OIL REFINING

PETROCHEMICALS

GASES

Process Field Services

Heurtey Petrochem SOLUTIONS

An Integrated Heaters Services Offer

In the current challenging industry, where margins are highly volatile, environmental standards are driving significant plant emissions reduction and technological changes, and where energy costs and energy efficiency are becoming increasingly important, the revamping of old assets to obtain “more with less” is a very strong driving force.

Therefore, the need for optimization, upgrade and maintenance is drastically increasing. Heurtey Petrochem Solutions is committed to support its customers with these requirements in order to guarantee a smooth, safe and reliable operation of the furnaces and reformers. In parallel to the grass-roots equipment supply, Heurtey Petrochem Solutions offers a complete range of services during the project lifetime such as Studies, Revamps, Spare Parts, After Sales, Connected Offering and Software Simulation Programs...

BENEFITS

- Largest reference list with more than 3,500 furnaces sold
- Owner of PFR Engineering and licensor of FRNC-5PC and REFORM-3PC furnace simulation software
- Ability to provide equipment performance and emission guarantees
- In-house Construction/Erection
- Extensive record allowing like-to-like replacement
- A dedicated team for furnace services
- Services team for critical revamp projects
- Local and regional presence
- Emergency response
- Fast track projects
- Real Time Monitoring

COMMERCIAL EXPERIENCE

In a competitive market and increasing project complexity environment, Heurtey Petrochem Solutions is the right partner through the whole project lifetime with the largest number of installed heaters in the world.

Over **3,500** furnaces sold

Over **60** years experience

Over **300** heater revamps

Over **300** heater studies

Services

› Studies

The existing heater performances can be optimized through heater studies to:

- Reduce/cancel bottlenecks
- Increase capacity or efficiency
- Operate under new conditions

- Feasibility Studies
- Mechanical Studies
- Process Studies
- Field Survey & Assessment

Heurtey Petrochem Solutions has years of experience providing the following types of studies:

- Fired heater or Reformer Process and Mechanical Studies
- Debottlenecking or Performance Evaluations
- Capacity Increase
- Evaluation of feedstock change
- Energy Efficiency Studies
- NOx Reduction Studies
- Material Upgrades
- CFD Modeling to evaluate Flame Shapes, Flue Gas and Combustion Air Flow Patterns, SCR additions and reformer tunnel evaluation
- Vibration Studies.

› Revamps

↑ Revamp: Before/After

Heurtey Petrochem Solutions can carry out any revamping project to improve heater performance in a practical, secure and effective way. Emphasizing the importance of the turnaround, the project team works directly with the operator to ensure full success of the revamp project.

Each revamping project is unique and custom-designed by Heurtey Petrochem Solutions' experts to take into account the operator needs and constraints.

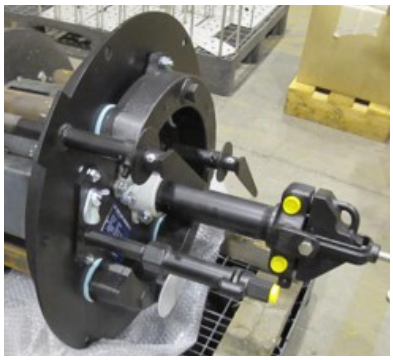
Heurtey Petrochem Solutions has successfully completed numerous revamps projects to supply the following:

- Replacement Coil Bundles
- Design and Supply of Radiant/ Convection Modules
- Stack Replacement
- SCR Design and Supply
- Burner Upgrades
- Furnace Re-Skins
- Emergency Rebuilds as low as 4 weeks
- High efficiency air preheaters (94%+)

Whether it is an upgrade, a planned turnaround, or an emergency response, Heurtey Petrochem Solutions has the expertise and capabilities to supply the required equipment.

Spare Parts & After Sales

With more than 60 years expertise, Heurtey Petrochem Solutions understands the importance of safety, smooth operation and maintenance of delivered furnaces. This is the reason why it is strongly involved in the Spare Parts offers and can provide any spare part, from a single burner tip to a fully modularized convection section.



TESTIMONY

We would like to extend appreciation to Heurtey Petrochem Solutions for their contribution supporting the safe completion and start-up of our project. This revamping project was the first major work occuring on the unit in many years and is performing exceptionally well since start-up.

American refiner

Connected Offering

The development of remote operation optimization through Connect'In™, a real time monitoring tool, brings added value by predicting heater critical KPI's and potential bottlenecking features for a specific set of operating conditions (feed throughput, unit severity, H_2/HC ratio).

