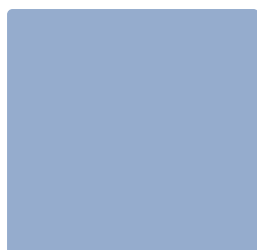
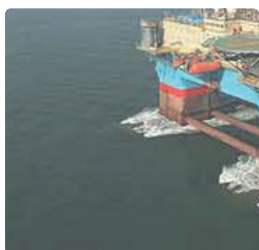
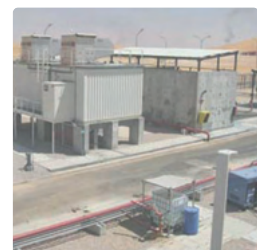
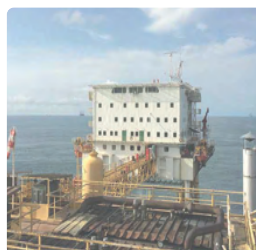
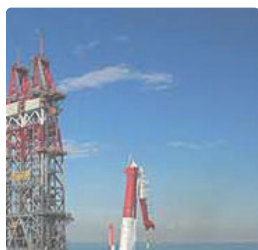
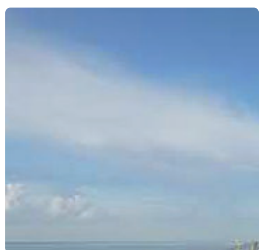
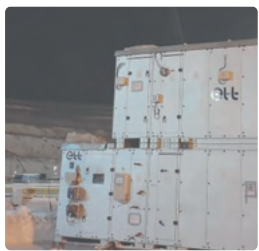
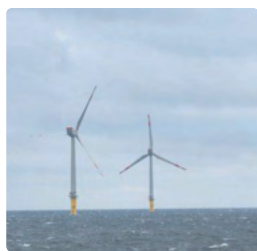
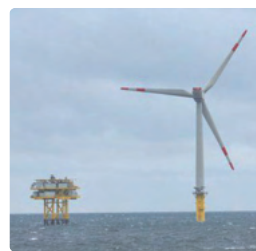




ENVIRONMENTAL
CLIMATE CONTROL
EQUIPMENT &
SOLUTIONS



Solutions for the energy sector



www.ett-hvac.com

ETT, an industrial specialist in energy transfer



Since 1979, the industrial company **Energie Transfert Thermique** has been recognised as a major player in the design and manufacture of high quality thermodynamic machines with very high energy performance.

Located at the tip of the Brittany coast, the 18,000 m³ plant (of which 16,000 are dedicated to production) is **ISO 9001** and **ISO 14001** certified, and participates in the "EcoVadis" certification process as part of its **CSR** (Corporate Social Responsibility) approach.

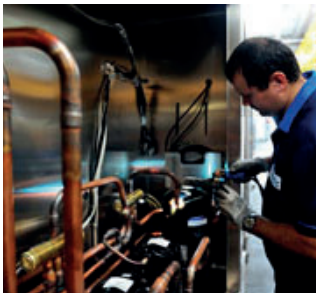
ETT is present both in France with its own technical and commercial organisation and abroad via a network of agents and distributors.



Always attentive to its customers' expectations, **ETT** has always placed innovation, respect for the environment and energy savings at the heart of its **Research & Development** approach.

This is also why a **department dedicated to the Energy Markets** (Oil & Gas, Nuclear...), composed of experienced specialists, was created several years ago to meet the needs of these very specific projects.

With a custom manufacturing capability that is well known and recognised in the industry, **ETT** offers a full range of quality products that have been installed at many prestigious sites around the world.



Because every project is unique and different

ETT has developed an efficient organisational structure to provide you with the know-how gained from over 35 years of experience :

- Expert advice for an optimal solution.
- Flexible design and production tools to meet our commitments on deadlines and products reliability.
- Support in operation through a service offer provided by a network of technicians on the installation sites.

Our tailor-made solutions benefit our clients. Our top priority is customer satisfaction.

Yves Millot, CEO.



Groupement des Industriels
Français de l'Energie Nucléaire
French Nuclear Industry Association

ETT, focus on research & innovation

ETT is attentive to the technical and regulatory developments that will shape the evolution of equipment. **ETT**'s approach is based on the skills of its various **Design offices** and **expert engineers**.

- Project Engineering Department
- Process planning Department
- Electricity & Control Department

All the technical services are supported by the Research and Development department, which is able to provide and validate innovative technical solutions, in particular thanks to its testing capacities within our climatic chamber.

ETT, the expertise to help you reduce your energy costs

Our commitments :

► Guarantee

- 20-year anti-corrosion guarantee for aluminium frame and casing

20-year guarantee
against corrosion
frame - casing

► Reliability

- Use of premium components
- Factory-tested units before delivery

► Service contract

- Audit and optimisation of the facility
- Extended guarantee
- Leak test of refrigeration circuits
- Technical assistance/consulting

► Retrofit - Refurbish

- Energy optimisation
- Control system optimisation and replacement
- Renovation or retrofit of the refrigeration circuit (ban on the use of R22)
- Unit transformation
- Communication tools (BMS, Web, etc.)

► Technical expertise

- Complete assessment of your HVAC machines
- Analysis and consulting services

► Training Center

- Maintenance and operation
- Customised training

What service means to us :

Advice

Expertise

Responsiveness

Guarantee



Dedicated resources for efficient project management

We are fully aware that our success depends on the success of our customers.

Our know-how, combined with constant monitoring of technological and regulatory developments, enables us to offer state-of-the-art heating, ventilation and air conditioning equipment that meets the specific needs and constraints of our customers.

To ensure the success of each of its projects (new installation or revamping), ETT relies on proven processes :



Engineering & Documentation

- A dedicated Oil & Gas team within the Projects department
- Dedicated project manager
- Compliance check list based on client's specifications
- 2D and 3D detail drawings
- Wiring diagrams
- Recommendations on interfaces with HVAC-related stakeholders
- Tests and inspection plans for units and components
- Material certificates (2.1, 2.2, 3.1)
- Sensor calibration certificates
- Welding log books
- Schedules (purchase orders, manufacturing, etc.)
- Other documentation as required
- Layout of pipes and ducts



Factory Acceptance Test

- Visual inspection of units
- Verification of operation in accordance with the functional analysis
- Tests according to EN 1886
- Performance tests in our climate chamber
- Weighing / listing of components and machines
- Maintainability testing
- Sound level measurements



Climatic Chamber

- Cooling and heating capacity up to 200 kW
- Ambient temperature range of +2°C to +45°C (+55°C for specific units)
- Recording of sensor data on a central data acquisition system
- Air and water flow measurements
- Units technically monitored by our R&D department before delivery
- Test reports



Interventions on site

- Onshore and offshore site surveys
- On-site refrigeration connection
- Experienced technicians for commissioning
- Dedicated team of engineers and technicians for after-sales service
- Commissioning and key spare parts

Environment : Eco-design promotes deconstruction

4 Goals :

- Design: integrating deconstruction.
ETT units are 98% recyclable (reuse and recycling rates based on the ULTI+ R32 21).
- Production: reducing environmental impact.
Aluminium can be recycled 100% indefinitely (no pollution, no painting, selective sorting).

- Operation: limit final waste.
ETT units incorporate "Eco-Design" air filters (selective sorting: frame - grid - media).
- Energy performance: focus on innovation through our Research & Development department.



Markets



**OIL
& GAS**



**ENERGY
STORAGE**

**NUCLEAR
INDUSTRY**



HYDROGEN

**AIR CONDITIONING
FOR SHELTERS**



**RENEWABLE
MARINE
ENERGY**

OIL & GAS

The background of the slide is a photograph of an offshore oil and gas platform. The platform is a complex structure with multiple levels, cranes, and a tall derrick. It is situated in the middle of the ocean. The sun is setting or rising, creating a warm, golden glow that reflects on the water's surface. The sky is filled with soft, white clouds. A dark blue rectangular box is positioned in the upper left corner, containing the text 'OIL & GAS' in white.

