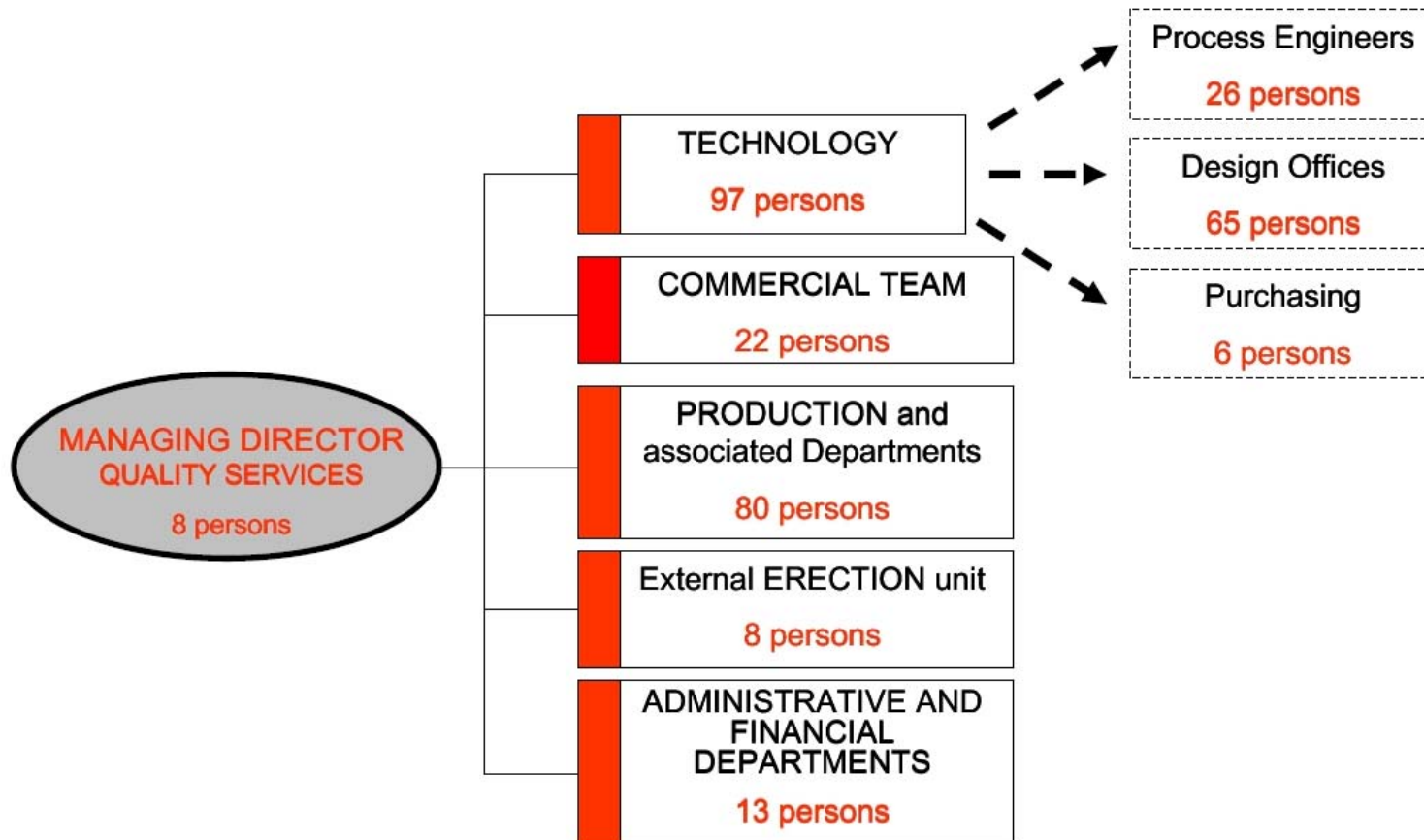
ALCOHOL

DRYING

ENVIRONMENT

HUMAN RESOURCES

A staff of 228 people





ENVIRONMENT DEPARTMENT

Thermal treatment and energy recovery systems for installations of variable sizes. Air pollution control equipment.

Incineration and applications:

- Solutions adapted to the treatment of : industrial waste, hospital waste, biomass with turnkey solutions, slaughterhouse waste, MBM, TAG and other applications
- Rotary kilns, stepped kilns, static kilns for solid, pasty and gaseous waste.

Air pollution control and energy recovery

- High temperature filtration, acid gases neutralization on bag filters or on ceramic candles filters
- NOx and dioxins treatment on catalysts
- An all-in-one solution : **CERCAT**



2. CERCAT PROCESS PRESENTATION



1. Why a different process?

- ⇒ To **decrease the size** of the equipment
- ⇒ To decrease the investment costs : **Compact installation**
- ⇒ For a **longer process lifetime** : The catalyst is embedded in the candle
- ⇒ To **optimize operating costs** : Reagent consumption, filtering residue production and energy consumption

