



HEURTEY PETROCHEM

Petro-Chem Development Co., Inc.

Introduction Of Capabilities
Process and Field Services Division





HEURTEY PETROCHEM

PART 1

General Presentation

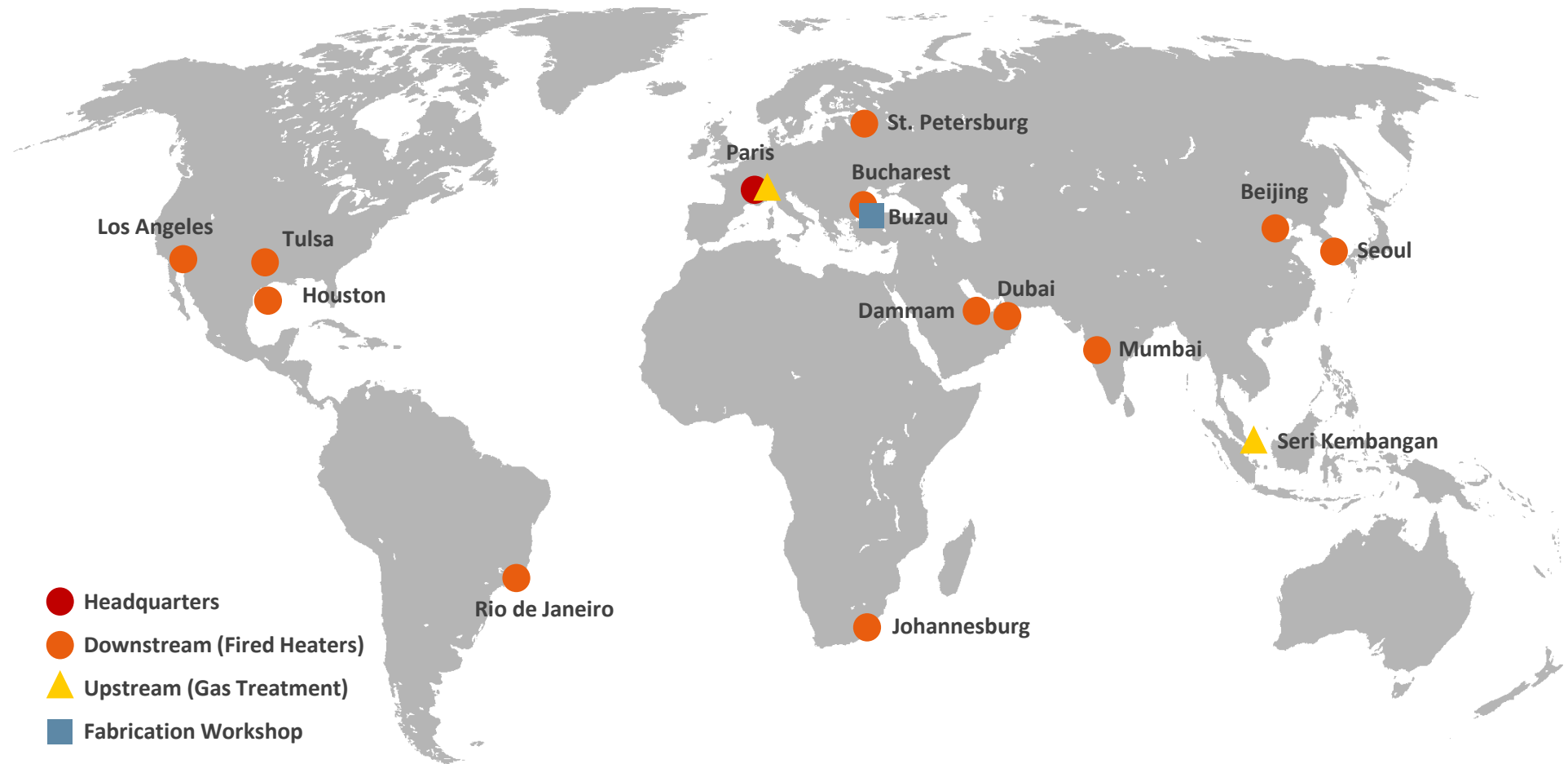


- Year of establishment : 1953
- 60 years of experience and leading position in the industry
- Operates in 2 sectors of activity :
 - Downstream: Process Fired Heaters (Heurtey Petrochem)
 - Upstream: Gas Treatment (Prosernat)
- Range covering all types of furnaces
- Control of all phases of furnace execution projects



