



Naturally,
LU-VE makes it better



Naturally

LU-VE makes it better

We've grown by a factor of 50 over the last 35 years.

There is a reason. Indeed, there are many:

RELIABILITY

over 20 years of performance certification

INNOVATION CAPACITY

has continued over time since 1986

VALUE

design based on Life Cycle Cost and Life Cycle Assessment principles

CLOSE TO CUSTOMERS

16 production plants in 9 countries

AFTER-SALES SERVICES

speed, punctuality and precision

SUSTAINABILITY

since 1986 we've been attentive to people and the environment

1986

€ 9 MILLION



2021

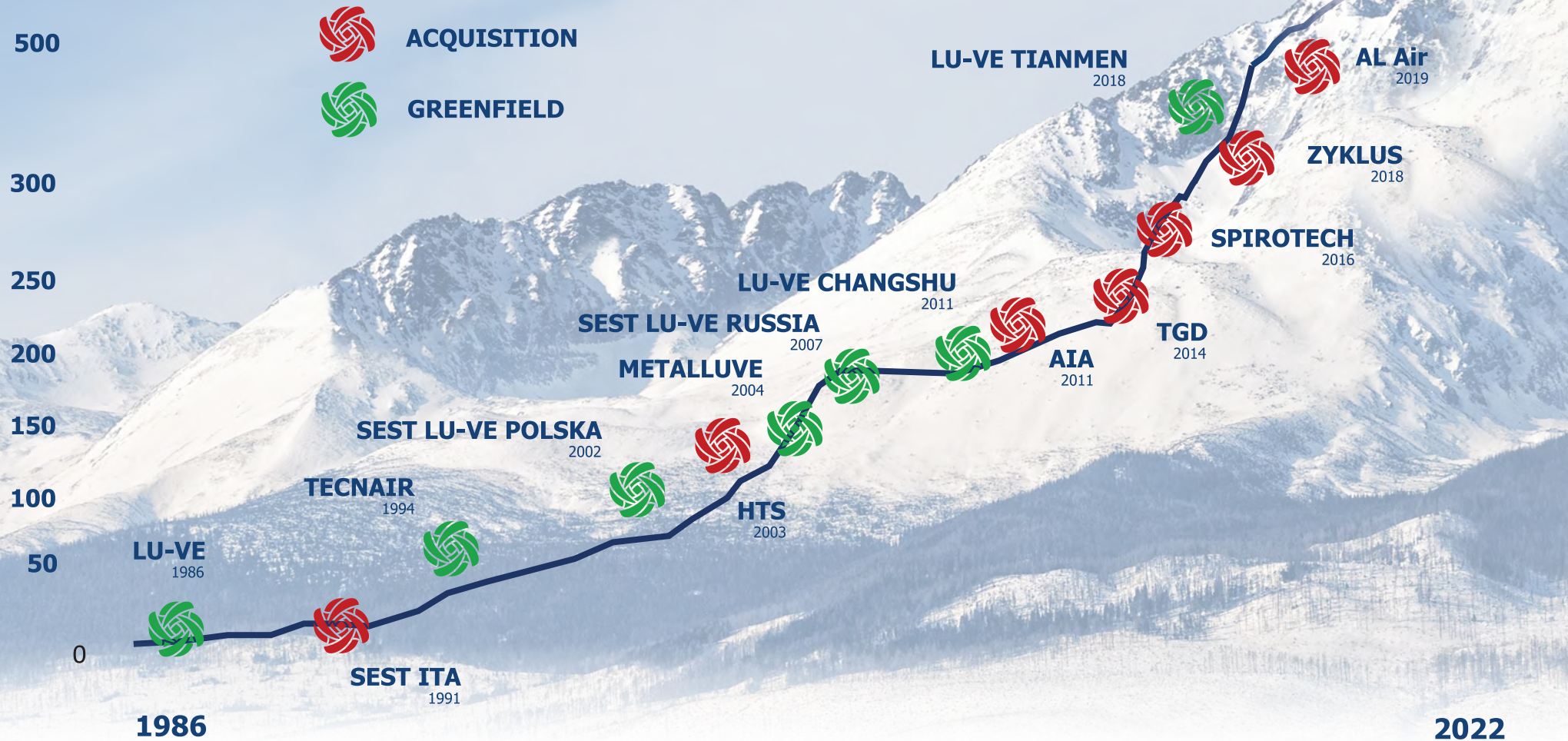
€ 492 MILLION

IGINIO LIBERALI

Founder and President
LU-VE Group

1986 - 2022

MILLION €



* LU-VE was founded in October 1985
METALLUVE was later absorbed into LU-VE
LU-VE Changshu was substituted by LU-VE Tianmen



VENTILATED PRODUCTS



GLASS DOORS



www.luvegroup.com

COILS



LU-VE DIGITAL



DIGITAL SIGNAGE



www.components.luvegroup.com

PRODUCTION UNITS

AIA

Asarum
Sweden

Air Hex

Alonte (Vicenza)
Italy

HTS

Novosedly
Czech Republic

Fincoil LU-VE Oy

Vantaa
Finland

LU-VE

Uboldo (Varese)
Italy

LU-VE DIGITAL

Uboldo (Varese)
Italy

LU-VE Tianmen

Tianmen (Hubei)
P.R.CHINA

REFRION

Fluminiano di Talmassons (Udine)
Italy

SEST

Limana (Belluno)
Italy

SEST LU-VE Polska

Gliwice
Poland

000 SEST LU-VE

Lipetsk
Russia

SPIROTECH

Bhiwadi (Rajasthan)
India

TGD

Travacò Siccomario (Pavia)
Italy

Zyklus Heat Transfer, Inc.

