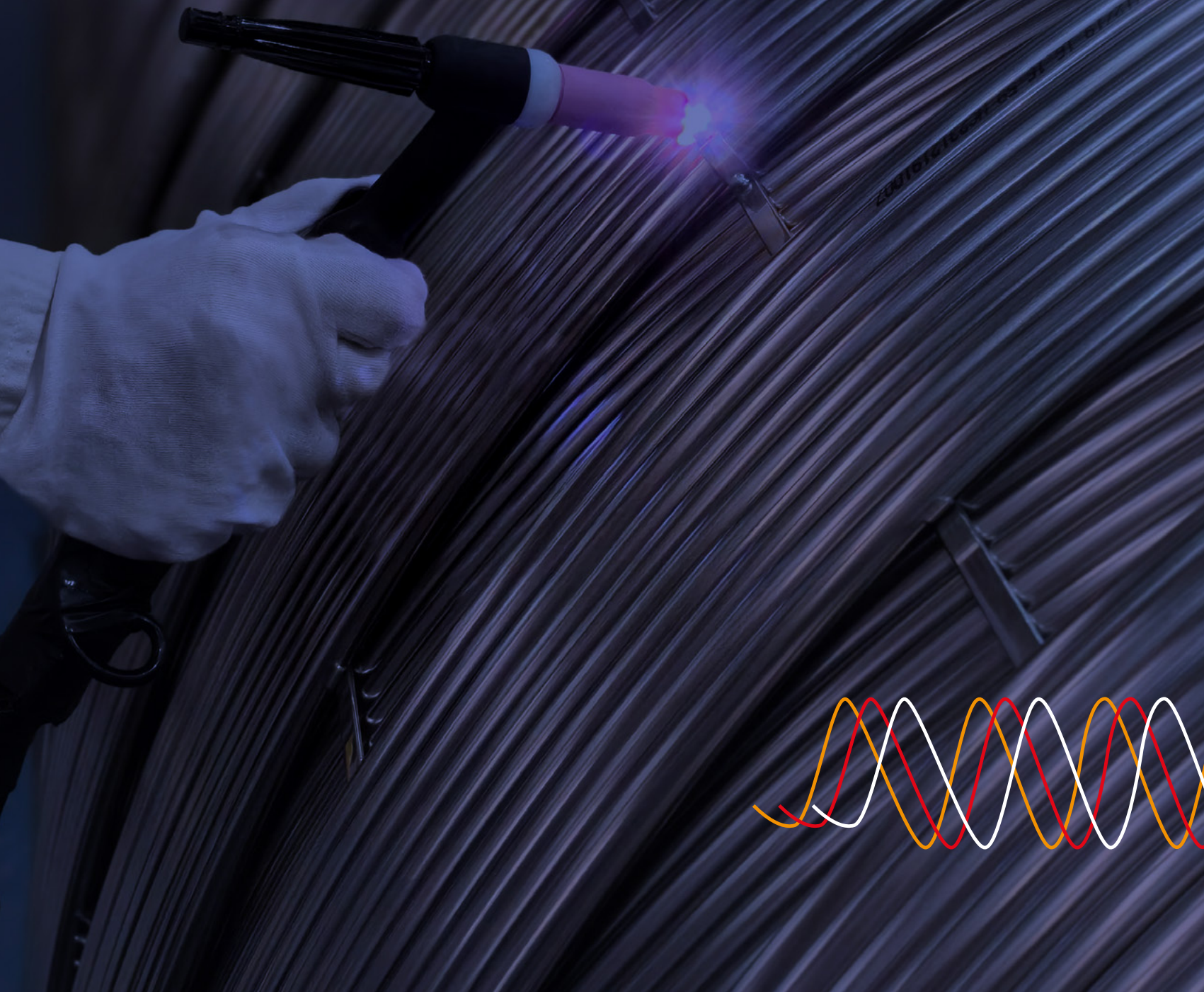




# Nectis

Solutions for Energy Efficiency





## OUR VISION

**A key to carbon neutrality in 2050 is energy efficiency. By offering an innovative approach to optimize project's environmental impact and economics, Nectis aims to be a recognized partner in this journey.**