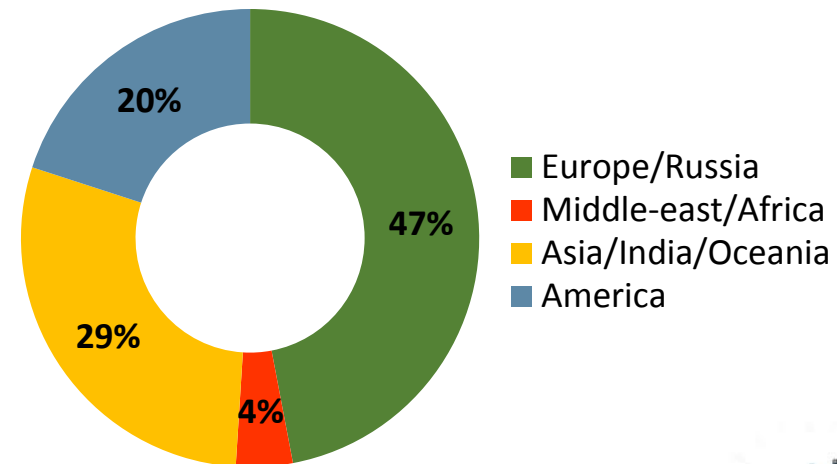
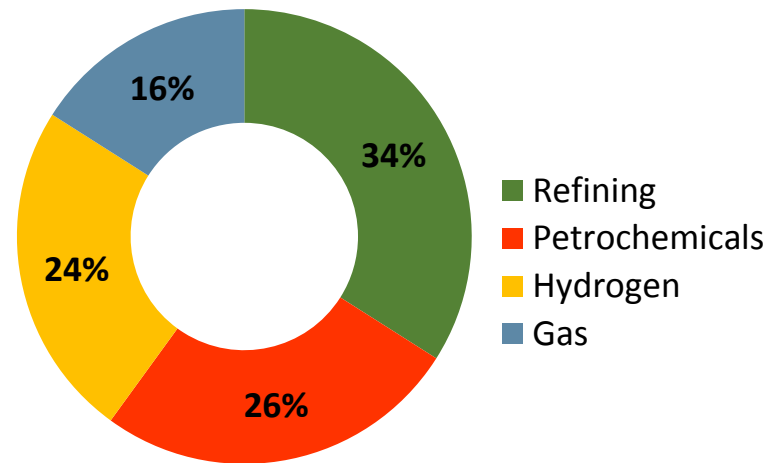
- 🔥 **Broad network of subsidiaries around the world** : USA, Brazil, Romania, Germany, Russia, India, Saudi Arabia, South Africa, Korea, China and Malaysia.
- 🔥 1100 employees worldwide
- 🔥 ISO 9001 Quality Certification
- 🔥 Acquired PFR Engineering in USA in 2009
 - World Renowned REFORM-3PC and FRNC_V
 - Software used worldwide by licensors and engineering firms to evaluate thermal equipment





- ☪ Listed on the Paris stock exchange market Alternext of Euronext
- ☪ Reference shareholder : IFPEN (36.1% of capital)
- ☪ Turnover 2013 : 401 MM€ (\$543 MM)
- ☪ Backlog 2013: 534 MM€ (\$722 MM)

2013 Turnover dispatch by sector of activity and geographical area :

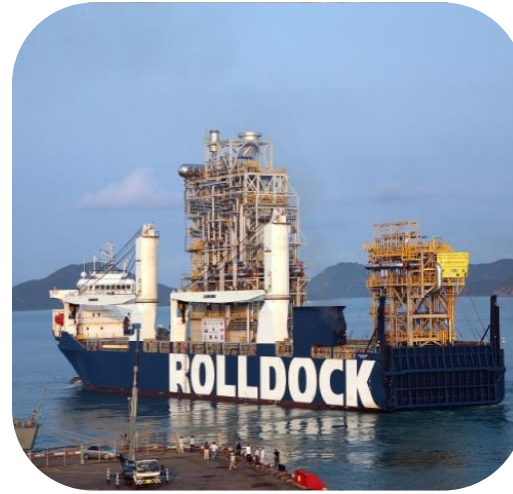


- Downstream activities are the core business of Heurtey Petrochem (70+ years of experience)
- Design and fabrication of Process Fired Heaters for the hydrocarbon industries :

REFINING



PETROCHEMICALS



SYNGAS



- Range covering all types of furnaces
- Control of all phases of furnace execution projects.