Jacksonville (Texas)
USA



Naturally

worldwide

LU-VE Group is one of the major manufacturers in the world in the heat exchanger field. **The Group** (HQ in Uboldo, Varese, Italy) consists of **16 manufacturing** facilities in **9 countries**: Italy, China, Czech Republic, India, Poland, Russia, Sweden, Finland and USA with a network of **32 sales companies and representative offices** in Europe, Asia, the Middle East, Oceania and USA.



4,400 skilled employees



More than **893,000** sqm total surface area



More than **262,000** sqm covered area



Over **3,355** sqm of R&D Laboratories



More than **83%** of production exported to 100 countries



Consolidated turnover **€ 492 million** (2021)



Listed on the **Milan Stock Exchange (Euronext)**





Naturally

everywhere

You can find LU-VE Group products everywhere in your everyday life: in the beer dispensers in your local pub, in the refrigerated counters in the supermarkets where you do your shopping, in the fridges of the ice cream parlour downtown, and in the wine cabinets and coolers of your favourite restaurant.

LU-VE products are everywhere, cooling, storing, controlling and protecting:

- **Ventilated heat exchangers** for HVAC&R
- **Cooling systems** for power generation and industrial applications
- **Heat exchangers** for display cabinets and refrigeration machines
- **Heat exchangers** for mobile applications
- **Data center air conditioning**
- **Glass doors** for display cabinets



Naturally

inquisitive

LU-VE has one of the biggest Research and Development laboratories in its sector in Europe and has collaborated closely for many years with **Politecnico di Milano** (Polytechnic University of Milan) and **29 other universities and research centers** in 13 different countries.

Innovation is in our DNA

Naturally

**Igea
Mirabilia**

**R-Fin
Image
Magic Vision**

**Armonia
Gateway**

**Nidea
Emeritus**

**Zero Energy Glass
The Whisperer plus**

Plug&save

Minichannel

Lt 0Energy door

The Whisperer

**BLS Titan door
LAS door**

**BLS door
Jetstreamer**

2021

2019

2018

2016

2015

2014

2012

2011

2010

2009

2008

creative

2006

**Dry and spray
Smart system**

2003

Wet and dry

2001

Jet-o-matic

2000

**Water spray
system**

1999

**Safetubes
System**

1997

**Superhitec
unit coolers**

1991

**Hitec
condensers**

1988

**Hitec unit coolers
with Turbocoil**

1971

STF

1969

Alupaint

1967

**Internal and
external turbo-system**

1965

Dual fin spacing

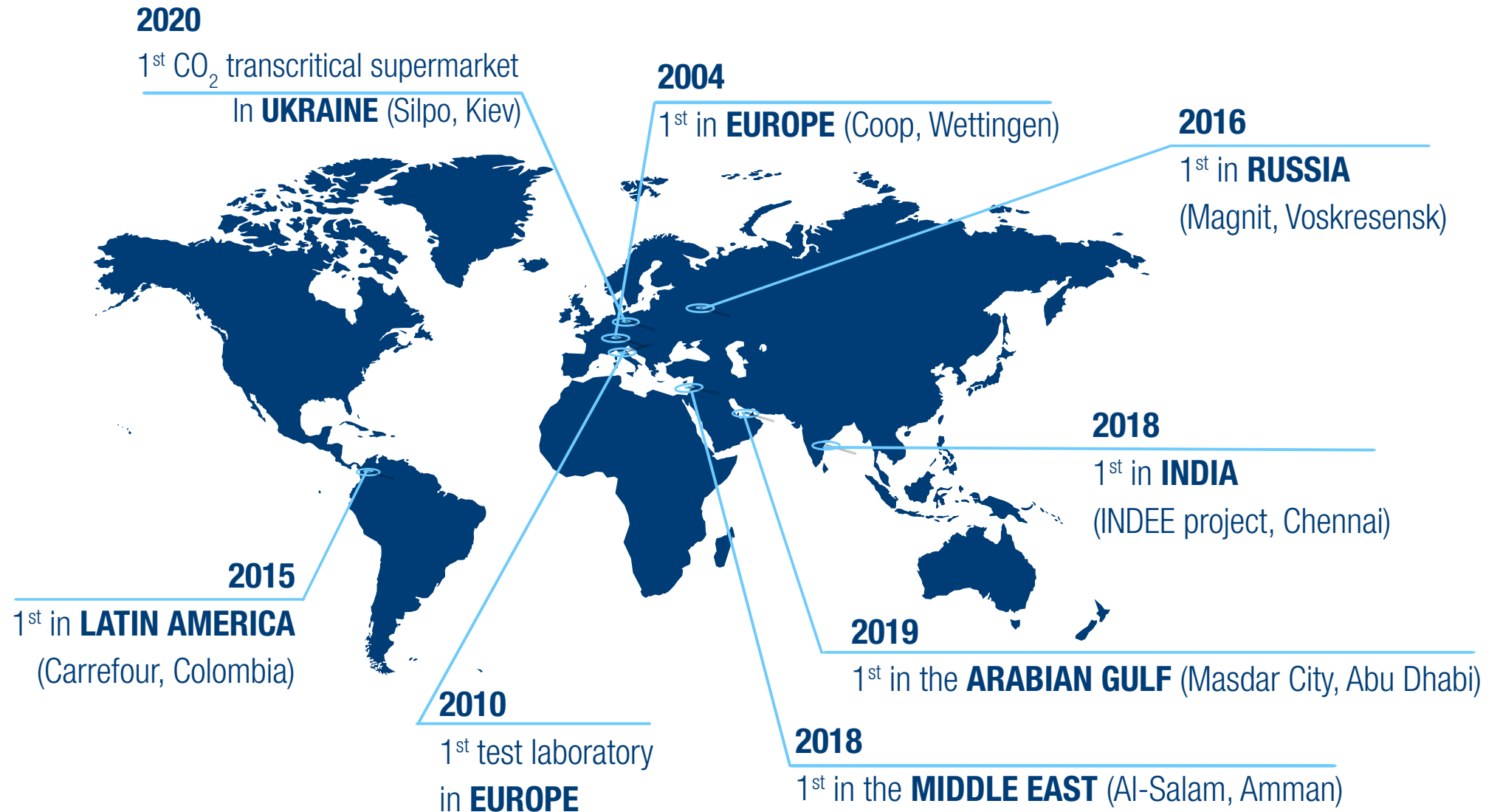
1961

Electric defrosting



Naturally

the first





Naturally

transparent

In 2000, LU-VE was the first company in Europe to achieve the then new, important, **“Eurovent Certify All”** certification for the entire ranges of: condensers, dry coolers and industrial unit coolers.

