

# **A**nalytical Solutions



for the  
LNG & Gas Industry

**SIEMENS**

# Industries and Markets

PA  
Process Analytics

Process Analytics

Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**

Why Process Analytics is necessary in many industries and markets?



Oil&Gas



Cement



Glass



Mining



Pharmaceutical



Chemical



Shipbuilding



Water



F&B



Automobile



Semiconductor



Airports

# Oil & Gas Processes

## Natural Gas – LNG - GTL

PA  
Process Analytics

Process Analytics

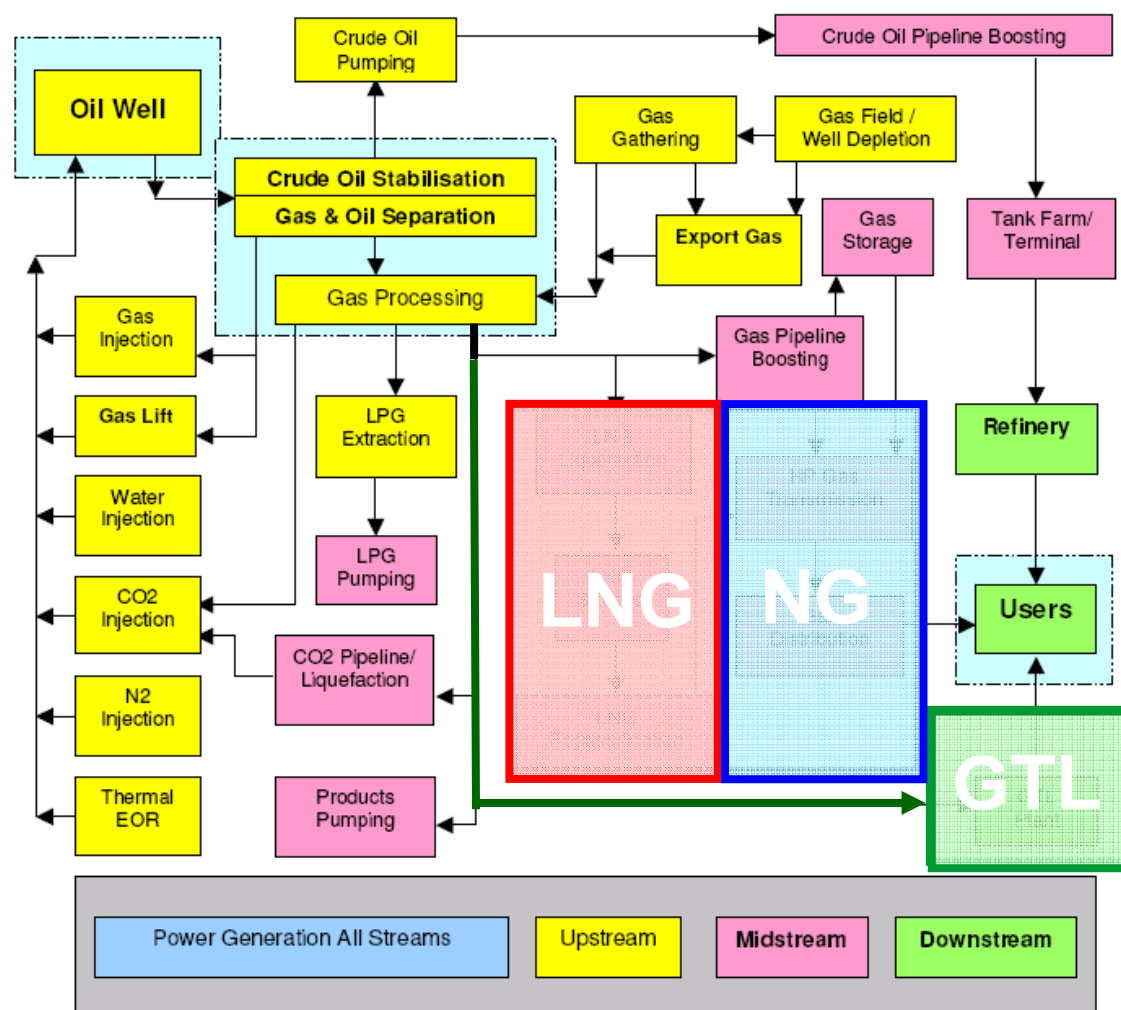
Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**