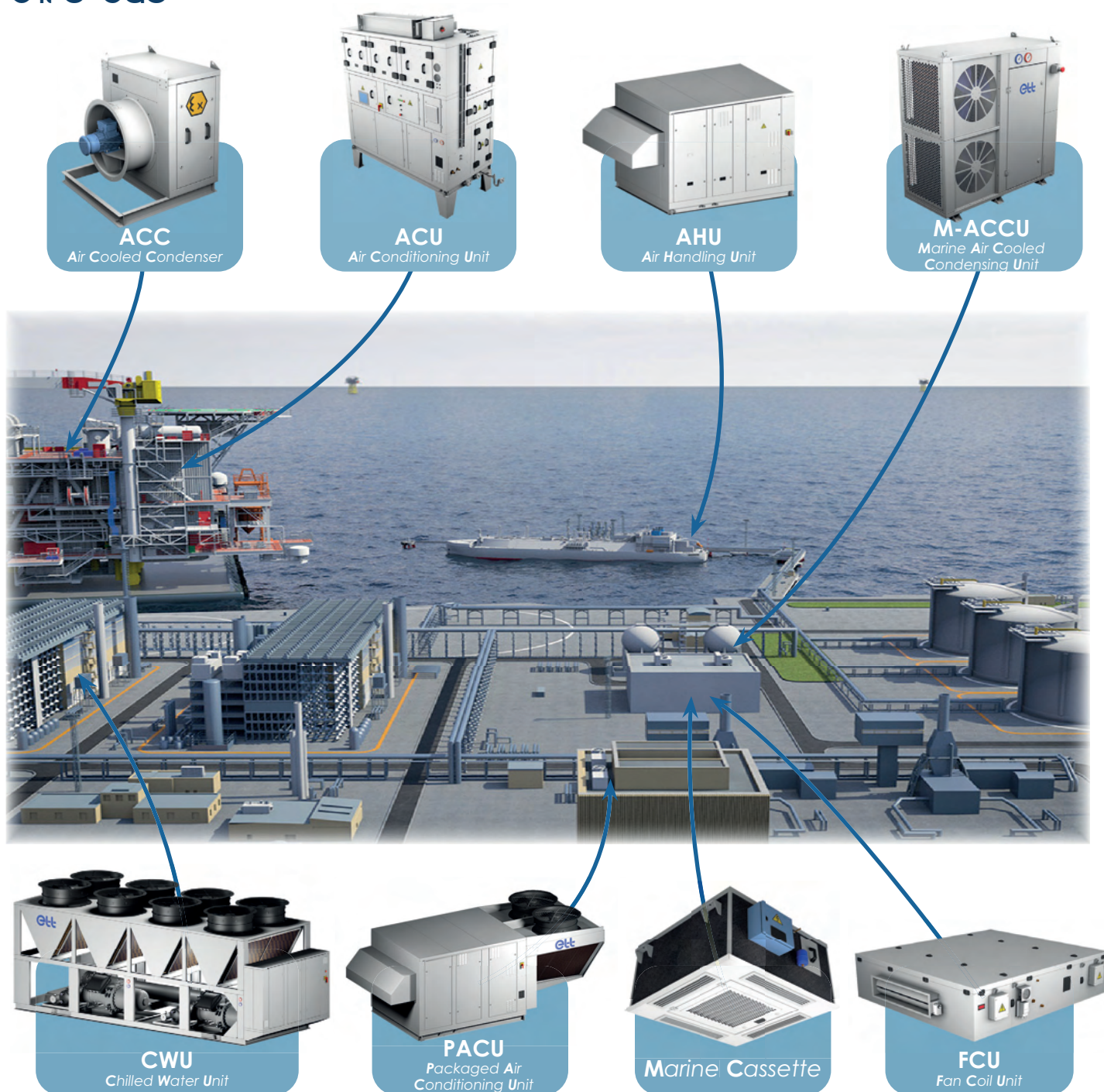
ETT has positioned itself as a **major player** in this **market** thanks to its referencing with various oil & EPC (**E**ngineering, **P**rocurement and **C**onstruction) groups.

With its **wide range of units**, ETT can offer any standard or customised solution **to suit the client's requirements and constraints**.

Their design favours **maintenance, repairability, robustness** and **performance** even in highly corrosive environments (offshore platforms with H₂S gas).

All units can be offered in **ATEX** Zone 2 or Zone 1 versions.

Oil & Gas



Oil & Gas Applications

Electrical rooms / Pressurisation of electrical premises

- ACU (page 21) / ACC (page 22)
- AHU (pages 22-23)

ACC Revamping

- ACC (page 22)

Food Fridges

- ACCU (page 23) / AHU (page 23)
- SCCU (page 24) / AHU (page 23)

Generators

- PACU ULTIMA GREEN LINE (pages 20-21)

Conversion halls

- PACU ULTIMA GREEN LINE (pages 20-21)

Instrumentation Rooms

- ACU (page 21) / ACC (page 22)

GBS (Gravity Based Structure) tank heating

- ACCU (page 23) / AHU (page 23)
- PACU ULTIMA GREEN LINE (pages 20-21)
- AHU (pages 22-23) / CWU (page 24)

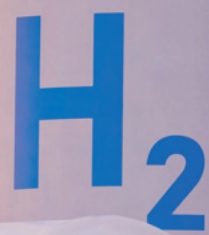
Living quarters (bedrooms, gyms, laundries)

- ACCU (page 23) / AHU (page 23)
- SCCU (page 24) / AHU (page 23)
- PACU ULTIMA GREEN LINE (pages 20-21)
- M-ACCU / FCU (page 25) or CASSETTE (page 23)
- CWU (page 24)
- CASSETTE (page 23)

Shelters (Gas compressor, Electrical room)

- ACU (page 21) / ACC (page 22)
- PACU RTS (page 21)
- PACU ULTIMA GREEN LINE (pages 20-21)
- ACCU (page 23) / AHU (pages 22-23)
- M-ACCU / FCU (page 25) or CASSETTE (page 23)

HYDROGEN



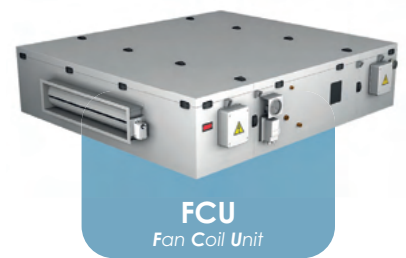
HYDROGEN

ETT's R&D team is constantly monitoring new technologies, including hydrogen. Through its membership of various technical associations, ETT has positioned itself as a developer and technical support for several partners in this Market, resulting in various prototypes. It is certain that this market can only grow in the years to come, in various fields including maritime and energy storage, and thus enable progress to be made in the energy transition and decarbonation.

With its **wide range of units**, ETT can offer any standardised or customised solution to suit the requirements of this very particular market.

All units can be offered in **ATEX** Zone 2 or Zone 1 versions.

Hydrogen



Hydrogen applications

Shelters (Electrical room, Electrolyser)

- ACU (page 21) / ACC (page 22)
- PACU RTS (page 21)
- PACU ULTIMA GREEN LINE (pages 20-21)
- ACCU (page 23) / AHU (page 23)
- M-ACCU/FCU (page 25)

Conversion halls

- PACU ULTIMA GREEN LINE (pages 20-21)
- PACU (pages 20-21)
- PACU RTS (page 21)

Instrumentation Rooms

- ACU (page 21) / ACC (page 22)

Hydrogen Generators

- PACU ULTIMA GREEN LINE (pages 20-21)
- PACU (pages 20-21)
- PACU RTS (page 21)

Electrical rooms / Pressurisation of electrical premises

- ACU (page 21) / ACC (page 22)
- AHU (pages 22-23)
- PACU RTS (page 21)