In 2016, Eurovent certified that the LU-VE heat exchangers for refrigeration had never registered a single negative test in the course of three different test cycles (from 2011 to 2015), for a MFV (Mean Failure Value: average value of tests with negative outcome) **equal to zero**.

In 2020 THE FIRST EUROVENT CERTIFICATION FOR CO₂



- ✓ CAPACITY
- ✓ SOUND PRESSURE LEVEL
- ✓ ENERGY CONSUMPTION
- ✓ AIR FLOW RATE

“Certify All” certification of EUROVENT.





Naturally

LU-VE makes it better



MAXIMIZED PERFORMANCE



ENERGY SAVING



MINIMIZED REFRIGERANT
CHARGE



REDUCED
NOISE LEVEL



MANAGE AND
CONTROL



CO₂ EQUATOR
REDRAWING



MINIMIZED WATER
CONSUMPTION



CUSTOMIZATION



REDUCED FOOTPRINT
AND WEIGHT



CORROSION
RESISTANCE



REDUCED
MAINTENANCE COSTS



MAXIMIZED
RELIABILITY



TRANSPORTATION, TRAIN AND MOBILE AIR CONDITIONING AND REFRIGERATION



AIR CONDITIONING FOR DATA CENTRES

Naturally



REFRIGERATION FOR COUNTERS AND DISPLAY CABINETS AND AIR CONDITIONING



GLASS DOORS, CLOSING SYSTEMS AND DIGITAL SIGNAGE SOLUTIONS



REFRIGERATION AND CONSERVATION OF FRESH AND PACKAGED FOOD AND FLOWERS



AIR CONDITIONING, HEAT PUMPS AND HOUSEHOLD APPLIANCES

a wide range of products



POWER GENERATION, OIL & GAS, STEEL-MAKING AND MINING



FRESH FOOD CONSERVATION AND PERISHABLE FOOD BLAST FREEZING



COMPACT COMMERCIAL UNIT COOLERS



The commercial unit coolers are designed for the conservation of fresh and frozen goods. All ranges are suitable for cold rooms or, with low ventilation, for work rooms and packing areas.



- **Highly attractive** modern casing design
- **Turbocoil®** with exclusive LU-VE design
- **Jet streamer®** fan grid ensures even air distribution and longer air throw
- **Very quiet** operation
- **Low energy** consumption

High
efficiency

Longer
air throw

Capacity for every
application

Available for A2L
refrigerants



HEAVY COMMERCIAL UNIT COOLERS

Alfa LU-VE commercial unit coolers, since their first appearance over a decade ago, have become a hallmark in the high-end commercial refrigeration sphere.

They are suitable for both **small and medium-sized** refrigeration and freezing applications.



- **Industrial know-how** applied to commercial refrigeration
- **Easy maintenance**
- **Full metallic casing** powder coated
- **Turbocoil®** with exclusive LU-VE design

Heavy
duty

High
efficiency

Rounded-edge
design

Easy
cleaning



HEAVY INDUSTRIAL AIR COOLERS



ARCTIGO, belongs to a modern generation of LU-VE Group heavy industrial air coolers

- > **application expertise**
- > **wide and versatile range**



- > **Improved preservation** of goods in the cold room
- > **Application-led design**
- > **Wide and versatile range**
- > **Only first-class materials** used for long standing performance
- > **Eurovent certified:** reliability in performance
- > **Peace of mind**
- > **Accessories for any application**

Reliable

Heavy duty

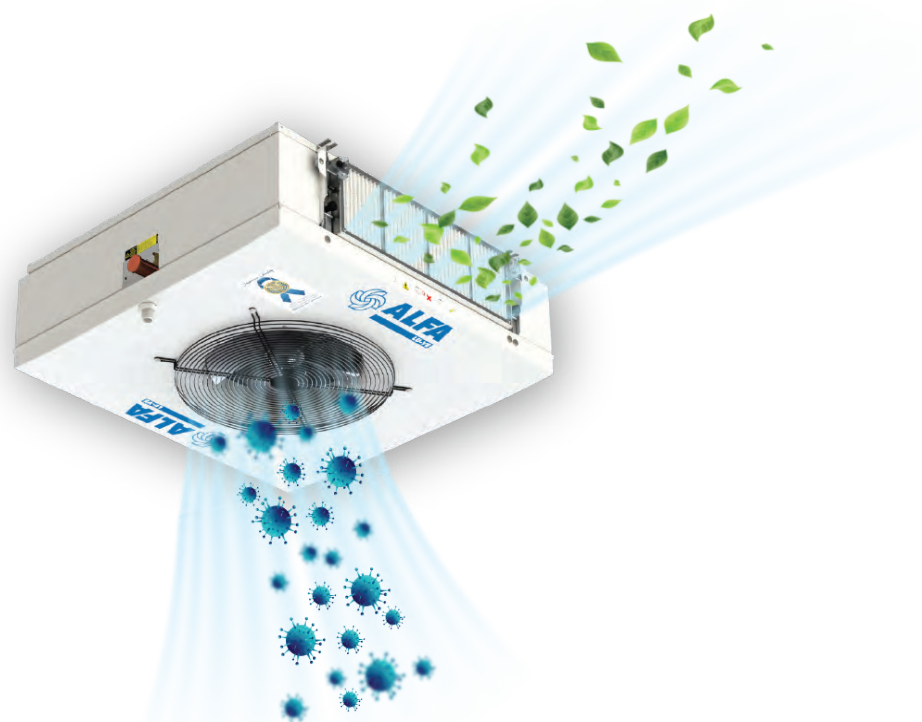
Natural

Ammonia
CO₂
Brine

Long lasting
performance

Optimal design

IGEA is a patent-pending solution designed to sanitize indoor air and improve quality of life.