# Your partner towards Energy Efficiency

## — OUR EXPERTISE

## Unlocking heat integration opportunities

Stemming from the shared ambitions of the energy industry specialists Axens, a key player in energy transition and a well-established technology, products, equipment and services provider and ZPJE, a reputed designer and manufacturer of spiral tube heat exchanger, Nectis provides worldwide markets with a unique energy efficient solution.

Contributing to optimize the performance and environmental impact of demanding processes, Nectis' solution relies on an exclusive technology: Spiral Tube Heat Exchangers. This equipment offers a wide range of possibilities thanks to a compact design and an excellent heat transfer efficiency. It gives an answer to process industries confronted with cost-effectiveness issues, environmental requirements, and plot plan constraints.

But Nectis also brings a full range of process knowledge and related services to guide its customers towards decarbonization.

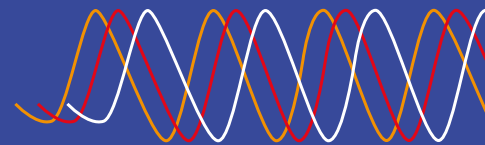
## — OUR MISSION

## Contributing to a low-carbon future

In a context of global warming and resource scarcity, energy efficiency becomes a major industrial issue.

Numerous industries are nowadays in need of solutions to reduce their CO<sub>2</sub> emissions. A wide range of solutions will be required to contribute to a collective carbon neutrality by 2050. Energy efficiency provides some of the quickest and most cost-effective CO<sub>2</sub> mitigation options while lowering energy costs and reinforcing energy security.

Nectis wants to take part in this transition towards a low-carbon future by supporting industries with its expertise. By combining a reliable technology with an extensive process knowledge, Nectis offers a tangible energy-saving solution to numerous industries. Committed to creating value for its customers, Nectis helps to unlock heat integration opportunities in the most demanding processes.



— PERFORMANCE & ROBUSTNESS

# Choose a high efficiency heat exchanger

Spiral tube heat exchanger is a fully welded equipment with high quality and seamless tubes, ensuring high reliability against leakage which is of major concern in case of ultra-low sulfur product specifications.

Spiral Tube Heat Exchanger proven ability to handle heavy or fouling refinery streams opens up a wide array of energy efficiency opportunities for new process units as well as existing assets. This technology is renowned for its ability to handle highly viscous and dirty fluids without fouling, making it suitable for a variety of applications.

With more than 1,600 references worldwide, Spiral tube heat exchangers are in a leading position in terms of technological advancement and energy efficiency. STHE exchangers are manufactured according to ASME Section VIII and certified with either a U or U2 stamp. This mark is a guarantee of the quality of the Spiral Tube Heat Exchanger.

## Product characteristics

- ✓ HIGH HEAT TRANSFER EFFICIENCY
- ✓ LOW PRESSURE DROP
- ✓ COMPACT DESIGN
- ✓ MECHANICAL ROBUSTNESS
- ✓ LOW FOULING



— A FULL EXPERTISE

# Combine technology & know-how

By choosing Nectis, customers choose expertise and peace of mind. With Nectis, industries are investing in a high-performance and reliable heat transfer solution, enabling high-yield production with guaranteed process performances. The equipment contributes to a significant reduction of capital and operational costs.

 **REDUCE ENERGY CONSUMPTION**

The heat transfer efficiency is 2 to 3 times higher than conventional shell and tube heat exchangers as the spiral tube design improves the fluid flow regime by creating high turbulence inside and outside the tubes. This allows for a pinch point as low as 2°C reducing consequently the hot and cold approach temperatures of the exchanger making possible to maximize heat recovery.

