

Refinery Electrification
A unique Electric Heater Solution

Concawe 2026, Brussels

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Heurtey Petrochem SOLUTIONS

Schneider Electric

Our speakers



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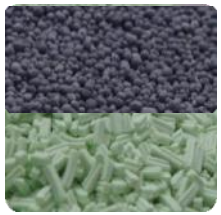
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Axens : a Common Identity around the World

3 Commercial Brands

Axens SOLUTIONS

- Technology Licensing
- Catalysts & Adsorbents
- Modular Units and Equipment



Heurtey Petrochem SOLUTIONS

→ **Axens Furnaces Product Line**

- **Process Furnaces:**
- From Process Design to Turnkey Projects,
- Engineering, Procurement & Construction,
- Studies, Revamps & Spare Parts,
- Technical Support via Remote Monitoring.







Axens HORIZON

- Audit & Consulting
- Digital Applications



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Schneider Electric is your Energy Technology Partner

Two Businesses

Energy Management + Industrial Automation

160k Employees in over 100 countries

€40.2bn FY 2025 group revenue

A BALANCED FOOTPRINT WITH OUR MULTI HUB MODEL



ELECTRIFICATION • AUTOMATION • DIGITAL INTELLIGENCE

From the power edge to the production line

End Markets
(% of FY 2025 orders)



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Electrification is a major opportunity to change the game

70%

CO_2 emissions can be removed with existing technologies

Reduction Impact

ENERGY DEMAND

25% Digitize

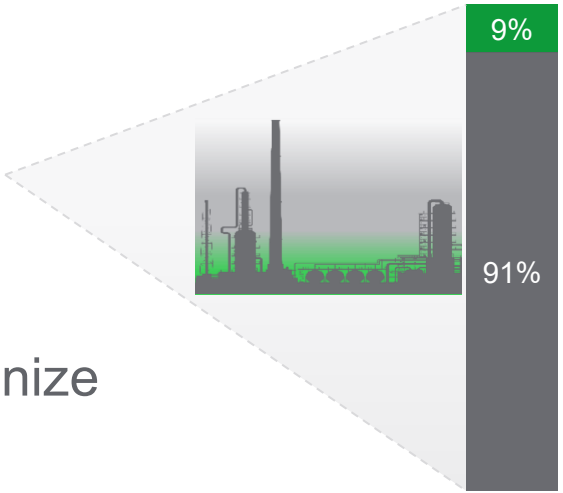
30% Electrify

ENERGY SUPPLY

45% Decarbonize

Source: Schneider Electric™ Sustainability Research Institute
The Path to Net-Zero Buildings; Back to 2050

EU Refineries average Energy Use



ELECTRICITY

FOSSIL FUELS
(Gas, Liquid fuels, Steam, Coke)