Tests conducted by the San Raffaele Hospital in Milan highlight the effectiveness of Igea on the viral load of SARS-COV-2, **neutralizing it completely in 30 minutes***



Igea prolongs the conservation time of goods, by up **to 10/15 extra days.***



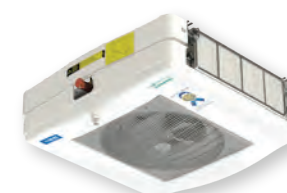
SAFETY AND LOW ENVIRONMENTAL IMPACT

* Full information and conditions on www.luvegroup.com

RETROFIT ON:



ALFA
LU-VE
FMD



LU-VE
EXCHANGERS
FHD

Value Defender

INDUSTRIAL AIR COOLERS OPTIMIZED FOR CO₂



LU-VE Group is a pioneer of natural refrigerants. In industrial refrigeration the air coolers «**Value defender**» present an **optimized design for CO₂**.

The Value Defender is **available with hot glycol defrost** with significant reduction in defrost running costs.



- > **Very low operating costs**
- > **TURBOFIN®** 3 heat exchanger for high efficiency operation
- > **Only first-class materials** used for long standing performance
- > **Eurovent certified:** reliability in performance

ANNUAL DEFROST OPERATING COST

Standard electrical defrost (4 cycles/day)



-82%
HOT GLYCOL DEFROST



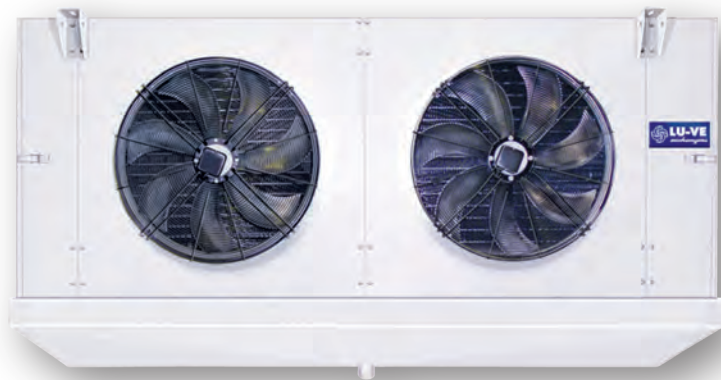
Optimized
for CO₂

Flexibility

Available with hot
glycol defrost

ARMÓNIA, the new range of NH₃ unit coolers, brings a brand new meaning to the low refrigerant charge concept:

- > **very low** ammonia charge (down to 0.07 kg/kW)
- > **minimized** circulation rate
- > **high-efficiency** specialized surfaces



- > **Wide range** of models
- > **½" tube diameter**
- > **High performance** at low pump circulation rate (down to 1.8)
- > **Side feed** for co-flow operation
- > **Highly customizable**

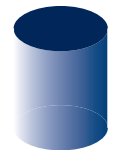
Do you really need
so much refrigerant?

AMMONIA REFRIGERANT CHARGE

Traditional market
solution



-67%
ARMÓNIA



Higher
efficiency

Cost
saving

Greater
SAFETY

Less
regulation
limits

Environmental
benefits



ULTRA LOW-CHARGE CONDENSERS AND CO₂ GAS COOLERS

MINICHANNEL® compact technology allows **ultra-low refrigerant charge**:

- > **special louvered profile** aluminium fins
- > high-efficiency **Ø5 mm** inner grooved copper tubes
- > 3 times less internal volume compared to the market standards



- > **Wide range** of models
- > **EC** or **AC** fan motors (1ph / 3ph)
- > **Modbus** fan control
- > **Fan speed** control (0-10 V)
- > **Anti-corrosion** surface treatment (optional)

Do you really need
so much refrigerant?

CONDENSERS REFRIGERANT CHARGE

Traditional market
solution



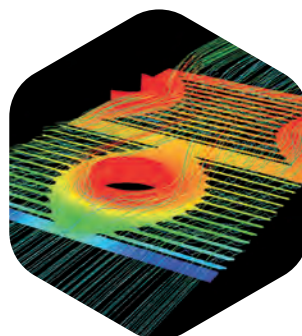
-68%

MINICHANNEL®



High
performance

Ultra-low
refrigerant
charge



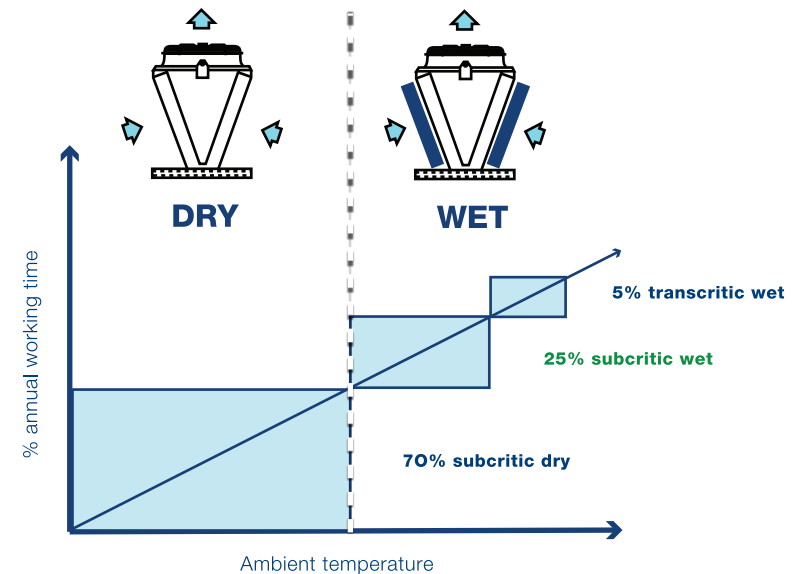
Capacity,
flexibility
for every situation