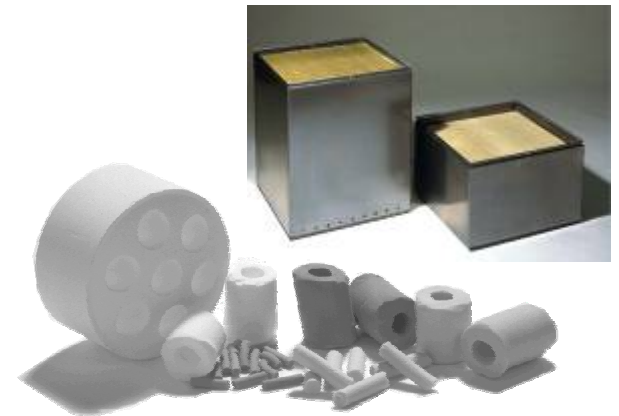
2. The CERCAT process concept

DIFFERENT

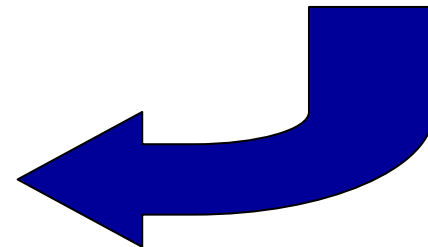
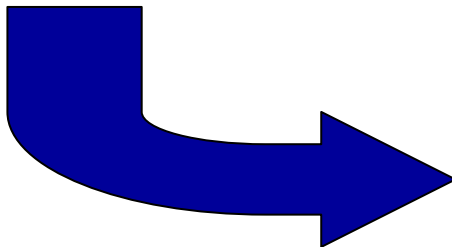
thanks to the combination of 2 well-proven technologies



CERAMIC CANDLES



CATALYST





3. Description of ceramic catalytic candles

- **Resistance to high temperatures : 900°C (optimum operating conditions 280 – 350°C)**

- Operation with high temperature treatment
- Efficient with variable operating conditions

- **Resistance to corrosion**

- Resist aggressive species attacks
- Can be used in difficult environment



4. Treatments

⇒ Acid Gases (HCl, SO₂ et HF)

Optimal neutralization thanks to the creation of a cake on the ceramic candle

⇒ Dust

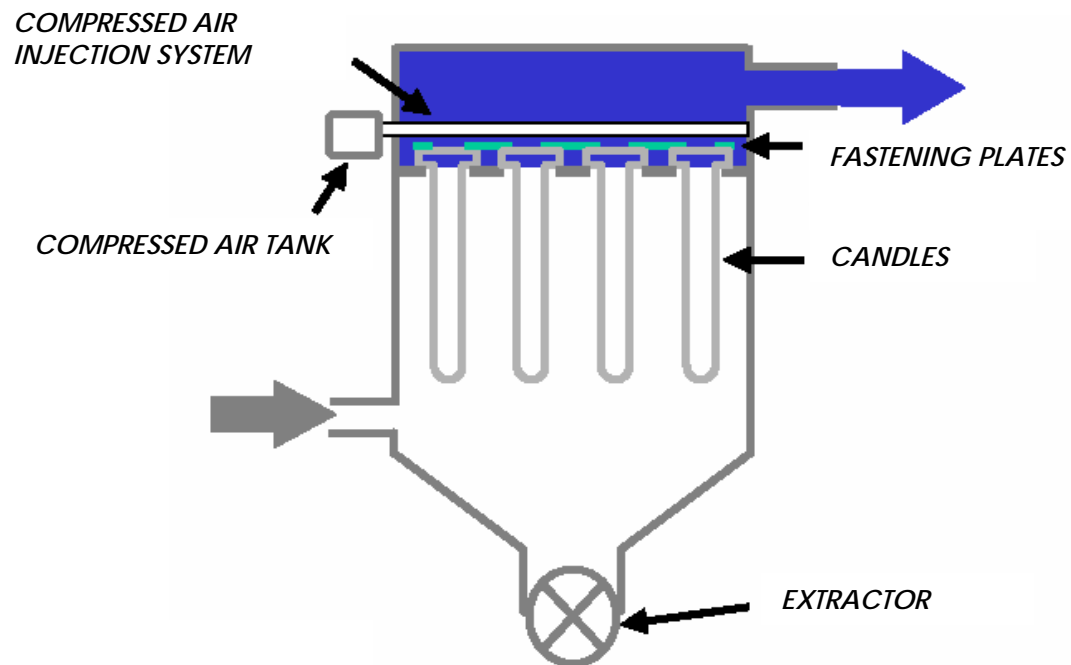
Filtration on the most efficient filtering element : The ceramic candle