TECHNOLOGY & LICENSORS

Technology neutral:

- In-house design tools to design furnaces
- Qualified by major licensors to design furnaces based on licensor process technology :

STEAM CRACKING

ExxonMobil
Chemical

KBR

Technip

EDC CRACKING

INEOS

OXYVINYL

SOLVAY

ARKEMA

Vinnolit

Leadership in PVC

REFINING

Axens
IFP / Group Technologies

Chevron

CBI
Lummus

Uop
A Honeywell Company

SYNGAS

JE JACOBS



HALDOR TOPSØE A/S

Davy Process Technology

KBR



HEURTEY PETROCHEM

PART 2

Technology

- Fired Heater Software
- Detailed Engineering Tools
- Computational Fluid Dynamic (CFD)



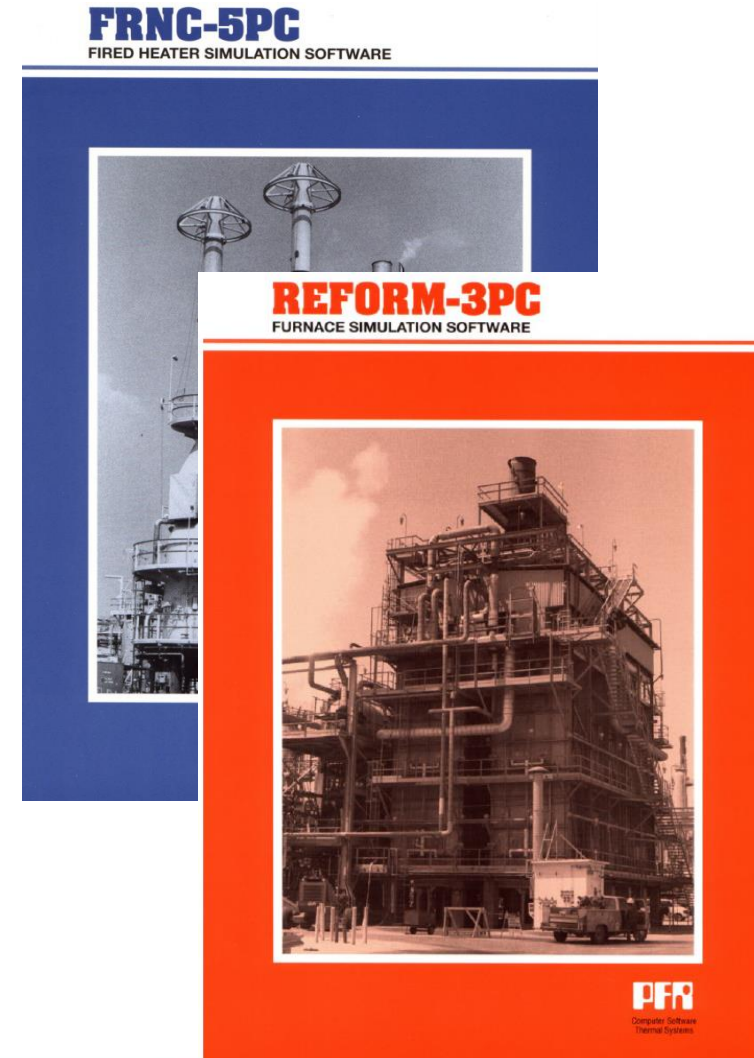
Preeminent reference tool; for rating, designing and simulating furnace operations

FRNS-5PC: General Purpose Fired Heater Simulation

Program. FRNC-5PC is a rating program for general purpose fired heaters. The program calculates operating parameters such as firing rate, heater efficiency, tube skin temperatures and required tube thicknesses, pressure drop and flow regimes, heat duties and fluxes, and much more based on user-supplied heater geometry and process information.