EC fan motor
as standard

Ø5 mm Adiabatic CO₂ gas cooler

Adiabatic CO₂ gas cooler, new generation for transcritical applications:

- > extends subcritical operations
- > redraws the CO₂ equator



Minichannel

HIGH-EFFICIENCY Ø5 mm HEAT EXCHANGERS

120 bar max
working
pressure

Extremely
compact
solution

Adiabatic System

PRE-COOLING SYSTEM

Increases
the overall
efficiency of
transcritical
systems

Advanced
controller

Propeller

HIGH-EFFICIENCY ELECTRONIC RADIAL FAN MOTOR

High static
pressure to
canalize
outlet air

Heat
recovery



NEW COMBINED SPRAY + ADIABATIC SYSTEM

EMERITUS® range of condensers, dry coolers and CO₂ gas coolers, brings together the benefits of:

- > spray system
- > adiabatic pre-cooling

Pro Log
control unit



Silencer



Adiabatic system

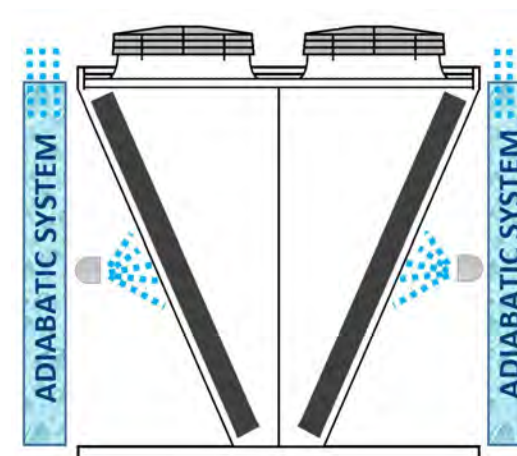
New spray
system evolution

APPLICATIONS

- > Air conditioning
- > Refrigeration
- > Industrial applications
- > Data center cooling

PLUS

- > Wide range of configurations
- > Intelligent control system
- > Protection systems



PRO LOG advanced control software, designed for air-cooled condensers, gas coolers and dry coolers with EC fans:

> **advanced function**

> **adaptable** to all kinds of plants/installations



FUNCTION

- > Fan lock prevention
- > Coil cleaning
- > Coil washing
- > Winter function
- > Anti-icing
- > Operating pressure check
- > Remote monitoring
- > Silent mode
- > Remote supervising
- > Data logger
- > Water quality check

TWO REGULATION MODES:

- > Proportional
- > Incremental neutral zone (PID)

DOUBLE SET POINT:

- > Fixed set point
- > Floating set point



User
friendly

Advanced

Adaptive

Connected

Reliable

Whisperer plus[®]



COMPACT SILENCER

HAVE YOU EVER HEARD THE SOUND OF SILENCE?

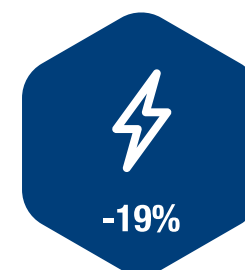
WHISPERER PLUS[®] is the second generation of **silencer specifically designed** for condensers, dry coolers and CO₂ gas coolers:

- > sound level reduction - **up to -6 dB(A)**
- > reduction of electricity consumption - **up to 19%**



PLUS

- > Energy saving
- > Silent operation
- > Smaller unit footprint
- > Elimination of warm air recirculation.

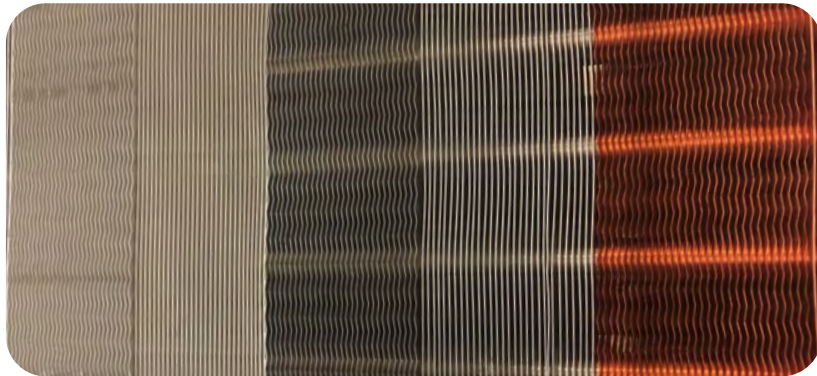




PATENT

R-Fin™ is an innovative solution designed to provide increased mechanical and corrosion resistance in industrial environments, applicable both to coated or uncoated fins.