⇒ NO_x

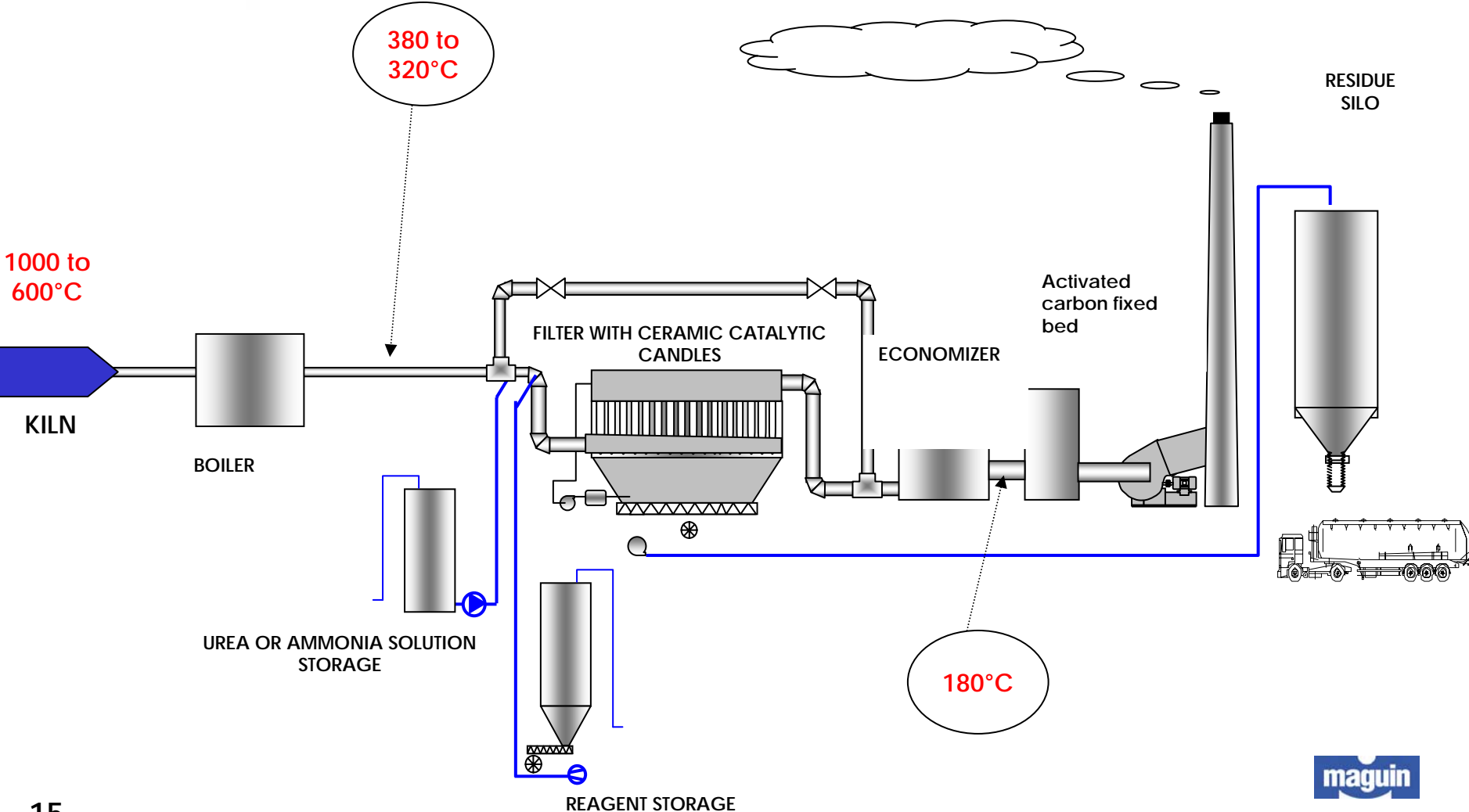
Reduction on catalyst with very high reaction yields

5. Filter operation

Filtration process :



6. Process Description



7. A well-proven technology

To answer the customers' needs, MAGUIN has invested in a Pilot Filter which can be used in different kinds of industries





7. A well-proven technology

The investment made by **MAGUIN** in a **Mobile Pilot Filter** has enabled to carry out tests and to validate the process performances in various industries

- 1. Animal fat incineration*
- 2. Slaughterhouse waste incineration*
- 3. After a thermal oxidizer*
- 4. After combustion engines*
- 5. Glass industry*



7. A well-proven technology

In all cases, the results have allowed to validate the following items in the **260 – 400°C** range of temperatures:

- *High filtration efficiency*
- *Good DeNOx yields*
- *Performance of the different kinds of reagents*
- *Process homogeneity and performance*