Source: Concawe
CO2 reduction technologies, 2019

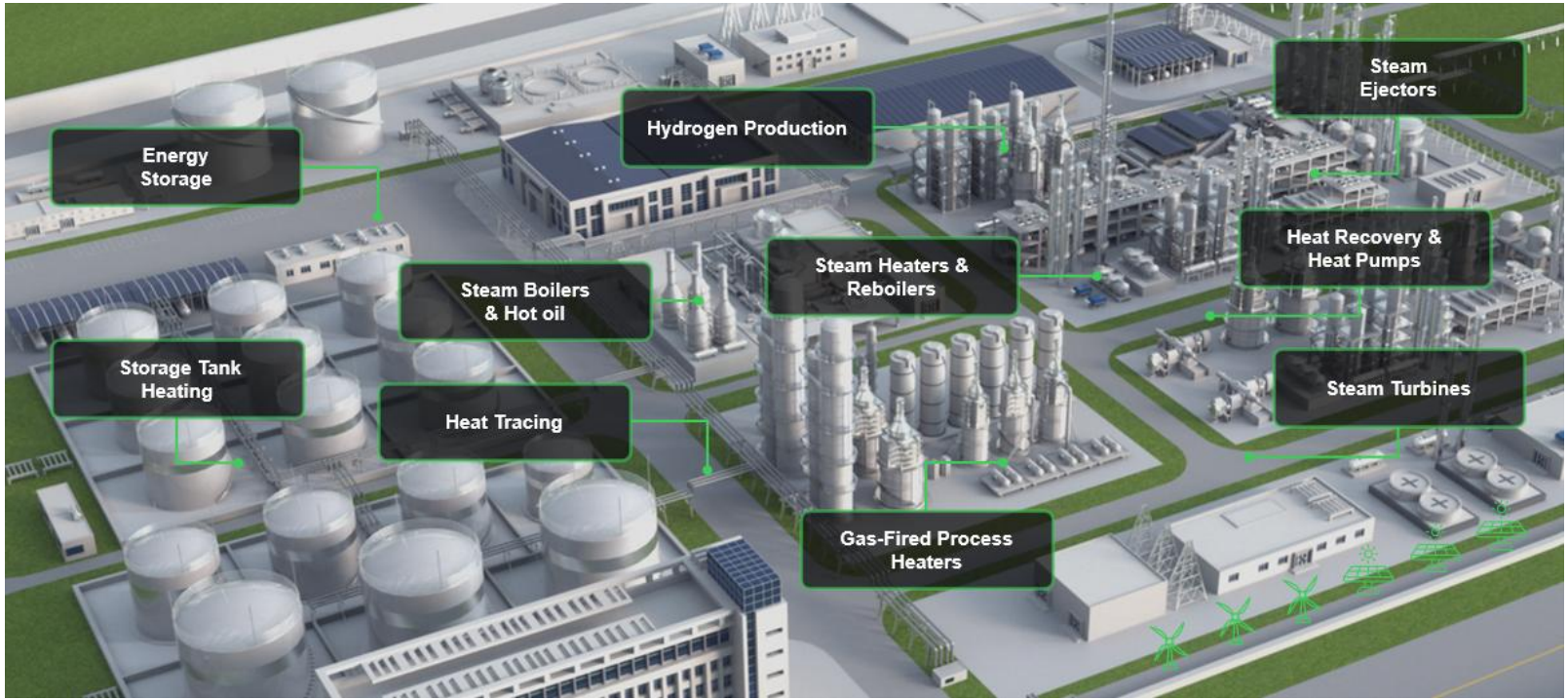
"Electrification is one of the **most important strategies** for reducing CO_2 emissions. As the industry landscape is very diverse, the many **benefits of electrification in industry** may not be well-known to all industrial producers."

Source: IEA International Energy Agency
Tracking Electrification

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Refining & Chemicals Electrification Opportunities

Above 70% of Downstream Oil & Gas emissions come from process heat



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Collaboration on Process Electrification

Complementary know-how & expertise for industrial process electrification

Schneider Electric

+

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Electrification & Energy Management
Industrial & Process Automation
Digital Services & Experts Advisory

Process & Heat Transfer Expertise
Electrical Tubular Heater Technology
Heater Remote Monitoring

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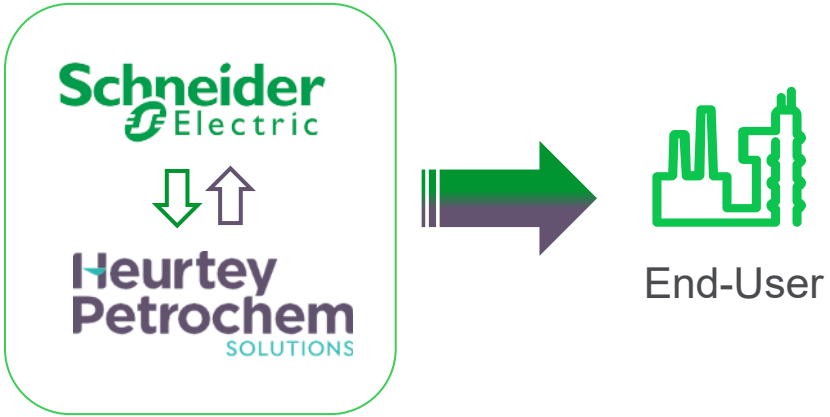
Integrated Solution Engineering & Supply

Heurtey Petrochem Solutions scope

- e-Heater Technology
- Process Design & Control Strategy
- Furnace in Modularized Elements

Schneider Electric scope

- Power Distribution & Control Solution
- Electrical Design & Interface with Process
- Modular & Pre-fabricated Package