- > **Increased mechanical resistance**
- > **Long lasting performance** thanks to longer lifecycle
- > **Pre-coated fins** edge protected
- > **No thermal efficiency loss**



R stands for:

- > **R**einforced
- > **R**obust
- > **R**igid
- > **R**ounded
- > **R**evolutionary
- > **R**esilient

R an innovative solution for:

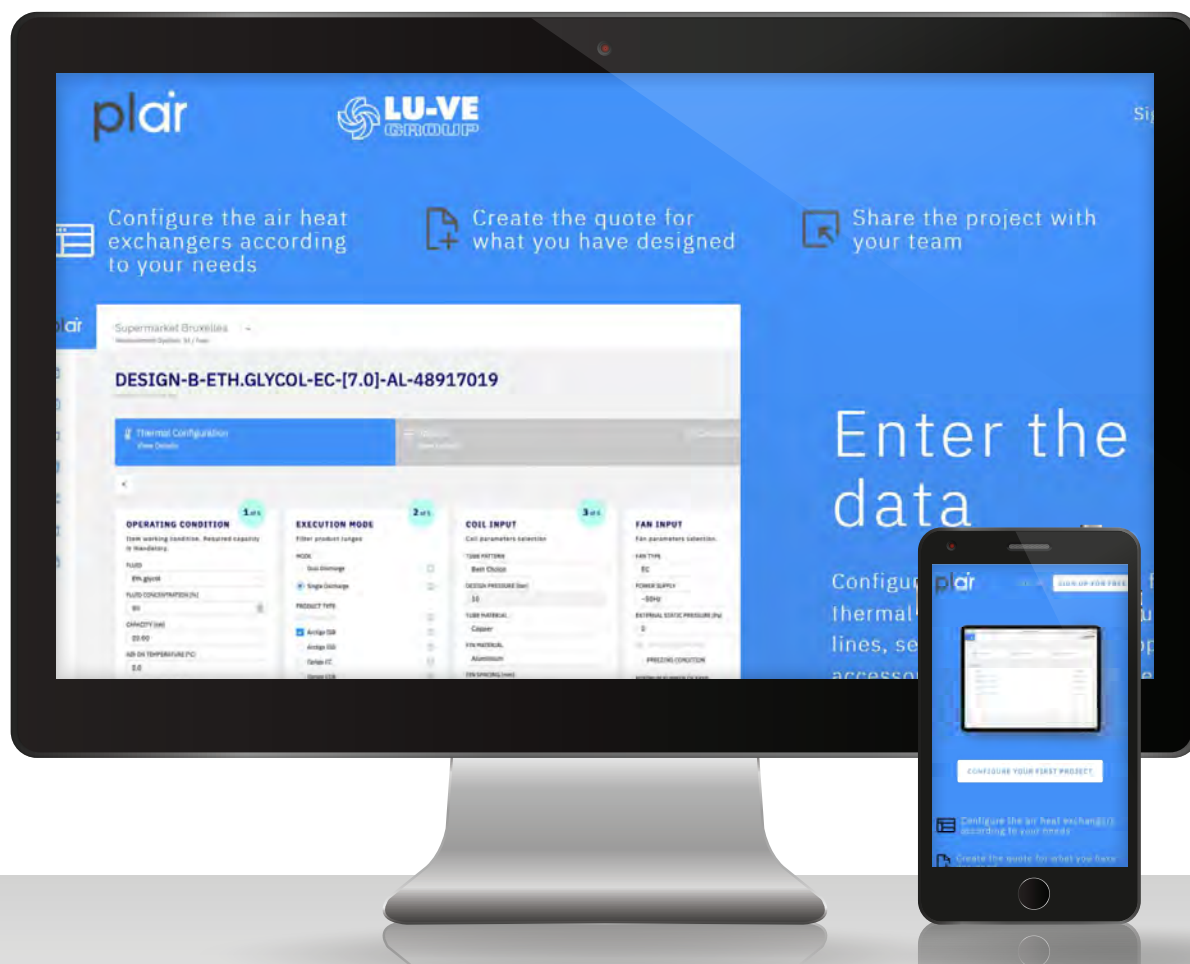
- > Industrial environments
- > Dirty environments
- > Particulate / Sand
- > Deep cleaning needs
- > High durability
- > Reduced maintenance requirement

Stronger

Protected

Reliable

Durable



The **free** and **collaborative**
application
to configure air heat exchangers



Configure
Quote
Share

www.plair.it



DOWNLOAD Cold Room Calculator



OVER 100.000 DOWNLOADS



Thermo glass doors & interactive mirrors

Since 2000, **TGD has been producing glass components for commercial, industrial, professional and scientific refrigeration markets.** Our aim is to offer our customers the highest efficiency solutions to reduce the energy consumption of their products, increasing their commercial value. **Our mission: to contribute to a better world.**



More than
20 years
experience

2003
The first 0 Energy
door for Freezing
applications



7
patents

2
pending
patents

Cold rooms and hang-on doors

Among many fridges for soft cheeses, fine wines and hand harvested tobacco, you will find our gentle touch, our creativity and our care for peculiarities. A huge range of framed and full glass doors is available to match any architect or designer fantasy. All appliances can be upgraded with TGD innovating LED patented technologies and with digital interactive systems.



LT WALK-IN GLASS DOOR SYSTEM

66 - 76 Negative temperature application



660 - 760 mm wide door



The most reliable glass door insert



Tropical version available



NT WALK-IN GLASS DOOR SYSTEM

66 - 76 Positive temperature application



The most diffused international standard



Superior Reliability: thousands of products operating in the market



Tropical version available



ROLL-IN GLASS DOOR SYSTEM

Maxi wide door



Glazed door system without threshold



Ideal solution for trolley pass though



Oversized door available



HANG-ON DOORS



Visicooler: bottle coolers, wine caves and branded vertical displays



Catering appliances: refrigerators for professional and scientific application



Vending machines

Industrial refrigeration - **Positive temperature doors**

The widest offer of glazed systems for wall cabinets operating at positive temperatures fully tested for the most extended life cycle and for the most varied environments. All doors are available in Class 3 UNI1253 versions, and on request in all the other versions of current legislation. Any appliance can be upgraded with TGD "Mirabilia", the only fully transparent door whose quality has been certified by the most accredited laboratories.