3. PILOT TEST IN THE GLASS INDUSTRY



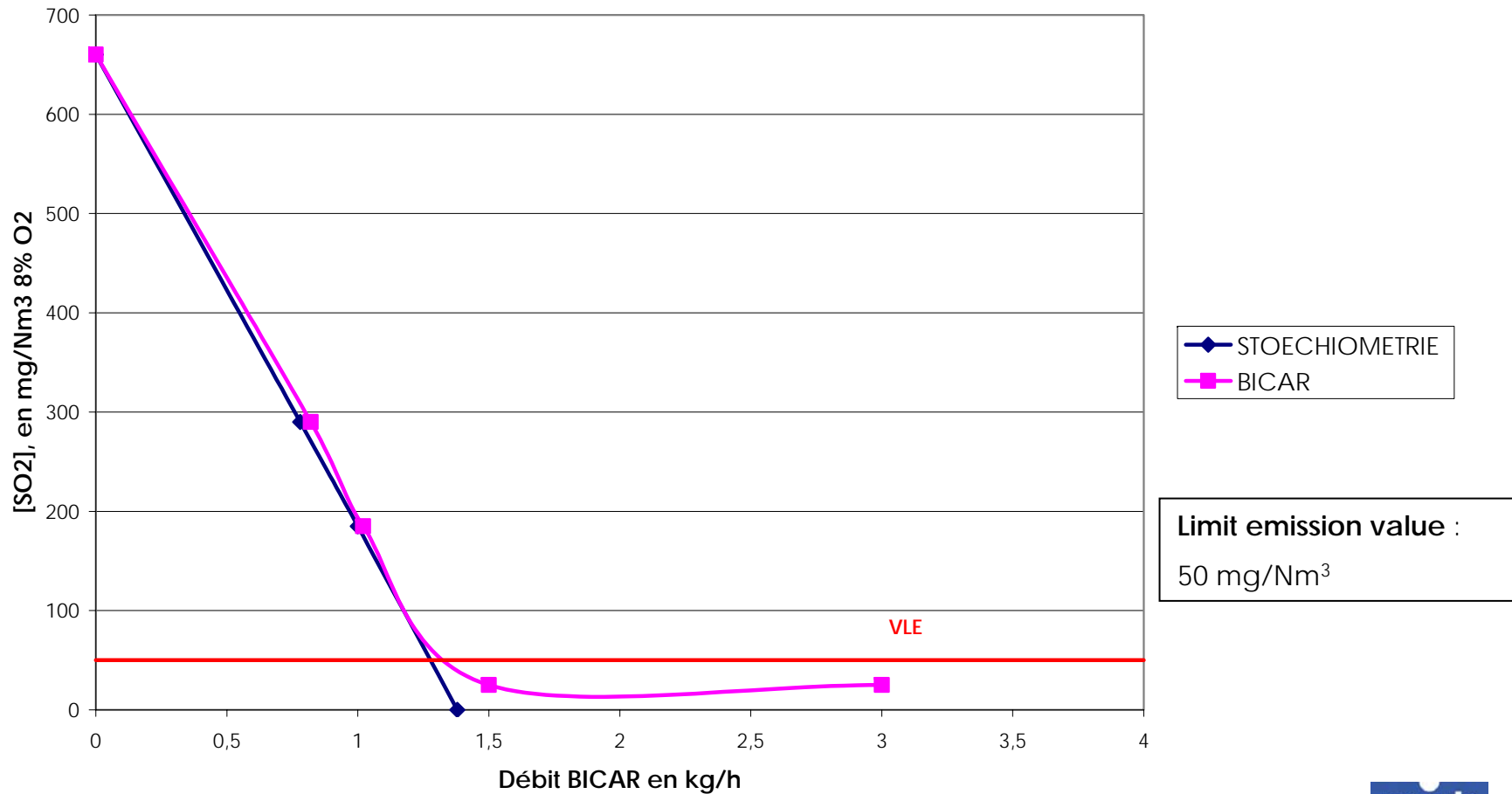
PILOT TEST IN THE GLASS INDUSTRY

PILOT FILTER TEST CARRIED OUT IN THE GLASS INDUSTRY

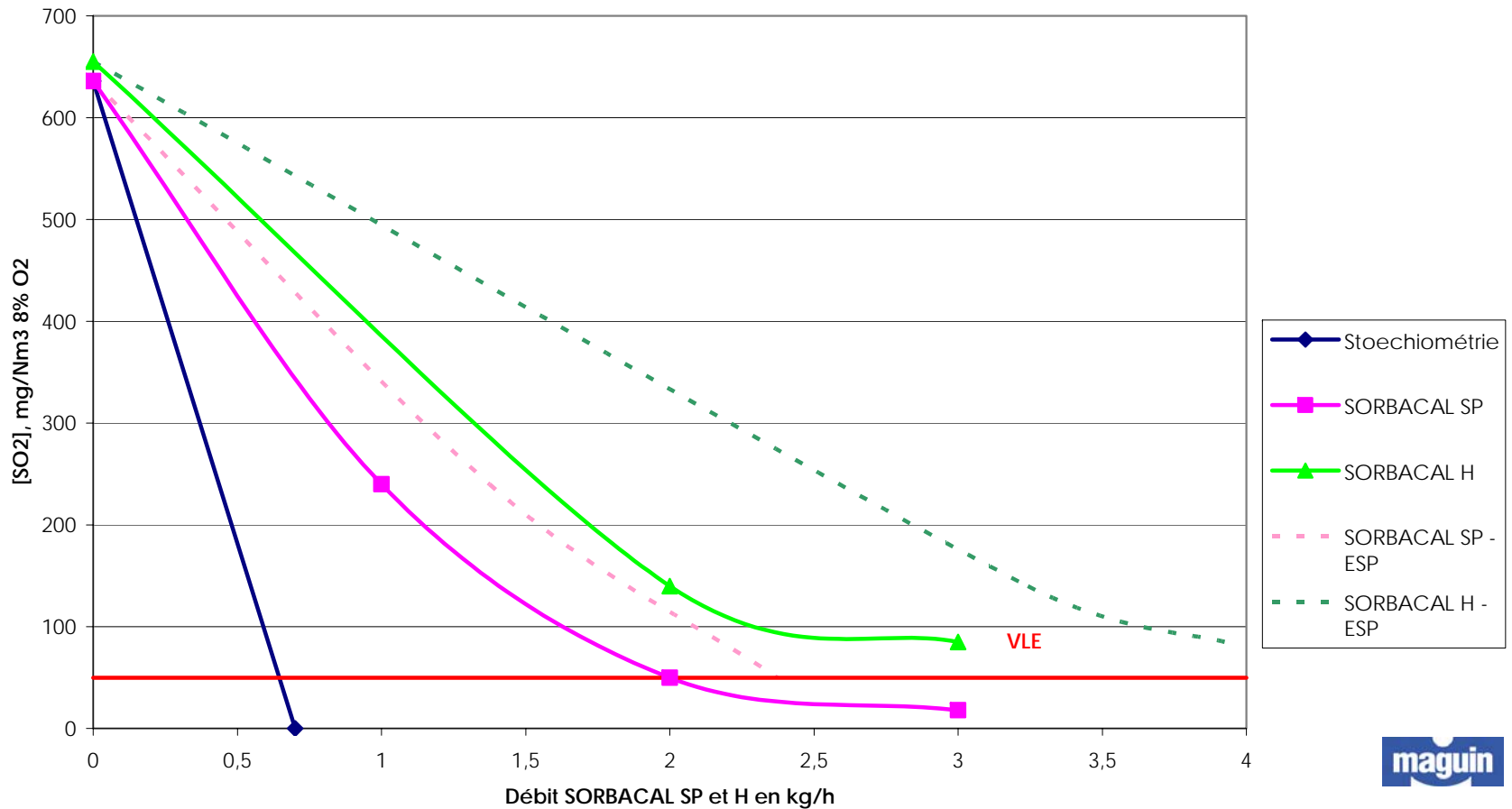
From **October to December 2005** and from **October to December 2006**