REFORM-3PC: Steam Hydrocarbon Reforming Simulation

Program. REFORM-3PC is a rating program for the firebox sections of Steam-Hydrocarbon Reformer furnaces, which are used in hydrogen ammonia and Oxo-Alcohol production. The program calculates operating parameters such as firing rate, furnace efficiency, tube skin temperatures, gas-and process-side temperature profiles, heat duties and fluxes based on user-supplied furnace geometry.



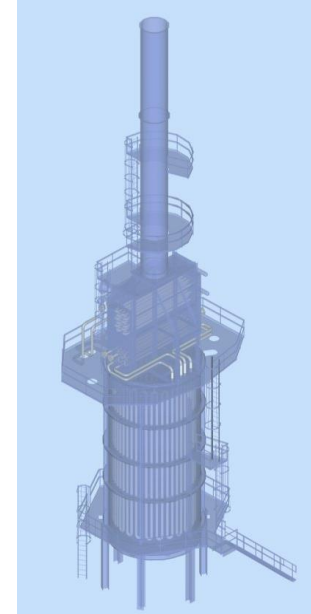
Technology (PFR Software)

- PFR was founded in 1972 as a technology Consulting firm, providing thermal engineering Services to the energy industry and application software to the oil and petrochemical industries.
- FRNC-5PC is a fired heater simulation program licensed by PFR, with over 175 world-wide user companies.
- REFORM-3PC : Steam Hydrocarbon Reforming software

CONCEPTUAL DESIGN

Process simulation: HYSYS, FRNC5, Reform-3
Petro-Chem Proprietary 'Design & Rating'
Program (Fired Heaters and Line Sizing)

Owner of PFR Engineering Computer Software FRNC5



DETAILED ENGINEERING

In House CFD Modeling : Fluent

CAD/CAO : AUTOCAD, ADVANCE (GRAITEC)