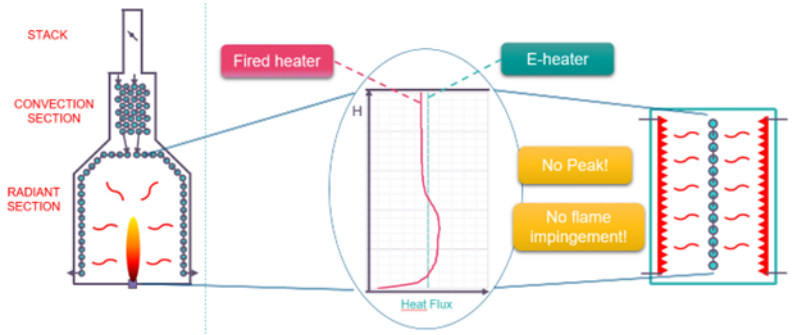


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E-Radiant Tubular Heaters – Design concept

- Technology based on **radiant electrical resistances**
- Very **similar** to **conventional process fired heater**
- But **without convection section and stack**
- **With tubular coil for process fluid, so no contact of the feed with heating elements.**

- **Optimized heat flux distribution**



- **Lower film temperature** (less fouling/coking, corrosion, longer cycle runs)
- **Lower coil temperature** (longer tube lifespan)

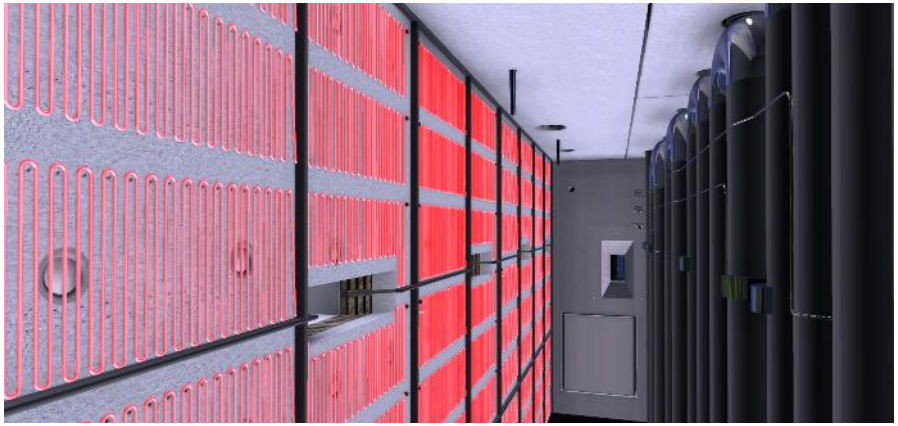
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E-Radiant Tubular Heaters – Best Solution

- Capacity to **adapt the heat flux** density depending on process requirements.



- **HPS design is the most adapted electrical solution for:**
  - Hydrocarbon services in general
  - **Vaporizing services**
  - **Fouling/coking services** (e.g., CDU, VDU)
  - **Reactor furnaces** (EDC crackers…)
  - **Film-temperature sensitive services**
  - **High temperature / high pressure services**
  - High duty services

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E-Radiant Tubular Heaters – Benefits

- No local emissions
- No CO_2 emission with decarbonized power
- No pollutants such as NOx, SOx or particulates

- Precise temperature control
- Wide operating flexibility
- Rapid response time

- Easier operation
- No combustion safety hazards
- Higher process efficiency, 95 to 98%

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E-Radiant Tubular Heaters – References

- **Supplied Electrical Tubular Heaters**, in operation for already **30 years :**
  - With **excellent feedback** from End Users (performance, reliability)
  - For **hydrocarbon services** :
    - Vaporizing (mixed phase)
    - With coking/fouling tendency process throughput, with outlet fluid temperature of 630°C





- **Ongoing projects for delivery :**
  - Petrochemicals :
    - Asia, Polysilicon unit, 3 heaters
  - Refining technologies :
    - Africa, Gasoline HDS, 1 heater
    - Germany, Vacuum Distillation Unit, 1 heater