Duration of the test : 3 months

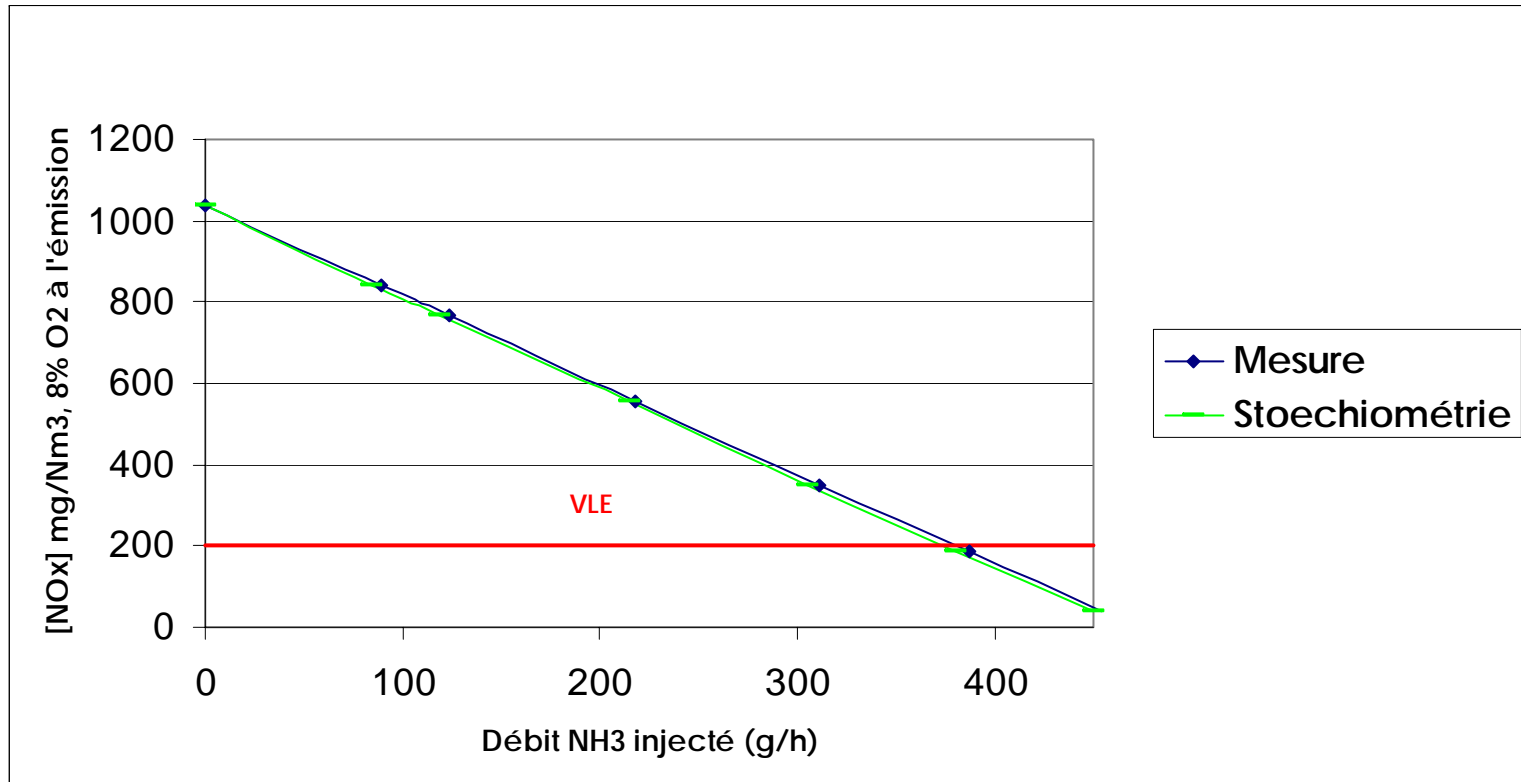
1. SO₂ neutralisation with sodium bicarbonate