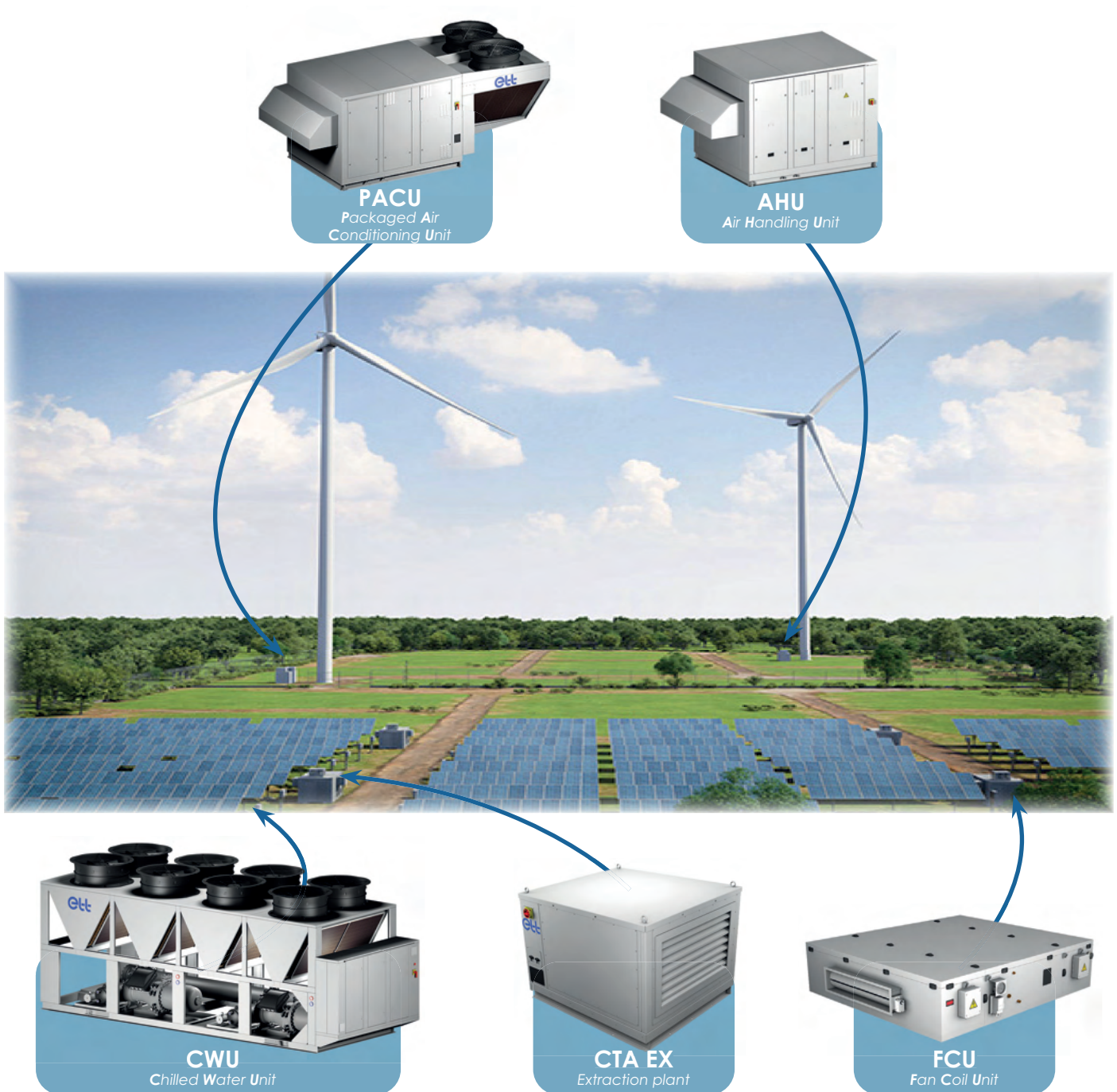


ENERGY STORAGE

ETT positioned itself as a supplier from the start of this new market. Various projects have allowed us to build up significant experience in this market, which has important subtleties.

The different solutions used are those of the Shelters type of air conditioning.

Energy storage



Energy Storage Applications

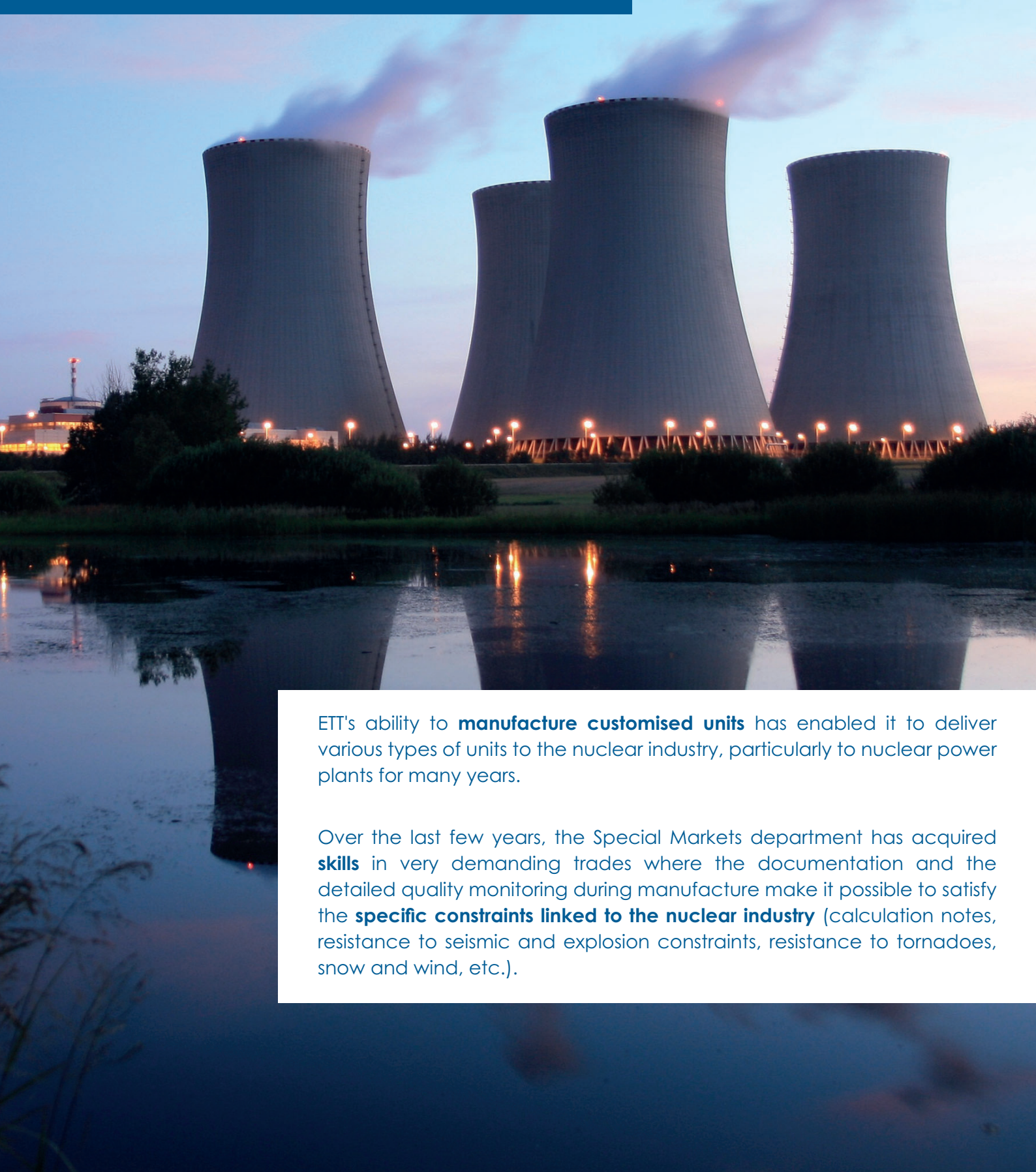
Electrical rooms

- PACU RTS (page 21)
- PACU ULTIMA GREEN LINE (pages 20-21)
- CWU (page 24) / AHU (pages 22-23)
- M-ACCU / FCU (page 25)

Conversion halls

- PACU RTS (page 21)
- CTA EX (page 26)
- CWU (page 24) / AHU (pages 22-23)
- M-ACCU / FCU (page 25)

NUCLEAR INDUSTRY



ETT's ability to **manufacture customised units** has enabled it to deliver various types of units to the nuclear industry, particularly to nuclear power plants for many years.

Over the last few years, the Special Markets department has acquired **skills** in very demanding trades where the documentation and the detailed quality monitoring during manufacture make it possible to satisfy the **specific constraints linked to the nuclear industry** (calculation notes, resistance to seismic and explosion constraints, resistance to tornadoes, snow and wind, etc.).