Steel Design : Staad Pro & Petro-Chem's (PCFH) Structure calculation

Piping Stress Analysis : CAESAR & FE - Pipe

Piping Design : Cadworx

Instrumentation : INTOOLS





HEURTEY PETROCHEM

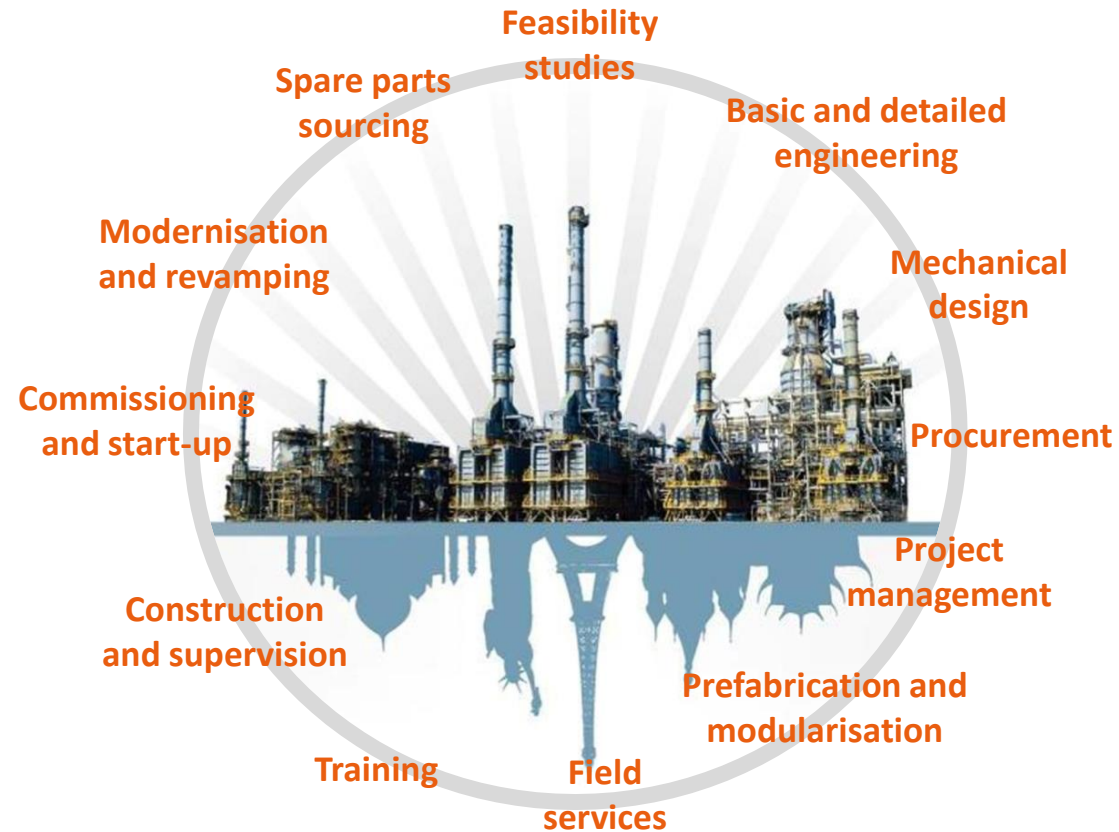
PART 3

Process & Field Services Division
Expertise and Resources



EXPERTISE & RESOURCES/PROCESS & FIELD SERVICES

Heurtey Petrochem offers a full range of resources for conducting projects, from feasibility studies to LSTK supply:



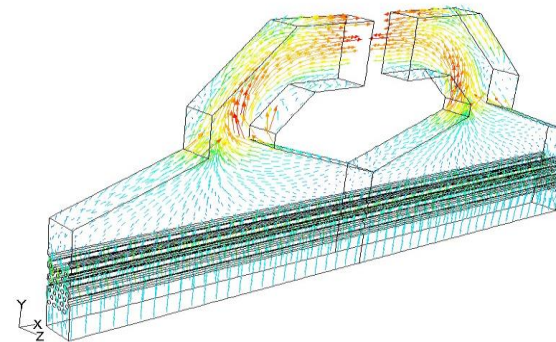
PFS approach to revamps

- ❑ Petro-Chem PFS approach to revamp projects follows a multiple stage approach focused on the development of a sound understanding of the owner's NEEDS, carrying this through to mechanical completion and start-up at site.
 - ❑ **FIRST STAGE** – Owner Driven – **Listen**, Collect Data and perform required Engineering Evaluation Studies
 - ❑ **SECOND STAGE** – Perform Detailed Engineering & Material Supply with Construction Optimization.
 - ❑ **THIRD STAGE** – Site Demolition, Installation and Startup



1st Stage – Defining client needs

- ❑ **Listen** to the Owner’s Concerns and Needs
- ❑ Use our diverse knowledge of Fired Equipment to further define the identified Needs.
- ❑ Collect Data
 - Well beyond a visual review of the heater or reformer, PFS has the diagnostic tools to collect pressure, temperature and FG Composition data where needed as well as perform thermal surveys with our Infrared Camera
- ❑ Apply our diverse knowledge of Fired Equipment to define only the studies that need to be performed to fully identify the path forward to resolution of the Needs
- ❑ Engineering Studies
 - Final reports are provided that summarize modeling results, recommendations, turn-key revamp budgetary cost estimates and overall project schedule.



- ❑ Detailed Engineering and Project Execution – One System

Engineering and material supply portion of revamp projects follow the same guidelines and utilize the same resources as new equipment projects. Project large or small - the resources of the entire Heurtey & Petro-Chem Group are available to execute revamp projects.

- ❑ Detailed Engineering and Project Execution – One Plan

On every project, a plan is developed focused on the Risks of each Stage and the design approach that will mitigate these risks.



☐ Startup and Commissioning Services.

PFS provides startup support and commissioning services for new and revamped equipment. We try to combine these services with our operator training service to make it more convenient for the end user.

Petro-Chem can provide all or a portion of these services depending on the complexity of the revamp and client preferences for performance of these functions.



- Financial Strength for any size project
- Familiar with Multiple Licensing Technologies
- Unrivalled Experience and Expertise in Design, Revamps, and Supplying Large Reformers and Fired Heaters
- Experience with executing large projects of all types and in locations all over the world
- In-House Process and CFD modeling**
- Expertise and tools for detailed fired heater process design attention and care paid to selecting suppliers of key components in accordance with client requirements
- Dedicated Spare Parts and Emergency Supplier