# Process Analytics Objectives

## PA Process Analytics

### Process Analytics

### Product Competence

### Solution Competence

### Industry Competence

### References

**SIEMENS**

## Process Automation

- Higher level of automation
- Optimization of resources
- Increase of product yield



## Quality Control

- Monitor and improve product quality



## Safety Monitoring

- Plant safety
- Operator protection



## Environmental Protection

- Compliance with legal requirements



## Custody Transfer

- Compliance with fiscal regulations



# Challenges

PA  
Process Analytics

Process Analytics

Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**

## Complexity of the sample /matrix

- Cross interference
- Calibration
- Accuracy

In general, the sample is extracted and prepared in a complex system before it can be measured in the analyzer

- Costs
  - Investment
  - Lifetime
- Approaching real time data

Los Alamos National Laboratory's Chemistry Division Presents a  
**Periodic Table of the Elements**

Group\*#

Period

Lanthanide Series\*

Actinide Series--



# Portfolio Process Analytics

## PA Process Analytics



Process Analytics

Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**

### Gas Analytics (extractive)

Series 6 Rack



Fidamat



Calomat

Series 6 Field



Oxymat

Ultramat 23



### Gas Analytics (in situ)

Laser  
Spectrometry



LDS 6

### Gas Chromatography

Maxum edition II



MicroSAM



Sitrans CV



### Exhaustgas Analytics

SIBENCH



E-BOX



### System Integration



# Maxum edition II

PA  
Process Analytics

Process Analytics

Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**





# Maxum edition II

## A Look Inside

PA  
Process Analytics

Process Analytics

Product Competence

Solution  
Competence

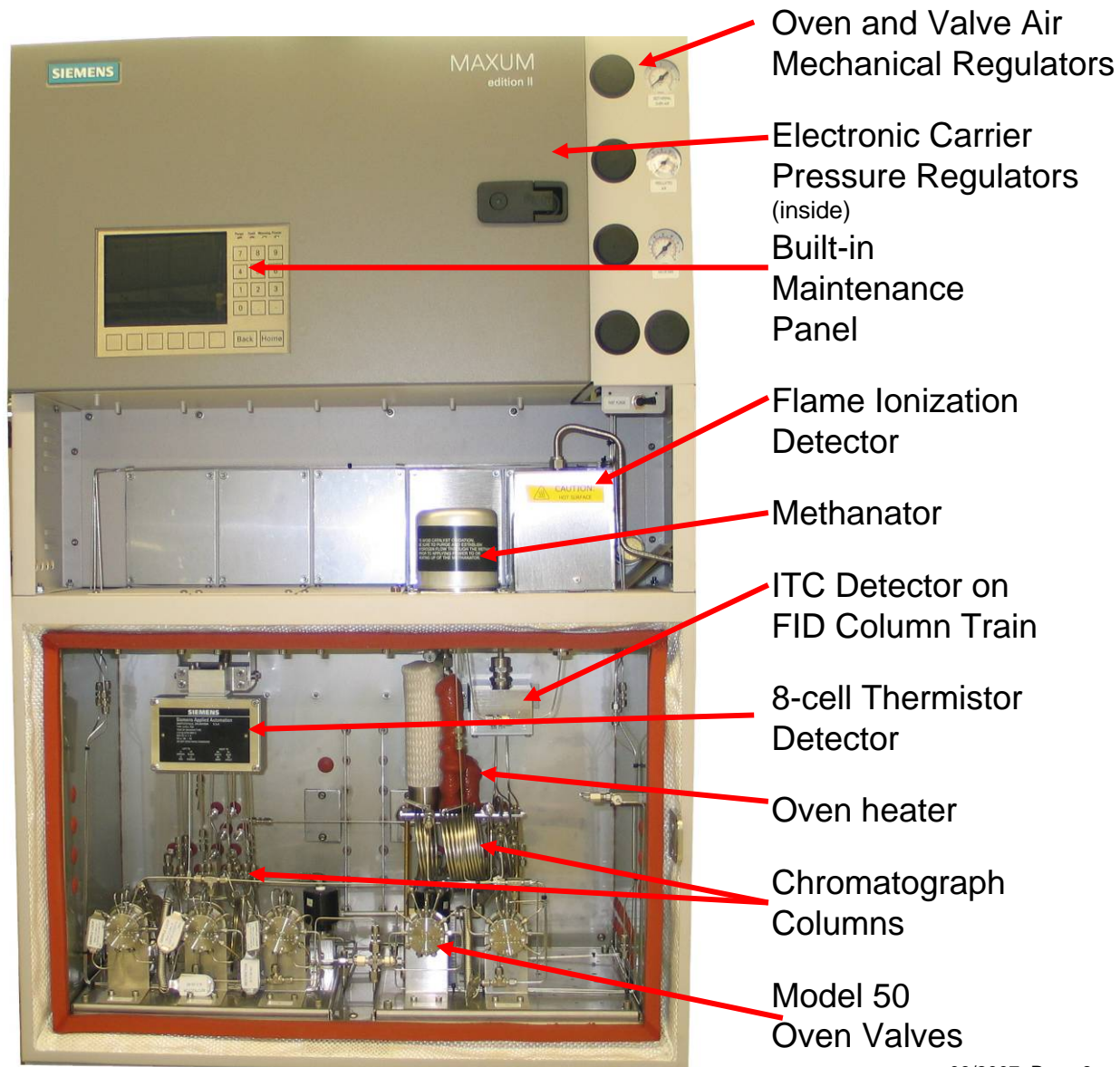
Industry Competence

References

Electronics  
Compartment

Detector  
Compartment

Oven  
Compartment  
(Air bath type)





# The Maxum Difference!

PA  
Process Analytics

Process Analytics

Product Competence

Solution  
Competence

Industry Competence

References

**SIEMENS**

## Densification

Combining  
2 or 3 GCs  
in one Maxum



## Standard Package

EPCs and Ethernet  
by default  
(no extra charge)

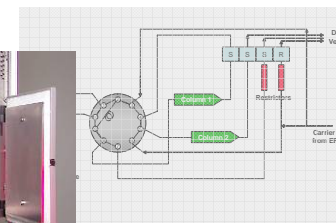


## Valveless column switching

No moving parts wetted by sample  
No maintenance at all  
during whole lifetime

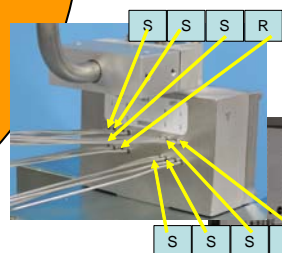
## Parallel Chromatography

Faster analysis, simple configuration, for two or more streams analyzed parallel and simultaneously



## Airless oven

Lower consumption of  
instrument air & power



## Multiple detector technology

incl. HID, ECD, PID for demanding applications  
3 Detector types in one Maxum possible,  
Multi-channel TCD: 2, 4 or 8 channels

# Total Cost of Ownership



Estimate Cost of Utilities for Process GC's									
		Power / year	Power / Life Time	Air / year	Air / Life Time	Carrier Gas / year	Carrier Gas / Life Time	Total / year	Total / Life Time
Advance Optichrom		10050	15750	560	8415	480	7200	2090	31350
MAXUM Airless		526	7890	69	1035	480	7200	1075	16125
MicroSAM		7	105	0	0	120	1800	127	1905
ABB		1050	15750	1293	19400	480	7200	2823	42345

Evaluated by BP