Nuclear industry



Nuclear applications

Electrical rooms

- PACU RTS (page 21)
- PACU ULTIMA GREEN LINE (pages 20-21)
- Front mounted air conditioner (pages 17-18)

Pumping stations

- Dehu MAN

SAP Groups

- CWU (page 24)

Polymer storage facility

- PACU RTS (page 21)

Boron storage

- PACU ULTI RE (page 21)

Generators

- CTA EX (page 26)
- DCO (page 26)

Reactor pool decenal visit

- CWU (page 24)

Auxiliary buildings

- PACU ULTIMA GREEN LINE (pages 20-21)
- PACU RTS (page 21)
- PACU ULTI RE (page 21)

MARINE RENEWABLE ENERGY- MRE



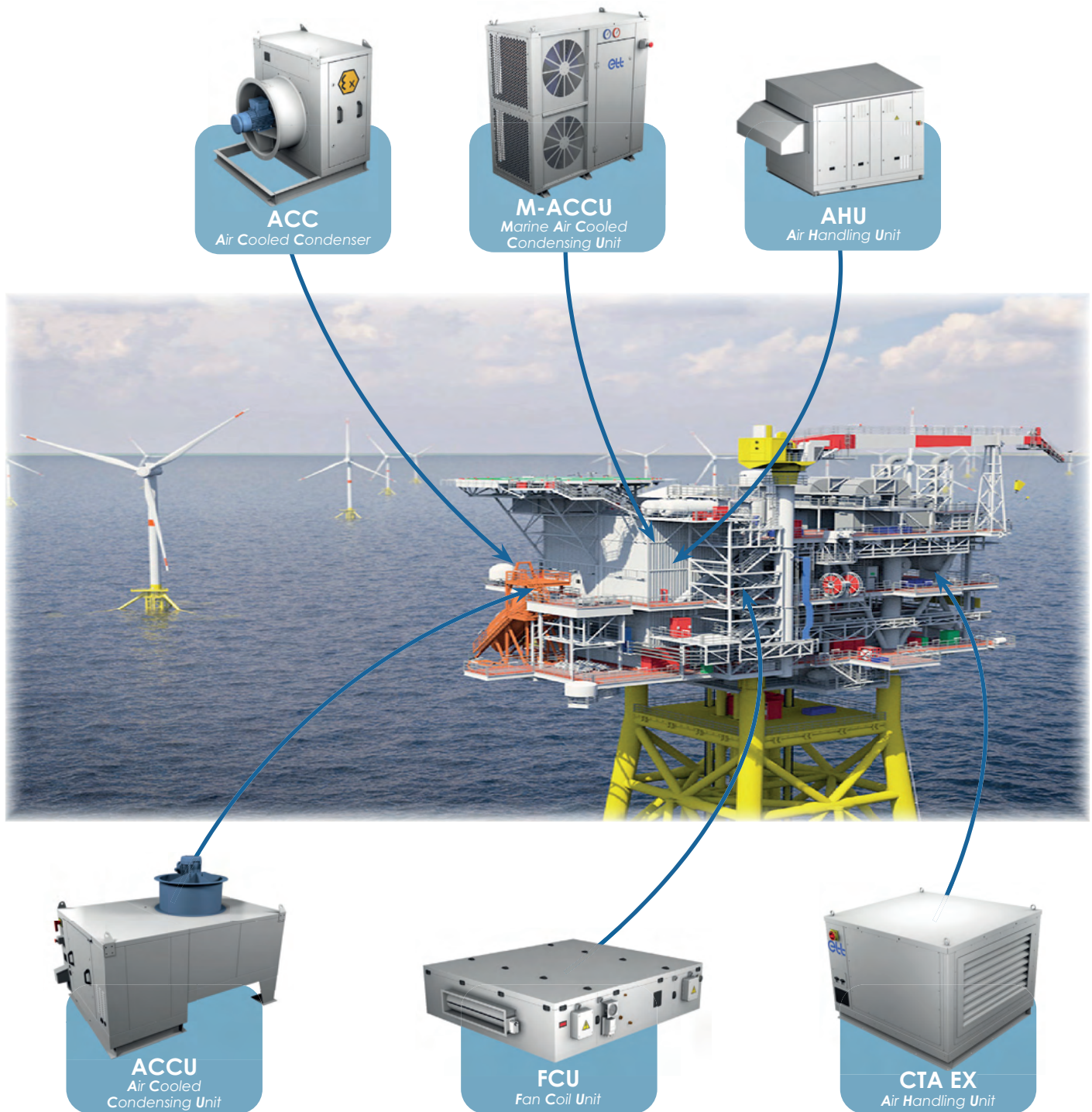
ETT is the leading French supplier of **air conditioning and pressurisation solutions for offshore wind substations** (Offshore Sub Stations).

These units are based on decades of experience in the Oil & Gas market. They can be chilled water or direct expansion type according to client's specifications.

The units are designed to withstand a marine environment. Different types of materials and options are available to meet these expectations.

Since these platforms are uninhabited and offshore operations are extremely costly, the design and selection of components require high **reliability** and durability.

Marine Renewable Energy - MRE



EMR Applications

Electrical rooms

- ACU (page 21) / ACC (page 22)
- CWU (page 24) / AHU (pages 22-23)
- M-ACCU / FCU (page 25)

Room pressurization

- ACCU (page 23) / AHU (page 23)
- CWU (page 24) / AHU (page 23)
- M-ACCU / FCU (page 25)

Generators

- CTA EX (page 26)

COOLING FOR SHELTERS



Through its involvement in various **energy** and **industrial** infrastructure projects (onshore & offshore) (energy storage, dockside, water treatment, naval, etc.), ETT offers air conditioning solutions for technical shields, generally in containers and called « **shelters** ». Shelter installations are a principle widely used in various fields because it allows complex installations to be prefabricated in the workshop and tested in their entirety before being shipped to site in France or abroad, particularly to offshore platforms.

Depending on the customer's requirements and specifications, ETT is able to propose different **technical solutions** without taking sides but guiding the customer in the best possible choice according to the constraints on site.

These solutions can be of chilled water type or direct expansion, packaged or split.

Part of the installation design (thermal inputs, cable routing and refrigeration piping) can be subcontracted to our various departments or partners, as well as the assembly of part of the installation in order to limit interfaces as much as possible.

Air conditioning for Shelters

(Electrical rooms, energy storage, process,...)

Split unit



Packaged roof top unit



Packaged front unit



Air conditioning for Shelters

(Electrical rooms, energy storage, process,...)

Unit with extraction box on the roof and specific fresh air intakes



Unit with pressurisation unit



Products



ETT unit ranges

ETT produces hundreds of aluminium rooftops per year. This material has been used by ETT for 40 years due to its excellent properties in terms of weight, corrosion resistance and recyclability. However, in some areas, particularly in the hydrogen sulphide laden atmospheres of Oil & Gas applications, this material is not suitable. **ETT has therefore developed a 316L (1.4404) stainless steel range** and has dedicated a team to its design, manufacture and commissioning.

ETT has extensive experience in designing machines for use in explosive hazardous areas. Our equipment can be adapted to the characteristics of Zone 1 to Zone 2 sites, and carries the ATEX marking. Our machines are subject to third party inspection before delivery. All ATEX/IECEx components come from manufacturers known for their quality.

All the machines below can be designed for **voltages** of 690/460/400/220 V and **frequencies** of 50/60 Hz.