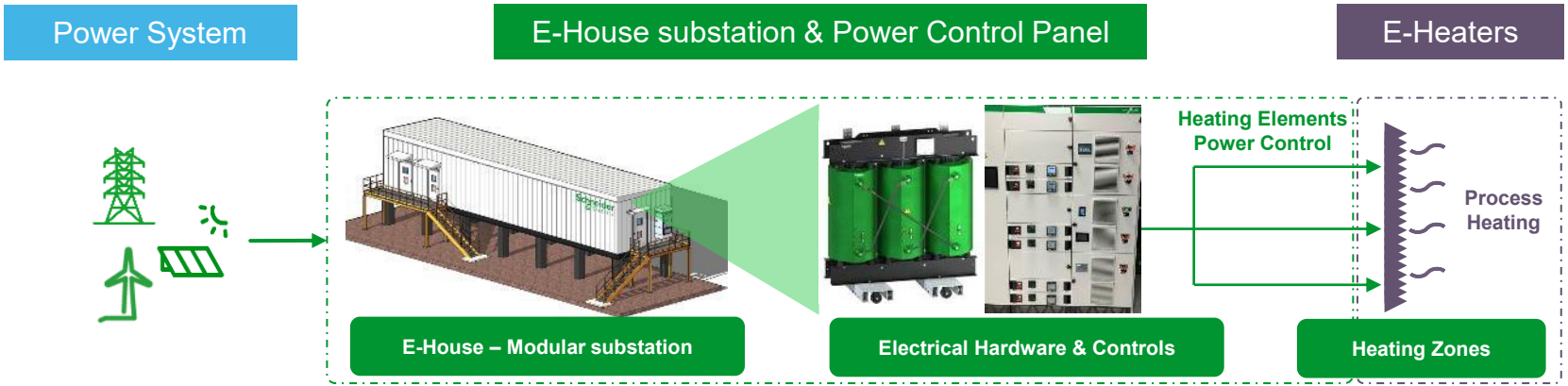
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Fit for Purpose e-Heaters Power Solution

For industrial process electrification



Power Infrastructure &
Energy management **expertise**

Modular & Scalable integrated solution
Faster delivery & On-site installation

Unified Power & Process Engineering
Fast and accurate controls

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e-Heaters Power Control Strategies

Impact of Power control strategies on Process

E-Heater Process & Power Control System

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Contactors

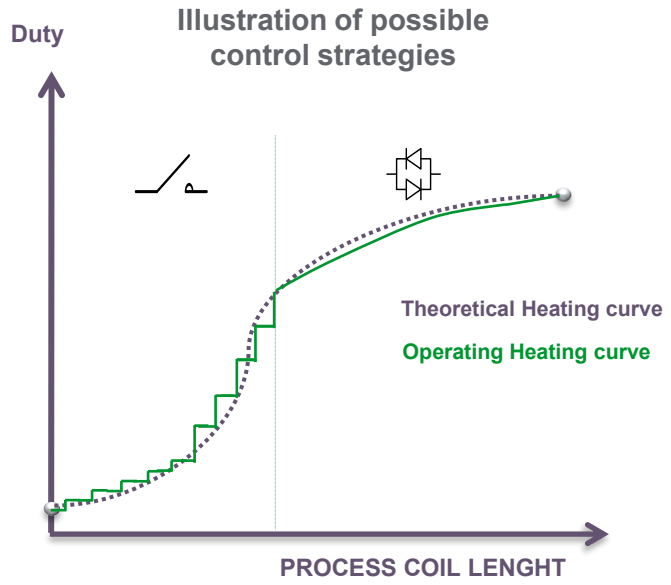
Step Control

SCR Thyristors

Smooth Control

Power Control Panel

Optimal configuration satisfying Process & Electrical requirements



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Electric Radiant Tubular Heater – Integrated Power & Process Solution



Power Transformers & Control panel





Heating elements

Tubular coil

Power Data

E-Heater Monitoring System

Process Data

Energy efficiency, Process efficiency, Analytics

Power Quality, Reliability & Maintenance

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Case Study

Shell Energy and Chemicals Park repurposing :

Decarbonisation & Transformation

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Press release

PRESS RELEASE

Shell, Schneider Electric and Axens Deploy First Industrial-Scale Electric Heater at the Shell Energy and Chemicals Park Rheinland