E-CUT SLIM

Entry level swing doors



Great visibility: only a 15mm frame all around the perimeter



High Energy Saving performance:
1.3 K glass value



Thousands products operating in the market



E-CUT SLIDING

Entry level sliding doors



Easy access: the best choice for all shops with narrow aisles



Easy cleaning: suspended doors on flat bottom profile



High Energy Saving performance:
1.3 K glass value



E-CUT WIDE LOOK

Full glass look



Full Glass door attractive appearance



"0 Energy" frame solutions and the latest generation of **"Full Glass Doors"**



Superior reliability: thousands of products operating in the market



Mirabilia^{by TGD}

Full transparent look - top of range



The best product visibility from all angles even in the longest aisles



High energy savings and maximum comfort during the shopping experience



Quality certified by the most accredited laboratories

Industrial refrigeration - **Negative temperature doors**

LU-VE Group offers a vast choice of doors, for applications operating at low temperatures.

The first **Zero Energy Doors** for vertical freezers were produced by TGD, as long ago as 2003. The best wall freezers for large-scale distribution are beautifully fitted with TGD doors.

All products are guaranteed for the best functioning in Class 3 UNI1273 in both standard and energy saving versions.



MAX LINE
The most diffused



MAX LINE E/S
The Energy Saving Solution



WIDE LOOK LT
The Top Level Solution



**GREEN GAS
HEATED FRAME**
The best solution for Plug-In cabinets



Extreme reliability: hundred thousand of products operating in the market



"0 Energy" door cuts the energy consumption of any wall freezer display



Full Glass door attractive appearance



The 100% Energy Saving Master Frame for Plug-in freezing applications



Perfect adaptability to any operating conditions



Anti Fog performance for the best products presentation



Low Energy master frame solution



Electrical heaters substituted by **warm refrigerant gas circuit**



The world-wide solution: available with any voltage predisposition



The highest payback on your investment



Superior reliability: thousands of products operating in the market



Higher efficiency thermodynamic circuit, **stronger benefit for the end user**

Digital Signage Solutions



Since 2017, LU-VE Group and TGD have developed new ranges of products, for applications not only in the field of the HVACR industry; new market segments and new products, taking advantage of the IoT technology.

GATEWAY

The IoT Mirror for Lift Cars



**A new revolutionary
multimedia tool**



**Communication,
digital signage & advertising**



**Emergency & maintenance
support mode**

iMAGE

Smart Mirror Display



**Smart
mirror television for hotel**



Luxury yacht application



**SPA, wellness
& training applications**

Magic Vision

by TGD

Transparent Interactive Door
for Refrigerators



Video mode



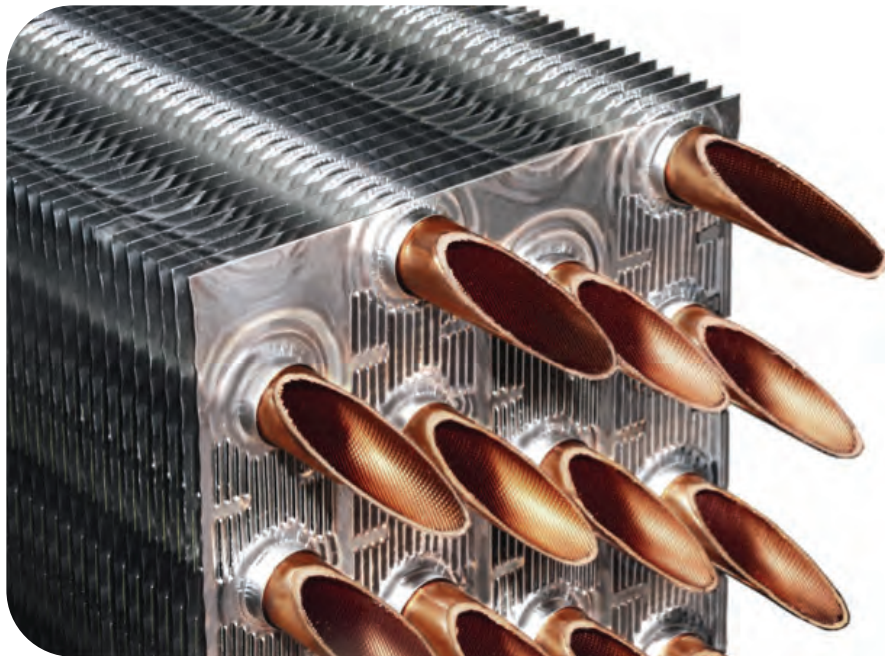
Touch Display mode



Integrated mode

Coils for your product and application

With nearly a century of experience supported by constant research and development led by **continuous innovation** in the manufacturing of heat exchangers, we offer the best solutions for a wide variety of markets and applications operating (also in challenging conditions). Our passion is there to satisfy market needs and to contribute to a **more sustainable world**.



- 8 different **tube diameters**
- 40 fin **geometries**
- Maximum working pressure **up to 120 bar**
- Solutions available for **CO₂, HC, Water, HFC, HFO**
- **Anti-icing**
- **R&D** and high tech internal laboratories
- Dedicated coils software
- **5 different protective solutions** against corrosion

High
efficiency

Low
refrigerant
charge

High
resistance
against
corrosion

Lower
weight

Higher
working
pressure

Less
carbon
footprint



REFRIGERATION

Refrigerated display cases and serve-over counters
Positive temperature vertical and semi vertical cabinets
Negative temperature vertical and horizontal cabinets
Condensing units / Monoblocks



REFRIGERATED TRANSPORT

Refrigerated trailers and trucks
Refrigerated containers for marine application



VEHICLE AIR CONDITIONING

Railways
Automotive
Bus/Coach
Agricultural machines



HVAC

Split / Condensing units
Chiller and heat pumps (air to water units)
Roof top (air to air units)
Fan coil, cassette, terminal units
Chilled beams
AHU/Heat recovery



HOUSEHOLD APPLIANCE

Heat pumps systems for
tumble dryer applications



Underwriters
Laboratories



Coils - fins

Each solution is engineered to fit the requirements of the market with tailor-made products.