Software Simulation Programs

- Heurtey Petrochem Solutions, through its acquisition of PFR Engineering Systems, provides industry leading software (FRNC-5PC, REFORM-3PC) for Fired Heater and Furnace rating, widely used in the industry by EPCs and Fired Heater designers. It also provides associated services, training and support.
- For modeling of combustion airflow patterns, combustion of fuel / flux profile, flue gas flow patterns and gas mixes, Heurtey Petrochem Solutions utilizes Computational Fluid Dynamics (CFD) software, implementing in-house simulation/ calculation programs

Other Services

As an integrated group, Axens has the knowledge, skils and resource to supply a large pannel of equipment

- Erection on end user site
- Pre-commissioning, commissioning & mechanical completion
- Start-up & dry out
- Performance test
- Training courses
- Site surveys, existing unit inspection and analysis
- Furnace tuning for performance and efficiency

{ CASE STUDY: Vibration Studies }

Heurtey Petrochem Solutions has the unique ability to perform studies to understand the driver for vibrations experienced on Heaters and to provide recommendations to mitigate them.

Challenges:

Following the delivery of two Crude Heaters and two Vacuum Heaters to a very large grass root refinery, some vibration studies were conducted to solve the following problems:

- Vibration in cross over piping and coils inside radiant section of Vacuum Heaters
- Coils in radiant section were lifting from support

Solutions:

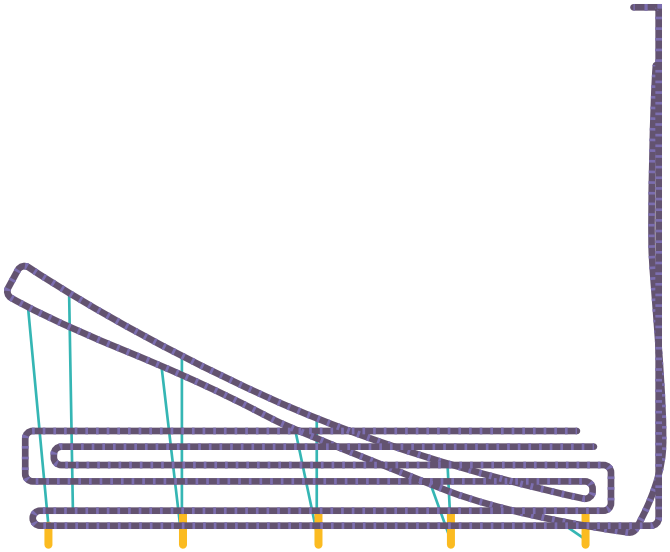
- A detailed stress analysis of cross-over
- A combination of detailed process simulation, CFD (Computational Fluid Dynamics) of radiant section (with combustion modeled) and FEA analysis was done to analyze radiant section coil vibration

Results:

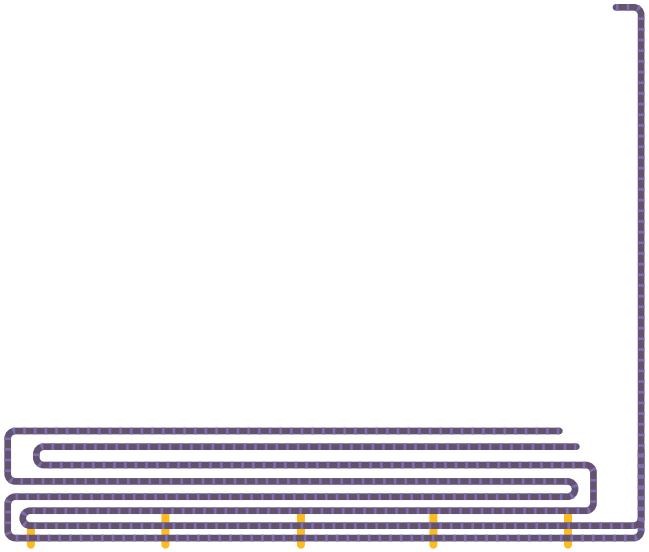
- It was determined that vibration was due to combination of factors - process conditions, flow regime, coil size, support system.
- Extra supports for cross-over were added to eliminate vibration

Modified and additional supports / clamps were added inside radiant section

Before



After



heurtey.net

Heurtey Petrochem Solutions is a world leader in process furnaces for the refining, petrochemicals, syngas and hydrogen markets. Heurtey Petrochem Solutions provides a comprehensive range of solutions including furnaces, waste heat recovery units, emission reduction equipment, services such as furnace performance optimization, revamp studies, CFD modeling and revamps as well as the supply of spare parts.

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