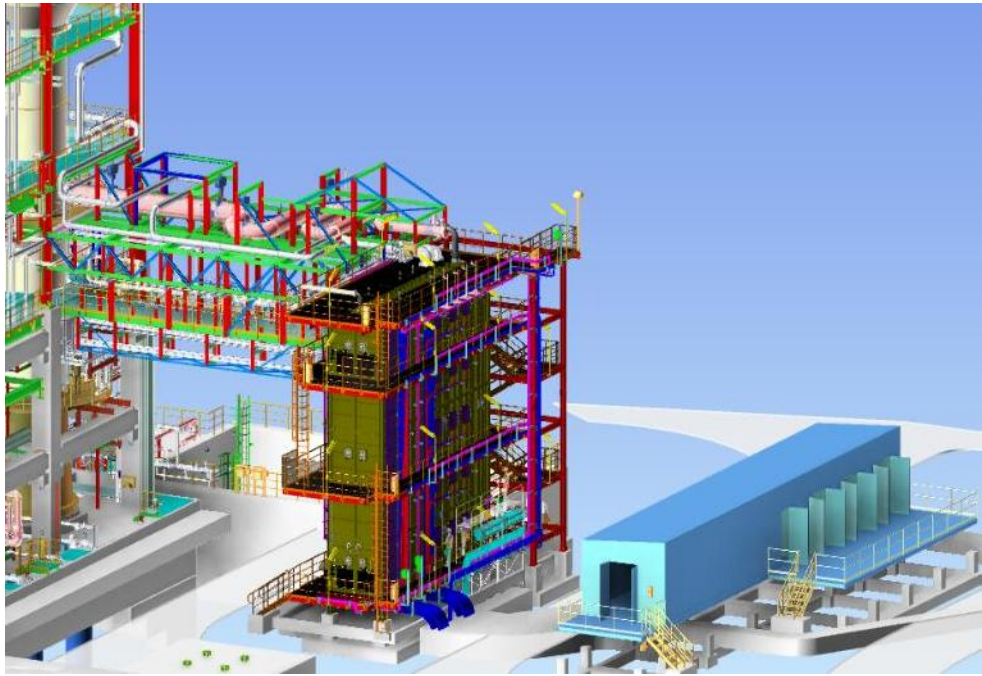
Wesseling / Köln-Godorf, Germany, Rueil-Malmaison, France, 7th September 2026 — A joint industrial decarbonization project demonstrates how electrification, process technology and site integration can help reduce direct CO_2 and NOx emissions from refinery heating.

Shell, Schneider Electric and Axens have successfully installed an industrial-scale Electric Tubular Heater at the R3 base oil project that is currently realized at the Shell Energy and Chemicals Park Rheinland (Shell Rheinland) in Germany, marking a significant step forward in the electrification and decarbonization of energy-intensive industrial processes.

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Shell Rheinland converts the hydrocracker at the Southern site (Wesseling) into a production unit for Group III base oils

- **Take profit of the Electrical Tubular Heater technology to combine :**
  - **Lowering** Shell's Scope 1 and Scope 2 **carbon emissions**.
  - **Reduce the peak film temperature** of the feed as much as possible **to ensure the best product quality**.



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Furnace delivery at Shell Rheinland Southern site (Wesseling)





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e-House & Power Control Solution

- Fully **pre-fabricated**, containerized & tested solution
- Multi-zones **Process & Power** Automation & controls integrated
- Electrical & Process **Safety**
- Redundancy, on-stream **Maintenability** & Availability
- **Operators friendly** – remote operations





~10 MW Power Control Panel

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E-house installation at Shell Rheinland

Southern site (Wesseling)



e-House installation



Delivered & Ready On Site

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Project Milestones

- **Mechanical Completion :**
  → Reached in May 2026

- **Commissioning and SAT :**
  → On going

- **Start-Up :**
  → Forecasted by End of 2026





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Large Scale Electrification on the way

Power + **Process**



- Up-to 100 MW electrical heating applications under design
- Optimization, Modularization and Standardization for cost-effective implementation
- Performances monitoring digital solutions & services

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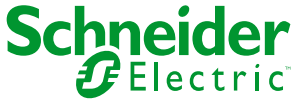
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Thank you!





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