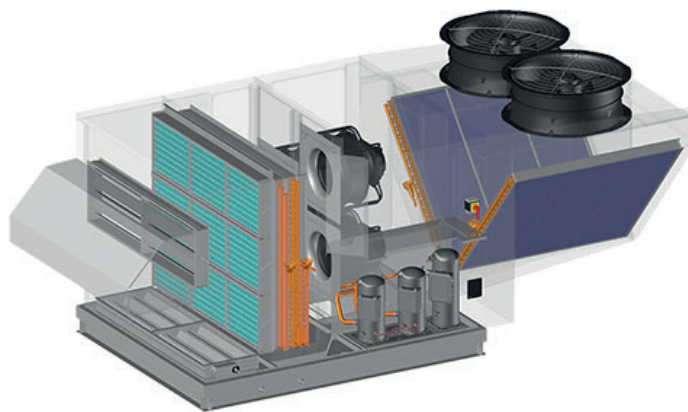
Packaged Air Conditioning Unit (PACU) - Standard range

Suitable for non-ATEX areas - Can be used in shelters in "non-critical" areas

- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a - R410A - R32
- Rated air flow rate from 750 to 54,000 m³ 3/h
- Net cooling capacity (R32) from 35.1 to 273.3 kW

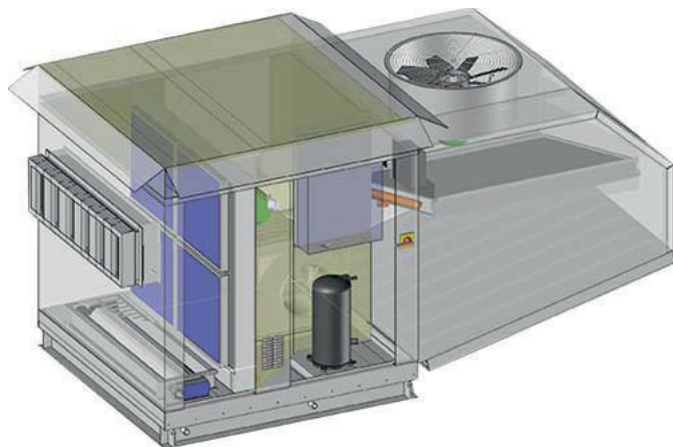
This unit includes :

- An ETT communication system for HPE+ control
- A IE4 high performance plug fan
- Coarse filtration ISO 65% (G4)+ ISO ePM1 50% (F7) without glass fibre
- ETT Tandem technology



Packaged Air Conditioning Unit (PACU) - Customised range

Suitable for non-ATEX or ATEX zones  - For use in Zone 1 and Zone 2



Technical features :

- **Unit in aluminium or stainless steel**
- Refrigerant : R134a or R410A
- Rated air flow rate from 1,500 to 30,000 m³ 3/h
- Net cooling capacity from 8 to 150 Kw (R410A)
- **Sand filter available as an option**

ETT unit ranges

Packaged Air Conditioning Unit (PACU) - RTS range

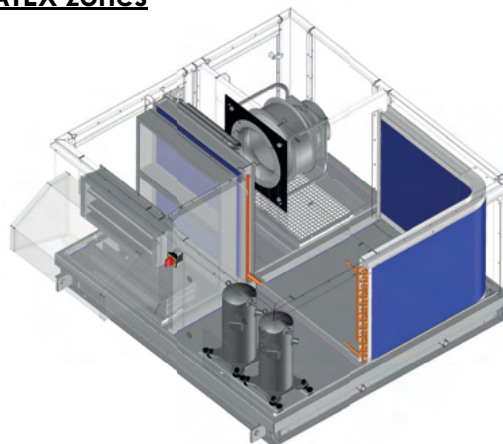
Applicable for non ATEX zones

Technical features :

- Standard unit in aluminium - Stainless steel available as an option
- Refrigerant : R134a– R410A – R32 - R513A
- From 2,500 to 4,000 m³/h
- From 10 to 20 kW

This unit includes :

- IE4 high performance plug fan
- Coarse filtration ISO 65 % (G4) + ISO ePM1 55 % (F7) without glass fibre
- ETT tandem technology



Packaged Air Conditioning Unit (PACU) - 4-damper ULTI RE range

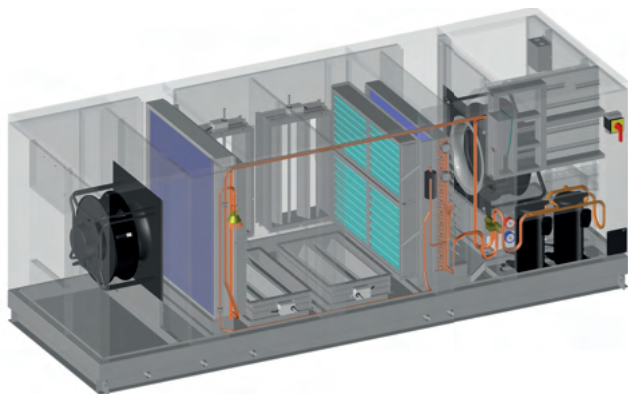
Applicable for non ATEX zones

Technical features :

- 4-damper unit with extract air energy recovery
- Standard unit in aluminium - Stainless steel available as an option
- Refrigerant : R134a– R410A – R32 - R513A
- From 2,500 to 4,000 m³/h
- From 10 to 20 kW

This unit includes :

- A IE4 high performance plug fan
- Coarse filtration ISO 65 % (G4) + ISO ePM1 55 % (F7) without glass fibre
- ETT tandem technology

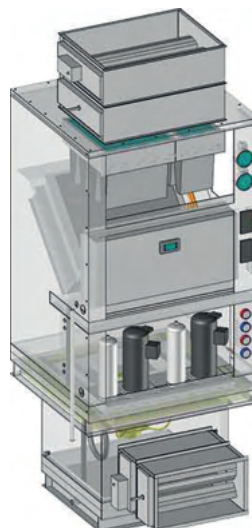


Air Conditioning Unit (ACU)

Applicable for non ATEX zones

Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A
- Rated air flow rate from 1,500 to 15,000 m³ /h
- Net cooling capacity from 8 to 70 kW



ETT unit ranges

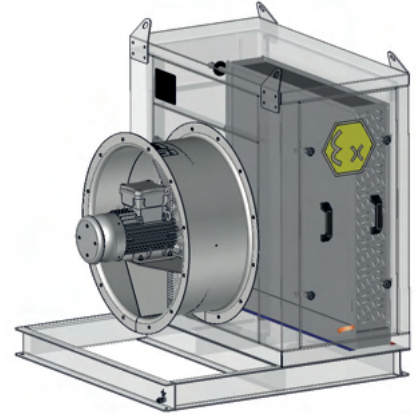
Air Cooled Condenser (ACC)

Applicable for non ATEX and ATEX zones 

- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A (hot water can also be used as a refrigerant)
- Rated air flow rate from 2,000 to 28,000 m³ /h
- Net Heating capacity from 13 to 200 kW (R410A)

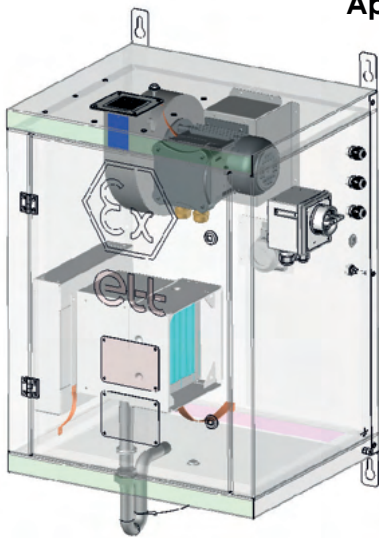
Available options :

- Coils with specific treatment (Heresite)
- Emergency stop switch



PRessurisation Unit (UPR)

Applicable for non ATEX and ATEX zones 



Technical features :

- **Standard unit in stainless steel**
- Rated air flow rate from 200 to 400 m³/h for UPR standard units
- Rated air flow rate from 400 to 2,000 m³/h for customised units.

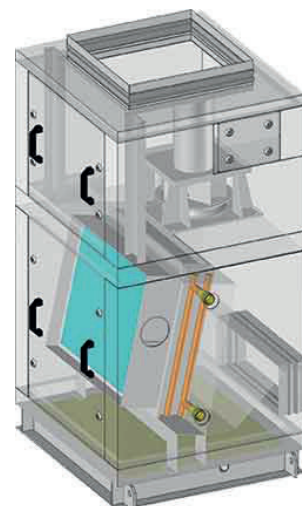
Vertical Air Handling Unit (AHU V)

Applicable for non ATEX and ATEX zones 

Vertical unit

Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Rated air flow rate from 1,000 to 50,000 m³/h
- Available components: centrifugal fans, refrigeration coils, thermodynamic coils (electric or hot water), droplet separators, sound traps, dampers)



ETT unit ranges

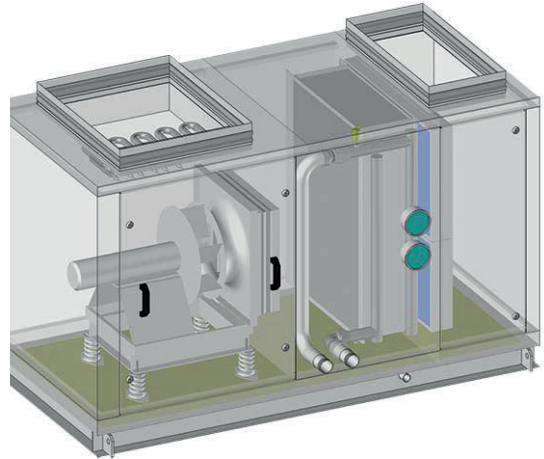
Horizontal Air Handling Unit (AHU H)