2. SO₂ neutralisation with lime



3. NOx reduction – 300°C



Limit emission value
: 200 mg/Nm³



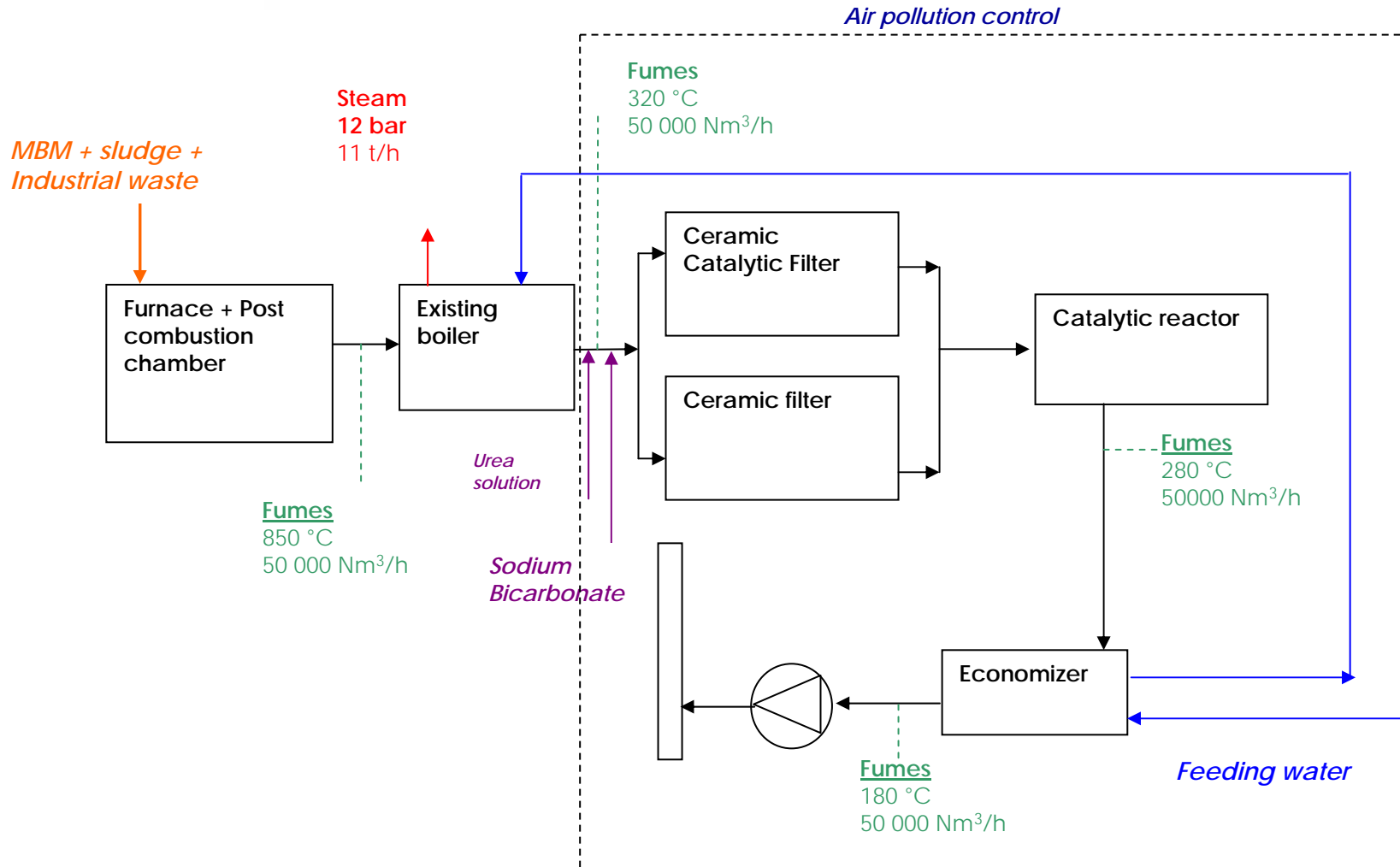
4. COOPERL RESULTS



COOPERL : the first industrial reference

Application :	incineration of sludge, MBM....
Capacity :	2 t/h – nominal flow : 45 000 Nm ³ /h maximum flow: 70 000 Nm ³ /h
Date of erection :	March 2008
Investment :	2,4 M€