 **MINIMIZE SHUTDOWN**

The special design of the tube bundle, absorbing thermal dilatation as a spring, is reducing the mechanical stress on the tubes. This robust and tolerant design allows operations with no limitation for cooling and heating rates during start-up, shutdown or transient operations. Also, there is no limitation on reverse pressure between the shell and tube side.

 **PROCESS CRACKED FEEDSTOCK**

Thanks to its high anti-fouling performance, it is possible to process various types of cracked feedstock, with very limited fouling tendencies. Its design with high turbulence both on tube side and shell side, and its very high fabrication quality tubes, avoids the deposits of fouling, so less frequent cleaning and inspections are required.

 **DECREASE CAPEX**

Spiral Tubes Heat Exchangers have a high surface area to volume ratio. Only one exchanger can replace multiple horizontal or vertical exchangers, saving on installation and capital cost for both new units and revamping projects. It can offer a heat exchange up to 30,000 m<sup>2</sup> for reforming and aromatic processes, and up to 10,000 m<sup>2</sup> for hydroprocessing units in a single piece.

 **FACILITATE MAINTENANCE**

The maintenance of Spiral Tube Heat Exchanger is very convenient. Enough space is designed at the header for maintenance purposes. The nozzle of the exchanger can be used as manholes to give the access required for cleaning in case of pressure drop build up on both sides, or repair of some tubes.

 **REACH ENVIRONMENTAL REGULATIONS**

The very high thermal performances of the spiral heat exchanger will decrease the fuel consumption on the charge heater and even sometimes allow to shut it down during normal operation, thus drastically reducing the emissions of the unit.

— A RANGE OF SERVICES

# Rely on our team of experts

### 1. Process optimization

As each industrial site is unique with specific operating parameters, Nectis will conduct a detailed preliminary analysis to provide tailor-made solutions allowing performance optimization with lower carbon footprint.

### 2. Project management

Nectis provides a structured and efficient document management, rigorous planning follow-up, and remains available to answer any questions.

### 3. Site installation supervision

Nectis' team is present during the installation of the equipment to ensure a proper handling and installation of the exchanger.

### 4. Training

Nectis provides a training program so that on-site operators will be able to understand and manage all the specificities of the equipment (installation, access, operation and maintenance).

### 5. Commissioning & start up

To handle the crucial commissioning and start-up step, Nectis team remain on site throughout the entire process to ensure a safe and trouble free start up.

### 6. Operation follow up

Nectis provides full support throughout the life of the exchanger by following-up the performances of the equipment, providing recommendations on preventive maintenance as well as supervising any cleaning or repair work required to reduce equipment downtime.



## SPIRAL TUBE HEAT EXCHANGERS ARE REFERENCED IN MORE THAN 300 INDUSTRIAL SITES.

Cumulating more than 7,000 years of efficient and reliable operation, spiral tube exchanger is proven and reliable technology and its manufacturing is certified for Quality Management System ISO 9001:2015, Environment Management System ISO 14001:2015 and Occupational Health Safety Management System OHSAS 18001:2007.



— WHO WE ARE

## About Us

By promoting the application of Spiral Tube Heat Exchangers (STHE), Nectis helps to unlock heat integration opportunities in demanding process services.

Nectis provides the full scope of services required for the integration of the STHE to the process scheme: studies, installation supervision, commissioning and follow-up. With its high expertise, Nectis helps industries to lower their carbon footprint.

*« Energy efficiency improvement is a short-term, yet significant, lever available to the industry to reduce their carbon footprint. If it enhances operation robustness and reliability capitalizing on over 7,000 years of cumulated industrial operation in more than 300 industrial sites, the incentive becomes even more obvious. This is exactly what Nectis brings to the industry, and I am extremely proud to contribute to this transformative endeavour. Our ambition is to support the industry to reach new performance standards for new and existing assets. »*

**Jacques Rault**  
President of Nectis Board



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