Applicable for non ATEX and ATEX zones 

Horizontal unit

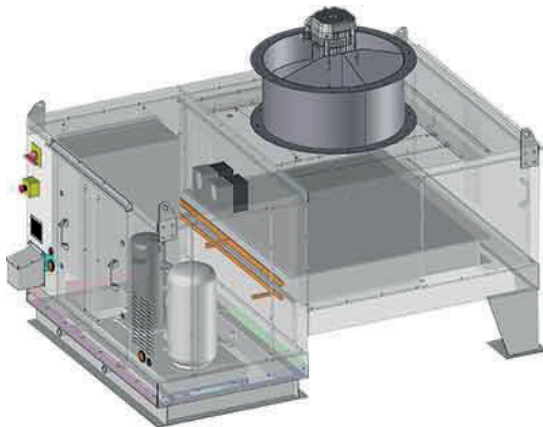
Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Rated air flow rate from 1,000 to 20,000 m³ /h
- Available components: centrifugal fans, refrigeration coils, thermodynamic coils (electric or hot water), droplet separators, sound traps, dampers)



Air Cooled Condensing Unit (ACCU)

Applicable for non ATEX and ATEX zones 



Technical features :

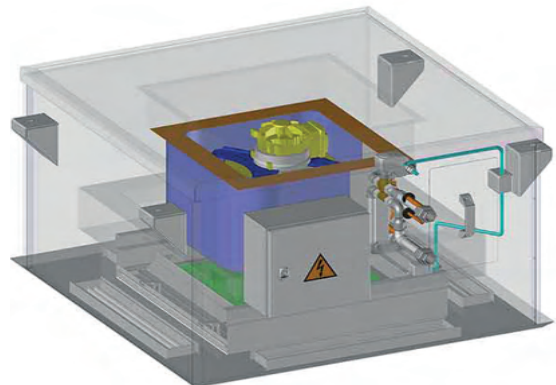
- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A (chilled water can also be used as a refrigerant)
- Rated air flow rate from 300 to 1,100 m³ /h
- Net cooling capacity from 2 to 8 kW (R410A)

Marine Cassette

Applicable for non ATEX and ATEX zones 

Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A
- Net cooling capacity from 5 to 15 kW (R410A)



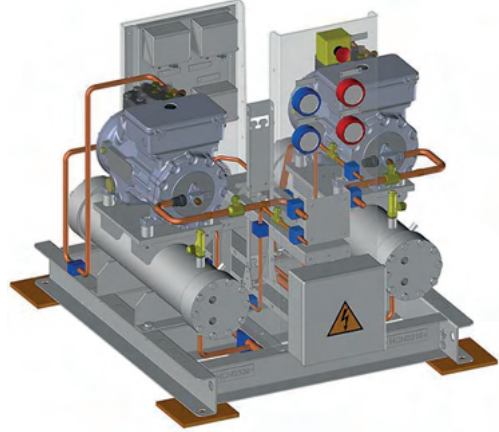
ETT unit ranges

Seawater Cooled Condensing Unit (WCCU/SCCU)

Applicable for non ATEX and ATEX zones 

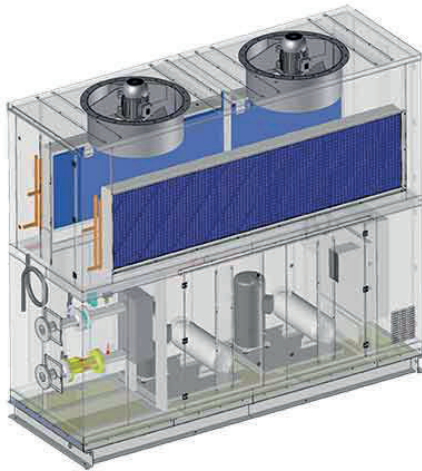
Technical features :

- Standard unit with aluminium base frame - **Optional stainless steel base frame available**
- Refrigerant : R134a– R410A– R290
- Suitable for both seawater systems (titanium exchangers) and hot water systems (stainless steel exchangers)
- Possibility to equip the unit with an external casing
- Suitable for voltages of 690/460/400/220 V and intensity of 50/60 HZ
- Net cooling capacity from 7 to 150 kW (R410A)
- With scroll or piston compressors



Chilled Water Unit (CWU) - R134a or R410A range

Applicable for non ATEX and ATEX zones 



Technical features :

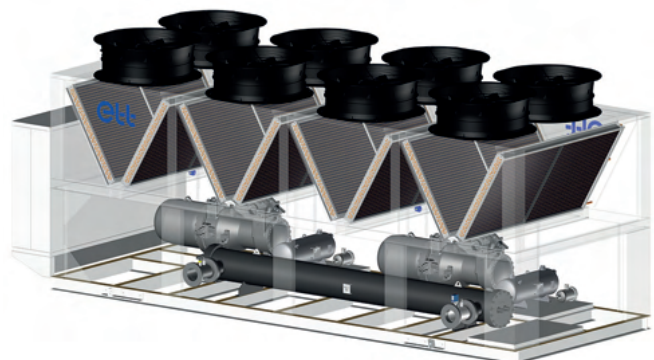
- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A
- Net cooling capacity from 15 to 200 kW (R410A)
- Available components: centrifugal fans, sound traps
- Suitable for low ambient temperatures

Chilled Water Unit (CWU) - EC+ R290 range

Applicable for non ATEX and ATEX zones 

Technical features :

- Standard unit in aluminium - **Stainless steel Available as an option**
- Refrigerant : R290 (Propane)
- Net cooling capacity from 300 to 1,200 kW (7/ 12°C)
- Optional full or partial heat recovery
- Suitable for low ambient temperatures



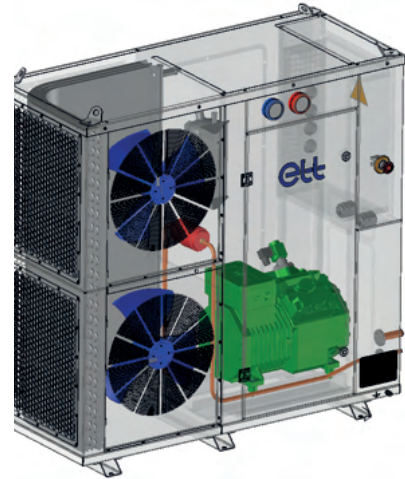
ETT unit ranges

Air Cooled Condensing Unit for the Marine market (M- ACCU)

Applicable for non ATEX and ATEX zones 

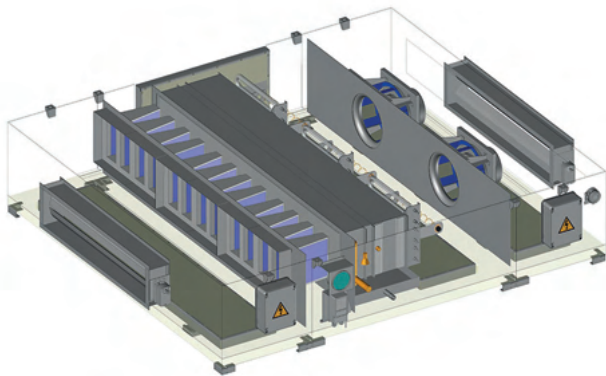
Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Refrigerant : R134a or R410A
- Net cooling capacity from 5 to 15 kW (R410A)



Fan Coil Unit (FCU)

Applicable for non ATEX and ATEX zones 



Technical features :

- Standard unit in aluminium - **Stainless steel available as an option**
- Rated air flow rate from 1,600 to 4,800 m³/h
- Many components available, such as centrifugal fans, DX or chilled water coils, thermodynamic coils (electric or hot water), droplet separators, sound traps, dampers)

Wall Mounted Unit (WMU)