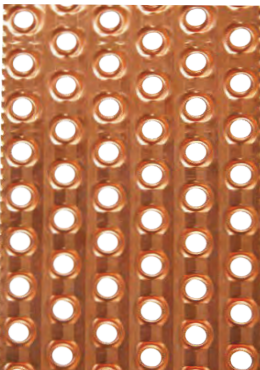
The productive experience of LU-VE has always interpreted material and technology research as the real first step towards **proposing innovation**.

FINS



ALUMINIUM

This is the most commonly used material and features a good resistance in normal environmental conditions.



COPPER

Copper guarantees higher resistance to corrosion for particularly aggressive environments.

FIN SURFACE



FLAT

Flat fins have the lowest resistance to air flow and reduced ice accumulation.



CORRUGATED

Corrugated fins improve the heat transfer factor to a lower degree than louvered fins, but with a lower pressure drop on the air side.

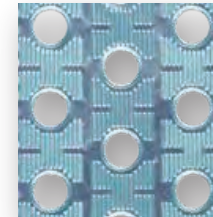


LOUVERED

Louvered fins increase the heat-transfer capacity by creating air turbulence, considering the same exchanging surface.

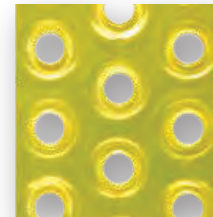
FIN SURFACE TREATMENTS

Surface treatments available on request



HYDROPHILIC

With this treatment fins become hydrophilic and therefore "wetable", avoiding the formation of drops.



HYDROPHOBIC

Epoxy-based treatment that effectively inhibits dust and bacteria build up.



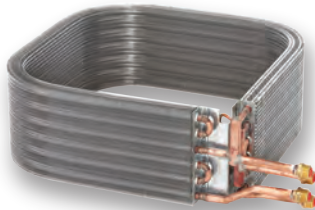
SUPER HYDROPHOBIC

Nanotechnology used to create a surface coating that guarantees high protection against corrosion and the deposit of dust.

Coils - technology

ADDITIONAL PROCESSES

BENDED HEAT EXCHANGERS



For all applications in the air conditioning sector, where specific flexibility and restricted dimensions of the finished product is requested, LU-VE provides its customers shaped exchangers with various radii of bend. Typical applications are chillers, heat pumps and cassettes.

FAN SHROUD



Fan shrouds improve the distribution of air on the coil, increasing efficiency and reducing noise. LU-VE can perform edge moulding thanks to its state-of-the-art equipment which ensures excellent quality and high precision. Thanks to a wide range of tooling, LU-VE can produce sheet metal work of various dimensions to satisfy the most complex of technical and performance requests.

PROTECTION YOU CAN TRUST

CATOCOAT



CATOCOAT is the tested and guaranteed **coating technology** which LU-VE has been offering to its customers **since 1996** and which today has evolved even further using new technologically advanced equipment.

The main advantages of the CATOCOAT technology are:

- Extensive and regular treatment in any complex shapes
- **Thin film**
- **Corrosion resistance** in salt spray test >1000 hours
- **Better resistance** compared to the other powder treatment technologies and pre-coated raw materials
- **Food products compliance**
- Low environmental impact thanks to the use of water-based paints and state-of-the-art installation works

EXCLUSIVE TECHNOLOGY

ST : Standard steel condensers



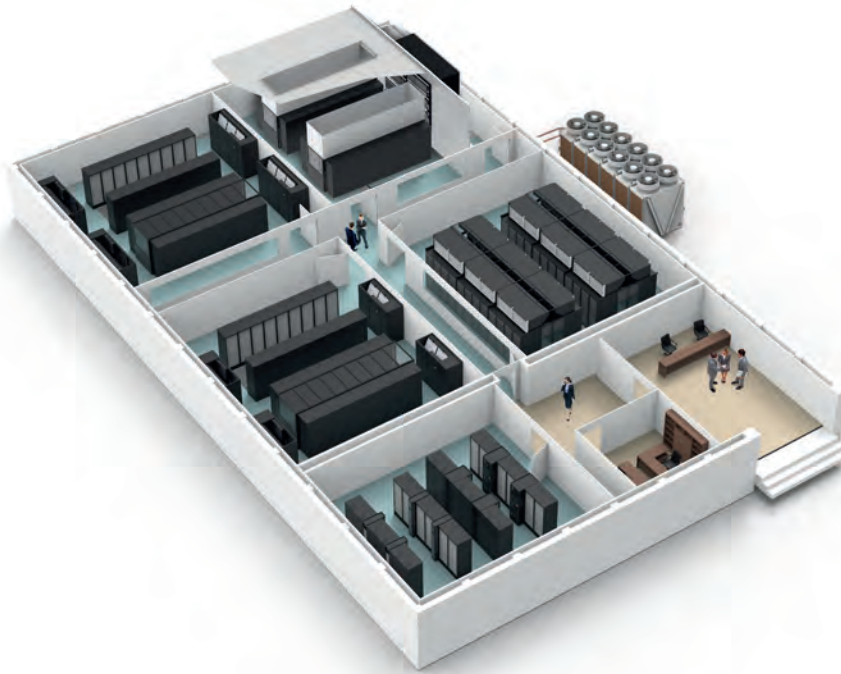
Tubeless steel heat exchangers.

Over 26,000,000 units manufactured up to 2022 using a unique patented method.

The combination of high mechanical strength and anticorrosion treatment make it ideal for applications without physical protection

Thanks to its structure, fin cleaning can easily be done with compressed air

Data center air conditioning



- **Heavy duty and modular units** for indoor and outdoor data center cooling
- **Fully customized** according to data center characteristics
- **Low total cost** of ownership
- Excellent solution **in combination with free cooling**
- **Advanced regulation** for optimised performances



Arctigo LSV
Low speed ventilation solution



Emeritus
New combined spray + adiabatic system



VXX3
High capacity dry cooler



Maserati Engine Lab (Modena, Italia)



OUR BEST DAYS HAVE YET TO BE LIVED

Nazim Hikmet