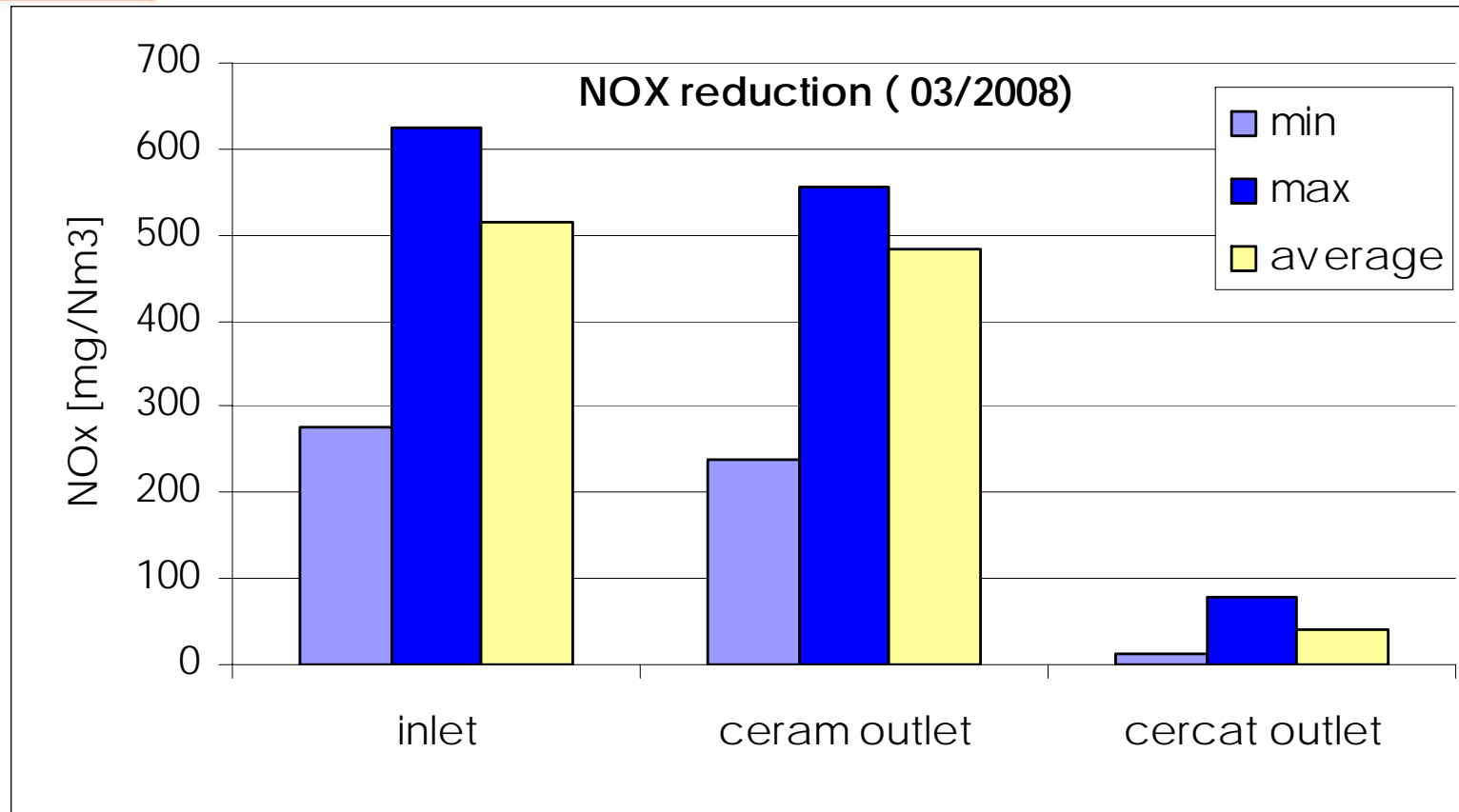
1. Installation



2. Measurements on site

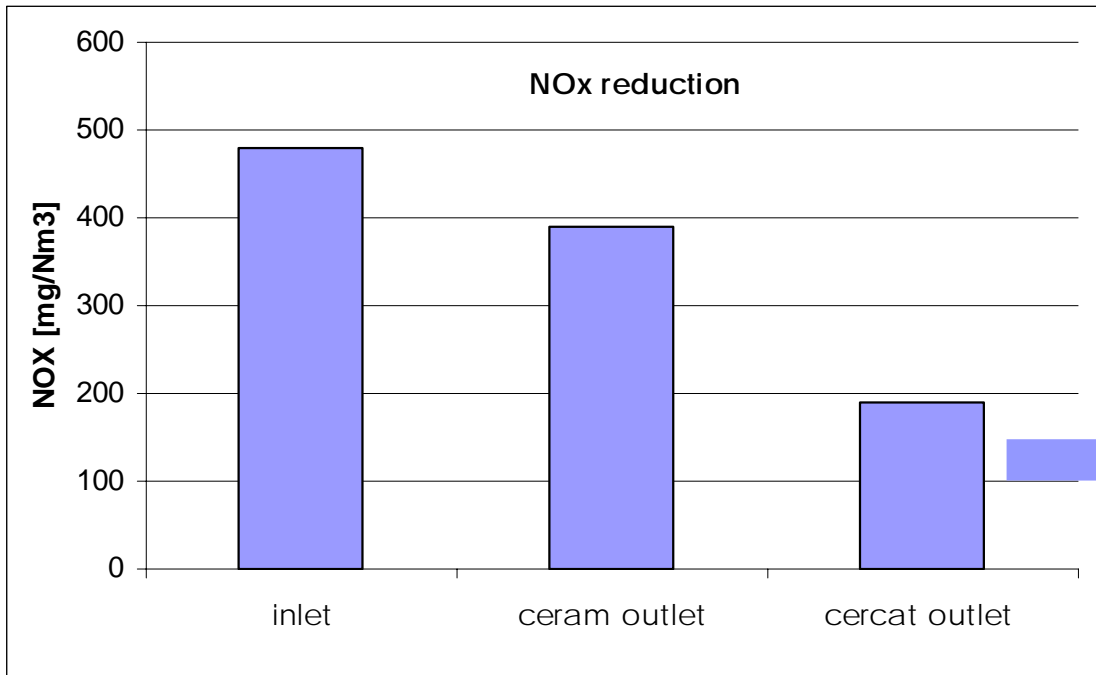


3. Tests results : NOx reduction



NOx removal efficiency > 90 %

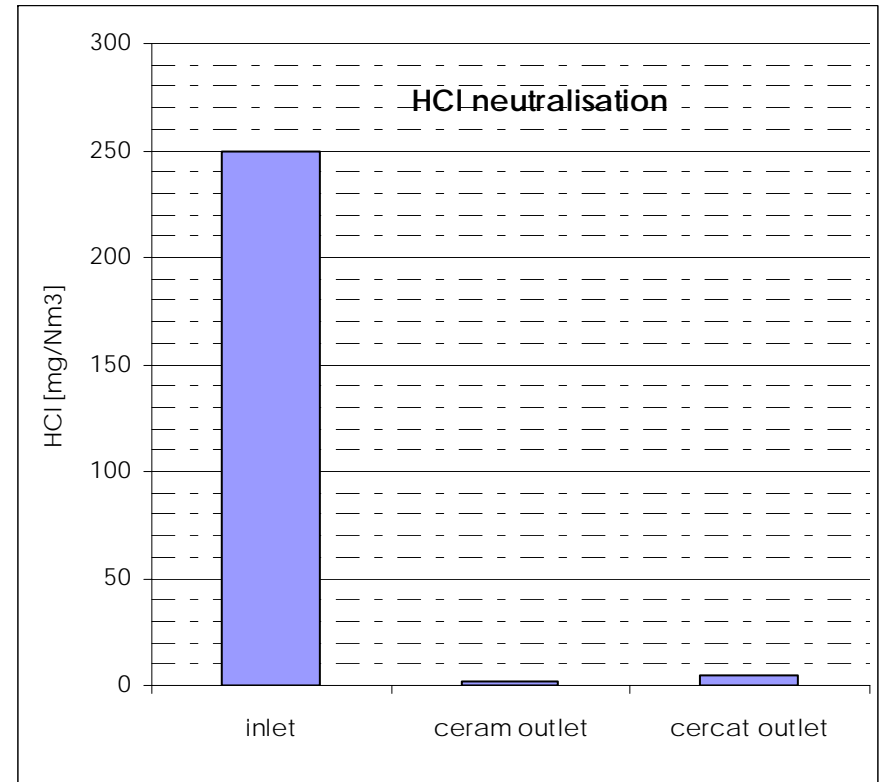
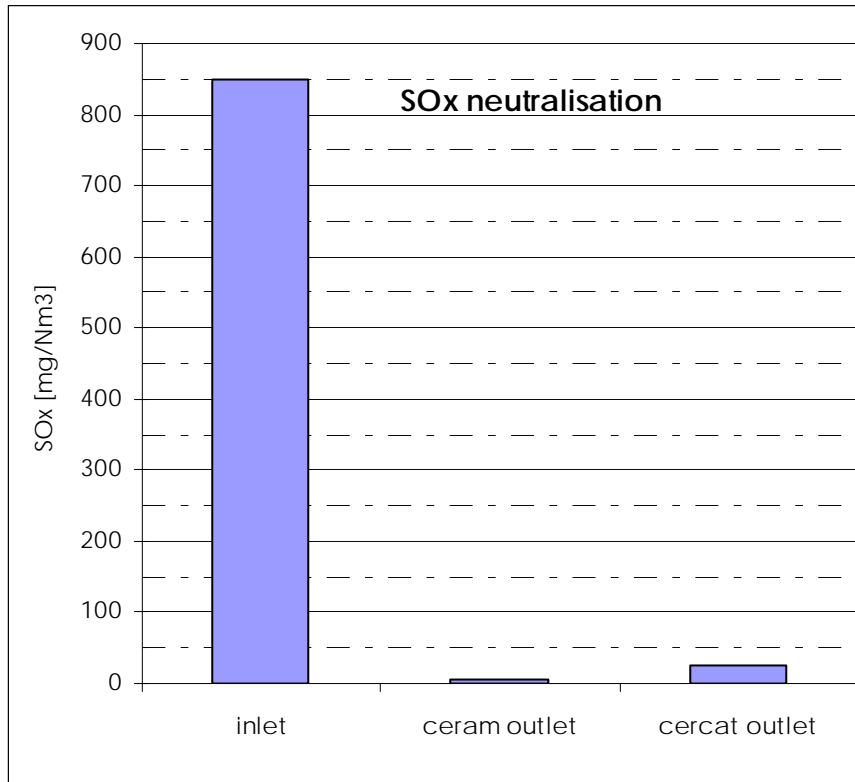
4. Measures taken in April 2009



NH₃ slip < 1 mg/Nm³

NOx removal efficiency > 60 %

4. Measures taken in April 2009



SOx and HCl removal efficiency > 95 %



5. CONCLUSIONS



The CERCAT filter :

- Is a **well proven technology** for Air Pollution Control
- Is available at a **competitive price**
- Allows to **anticipate** more stringent regulation **without extra equipment**
- Can be used with **energy recovery equipment**

THANK YOU FOR YOUR ATTENTION