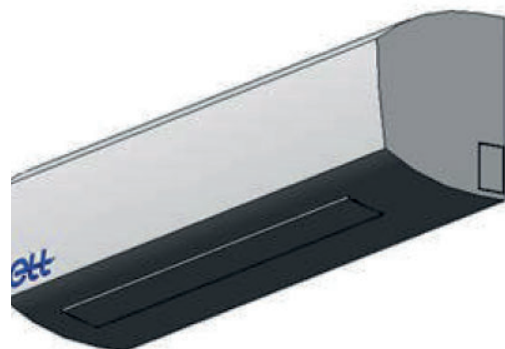
Applicable for non ATEX and ATEX zones 

Technical features :

- Standard unit with non-metallic casing
- Refrigerant R134a or R410A
- 1,000 m³/h
- 5 kW

Available options

- Built-in expansion valve
- Condensate pump



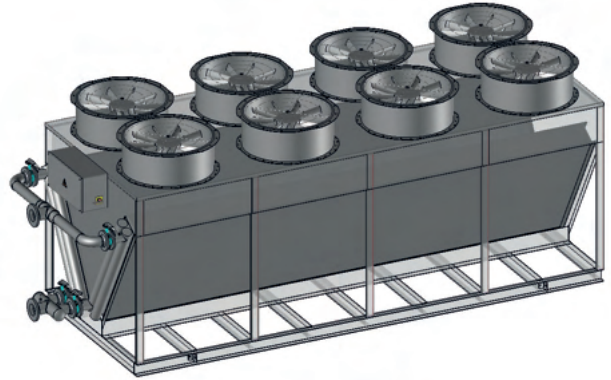
ETT unit ranges

Dry COoler (DCO)

Applicable for non ATEX and ATEX zones 

Technical features :

- Standard unit in aluminium - stainless steel as an option
- From 15 to 600 kW
- From 7,700 to 84,000 m³/h
- EC or AC fans

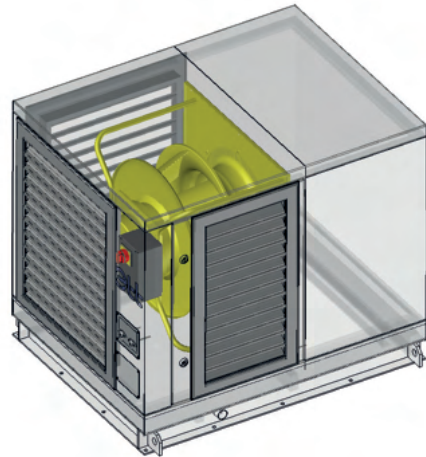


Extraction Unit (CTA)

Applicable for non ATEX and ATEX zones 

Technical features :

- Standard unit in aluminium
- Stainless steel optional
- Exhaust air flow rate from 1,000 to 10,000 m³/h
- EC Fans



References



OIL
& GAS



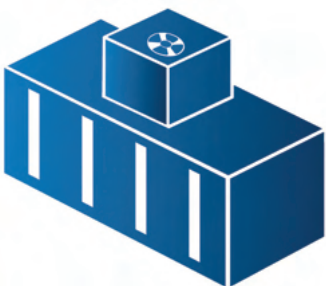
ENERGY
STORAGE

NUCLEAR
INDUSTRY



HYDROGEN

AIR CONDITIONING
FOR SHELTERS



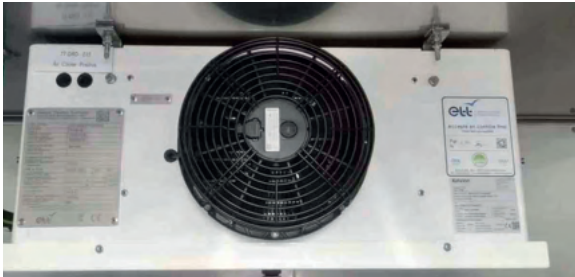
MARINE
RENEWABLE
ENERGY

References

Oil & Gas



Painted ACC



Cold room evaporator



ACU stainless steel



ACCU ATEX



Project in Russia



Pressurisation unit



Double flow AHU

Hydrogen



GE H2



GE H2



GE H2



GE H2



GE H2

References

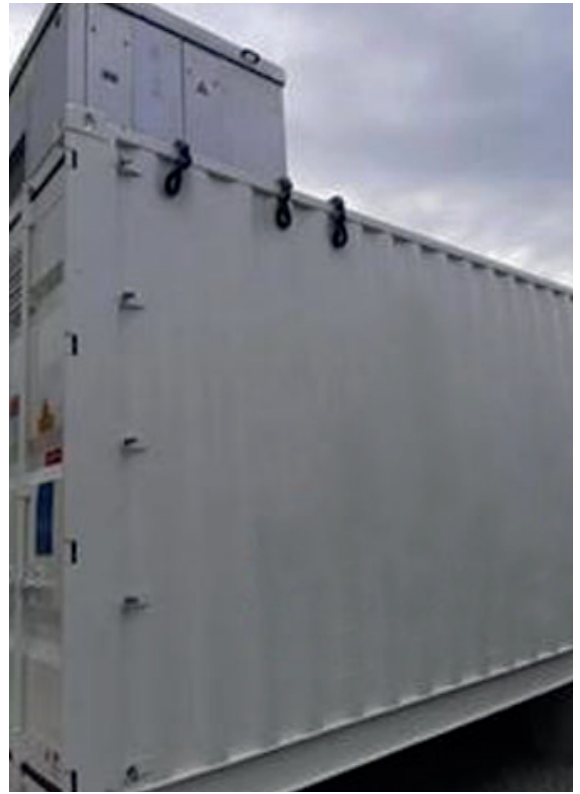
Energy storage



ULTIMA Rooftop



Stainless steel Rooftop



RTS Rooftop

Nuclear industry



Specific refrigeration unit



Mobile Rooftop



Specific refrigeration unit



Roof Top - electrical room (Alu A64)



Roof Top - electrical room (Alu A64)



Specific refrigeration unit

References

Air Conditioning for Shelters



Dockside



Roof Top RTS - electrical room



Roof Top ULTIMA - thermal power plant

Marine Renewable Energy - MRE



Air handling unit for pressurisation



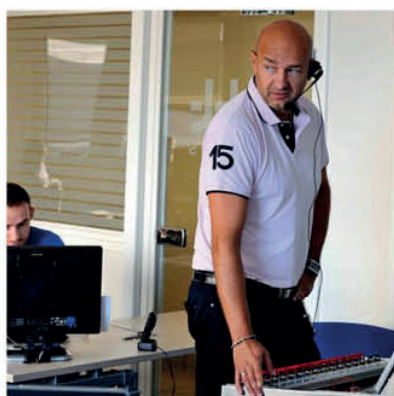
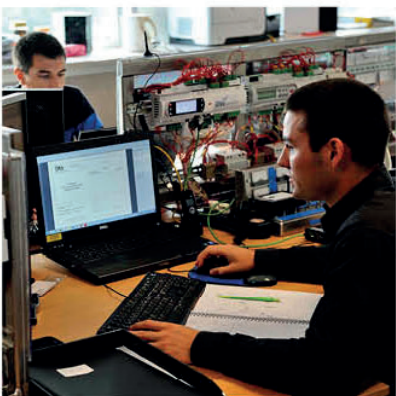
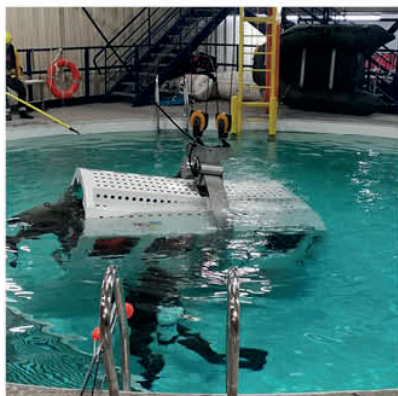
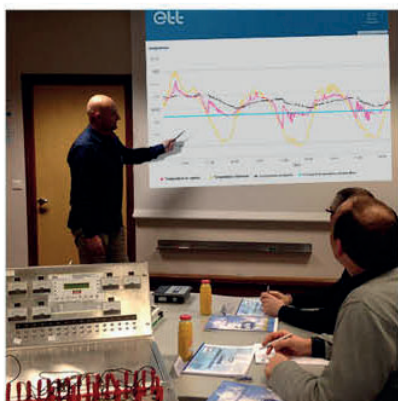
ACCU stainless steel



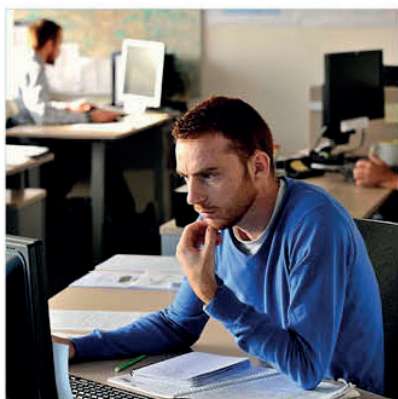
ACCU stainless steel



ACC stainless steel



ETT, services
dedicated to applications
of the **energy market**



ETT Services: Focus on customers and markets

With their solid experience, ETT Services staff can operate in France and abroad in various sectors (Oil & Gas, Marine, Offshore, Nuclear, etc.).

A team of **experts** at your service :



Hotline
Technical experts (French & English)



Study of services
Specialized engineers



Optimisation / Evolution



On-site interventions

Experienced technicians trained in regulatory requirements and ETT technologies in France and abroad

Training

- ETT, approved training body
- Accreditation number : 532 909 199 29
- Training in the use and maintenance of ETT units is Datadock certified.



Manufacturers' audits

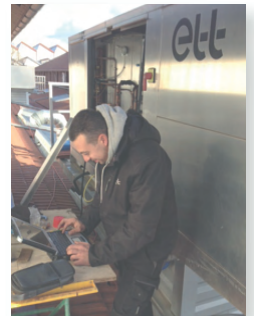
- Assessment of the condition of the facility
- Advice and recommendations
- Improved performance and sustainability
- Additional maintenance



ETT Services: Focus on customers and markets

Manufacturer Service Contract

- **Technical maintenance operations**
 - Preventive and curative measures, recommendations
 - Equipment adapted to the expertise of the installation
 - Training of technicians on ETT specific materials
- **Regulatory upgrades**
 - Authorised staff - Certificate of competence
 - Procedure and regulated material
- **Optimisation of settings**
 - Control and adjustment of set points, time slots
 - Control and adjustment of advanced settings
- **Replacement of consumables**



MyETTVision Supervision

- Managing a fleet of units
- Functional diagnosis
- Indoor climate control
- Receive notifications on faults
- Define the schedule of operations
- Control performance and energy consumption



Optimisation & Retrofit

- Regulatory upgrades
- Energy optimisation
- Evolution of applications
- Controls - Communication
- Energy recovery
- Continuous dehumidification

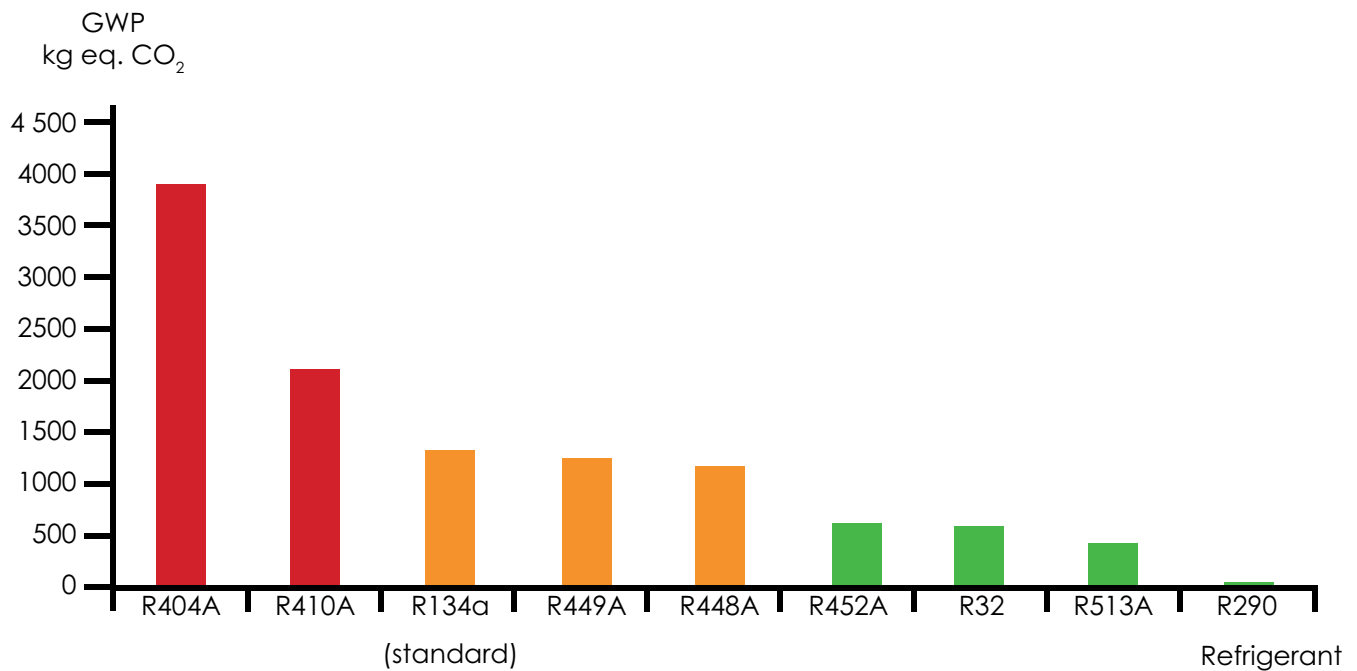
Spare Parts

- A large and available stock
- Real-time package tracking
- 1,500 product references



Technical guidance

Available refrigerants



Depending on customer specifications, the type of fluid can be adapted to each project.

What is the GWP of a refrigerant?

GWP=Global Warming Potential

This index reflects the warming power of a refrigerant emitted into the atmosphere compared to that of the same mass of CO₂

(GWP of CO₂ = 1).

The higher the GWP of a gas, the more negative its impact on the environment

Technical guidance

Recall of the ATEX Directive

IEC60079-0 CLASSIFICATION OF EQUIPMENT					ZONES
USE	EQUIPMENT GROUP	EPL = Equipment Protection Level = (Level of protection of the equipment)	LEVEL OF PROTECTION	IF ATEX PRESENT	60079-10
Firedamp mines	I	M1 Maximum mine gas content	Very high	Power ON	
		M2 Below a certain value	High	Power OFF	
Explosive atmospheres due to presence of gas	II A B C	1 G	Very high	Power ON	0
		2 G ⁽¹⁾	High		1
		3 G	Normal		2
Explosive atmospheres due to the presence of dust	III A B C	1 D	Very high		20 IP6X
		2 D ⁽²⁾	High		21 IP6X
		3 D	Normal		22 IP5X

DIRECTIVE 14/34/EU CLASSIFICATION OF EQUIPMENT					ZONES
USE	ATEX GROUP	CATEGORY	LEVEL OF PROTECTION	IF ATEX PRESENT	60079-10
Firedamp mines	I	M1 Maximum mine gas content	Very high	Power ON	
		M2 Below a certain value	High	Power OFF	
Surface industries	II	1 G	Very high	Power ON	0
		2 G ⁽¹⁾	High		1
		3 G	Normal		2
		1 D	Very high		20 IP6X
		2 D ⁽²⁾	High		21 IP6X
		3 D	Normal		22 IP5X

I: Methane

IIA: Propane

IIB: Ethylene

IIC: Hydrogen, Acetylene

IIIA: Combustible suspended particles

IIB: Non-conductive dust (electric resistivity > 10³ Ω m)

IIC: Conductive dust

⁽¹⁾ can be installed in zones 1 and 2

⁽²⁾ can be installed in zones 21 and 22

ATEX marking

Ex II 2G
Ex II 2G

Protection type marking

EX d IIB T4 Gb
EX tb IIC T125° Db

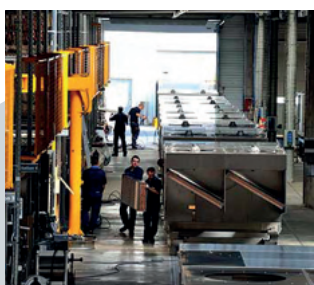
Gas

Temperature classes	T1	T2	T3	T4	T5	T6
Maximum surface temperature	450°C	300°C	200°C	135°C	100°C	85°C

D = dust

Temperature class	T 125 °C
Maximum external surface temperature (motor)	125°C

NOTE : Foreign certifications such as CU TR 012/2011 on request **Ex**



Reference : MARK- BRO -52-EN_C

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