Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

CONNECTING EXPERTS.

Everest – modular R-290
2 and 4 pipes Heat Pumps

CHILLVENTA

ENEX TECHNOLOGIES

World Leader in natural HVACR
Energy efficient cooling, heating, ventilation and refrigeration
Began in the 1930s with **Ammonia** natural refrigeration equipment
Adding later **CO2**, **Propane** and **Water** as natural refrigerants with **low GWP**.

Founded by industry veterans and pioneers in natural refrigeration systems
Transforming the HVACR industry **and reducing global warming**

ENVIRONMENT

INNOVATION

COMMUNITIES

DIVERSITY & INCLUSION

Our global reach is backed by solid numbers

200 M€
Revenues

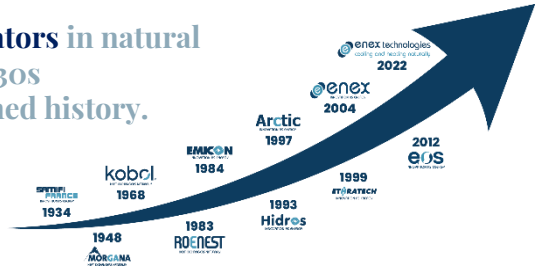
12
Factories

1.000+
Employees

125
Countries

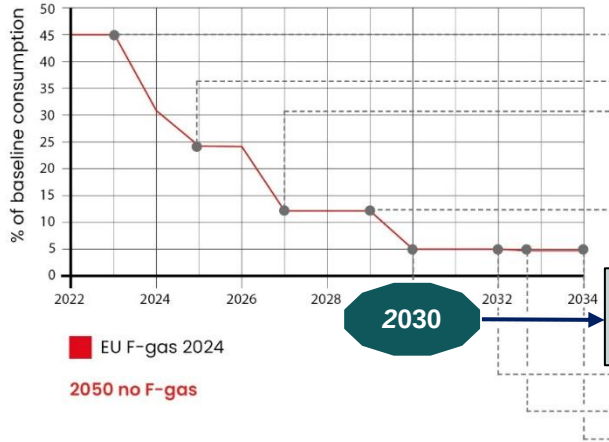
REFRIGERAZIONE COMMERCIALE	REFRIGERAZIONE INDUSTRIALE	IMPIANTI DI VENTILAZIONE	SCAMBIATORI DI CALORE
enex	enex industrial	EMICON	kobol
kobol refrigeration		ETHRATECH	MORGANA
			ROENEST

Pioneers and innovators in natural HVACR since the 1930s
400 years of combined history.



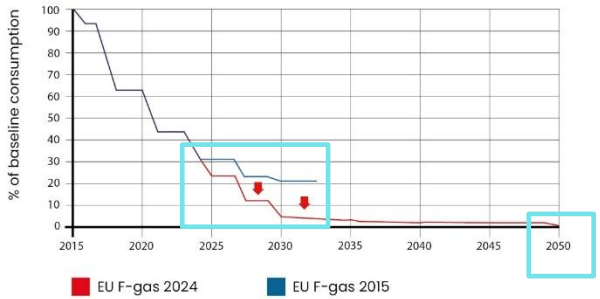
The F-Gas February 2024 impact

Multiple phase-outs between 2025 and 2035



Multipack centralized refr. systems for commercial use with a rated capacity of 40 kW:	GWP 150
Any self-contained refrigeration equipment:	GWP 150
Chiller <12 kW: Chiller >12 kW: Monoblock AC/HP <12 kW & AC/HP >12 kW and <50 kW: Split AC & HP air-water <12 kW:	GWP 150 GWP750 GWP 150 GWP 150
Split AC/HP air-air <12 kW: Split AC/HP >12 kW:	GWP 150 GWP 750
Refrigeration equipment (any): **Other self-contained AC/HP >50 kW :**	GWP 150 **GWP 150**
Split AC/HP >12 kW:	GWP 150
Split AC/HP <12 kW:	No F-gas

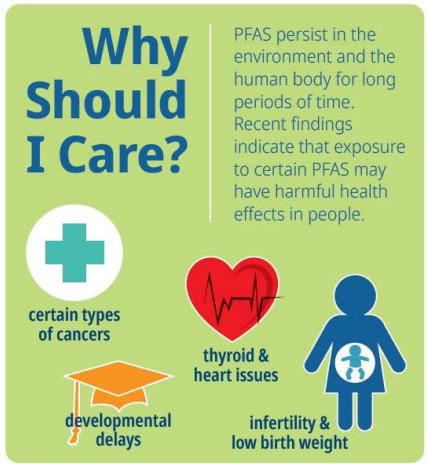
Significant reductions in quotas starting in 2024



- **Complete phase-out of F-gases by 2050**
- **Reduction of quotas: impact on the price and availability of F-gases**
- **Restrictions on the GWP of Heat Pumps**
- **Service ban: GWP 2500 (2026)**

The REACH regulation expecting for 2025

- PFAS: Over 100,000 fluorine-containing substances, including many refrigerants such as R1234ze
- Health risks: thyroid diseases, liver damage, kidney cancer, and high cholesterol levels
- Proposal for restriction under the European REACH regulation
- Decisions expected in 2025, with the worst case being a ban on F-gases by 2030 or 2032



- **5,600+** total comments
- **4,400+** organizations, company and individuals
- **Sweden & Germany** at the top of the list (2,000+ comments)
- Numerous comments from **non-UE countries** (Japan,China,USA, Switzerland, Korea, etc.)

Propane (C_3H_8 – R290)

- History and Uses:
  - Used since the early 1900s.
  - Currently undergoing rapid expansion in heat pumps and process chillers.
  - Recently developed modular, multi-circuit low-charge solutions (0.06 kg/kW)
- Safety Aspects:
  - Non-toxic, flammable.
  - Heavier than air, disperses downwards in the event of a leak.
  - No charge limit for outdoor installations in restricted access areas (EN378-1).
  - Leak detection sensors and Atex extraction fans required in the compressor compartment.
  - Clearance area around the machine free from ignition sources.
- Environmental Impact:
  - Negligible greenhouse effect (GWP=0,02).
  - Produced by refining petroleum.
- Thermodynamic Characteristics:
  - High volumetric cooling capacity (compressor displacement 40% less than R1234ze).
  - High solubility in oil, requiring special attention for proper compressor lubrication.
- Material Compatibility:
  - Compatible with commonly used materials

Emicon Screw Chiller and Heat Pump – ENEX Technologies

Emicon Modular scroll Heat Pump – ENEX Technologies

Emicon Reciprocating Chiller and Heat Pump – ENEX Technologies

ETS Propane Timeline History

2007 – 2024
Experience and skills gained over 4 generations of product

2007

1°

Reciprocating

2009

2°

Reciprocating

2012

3°

Reciprocating

2021

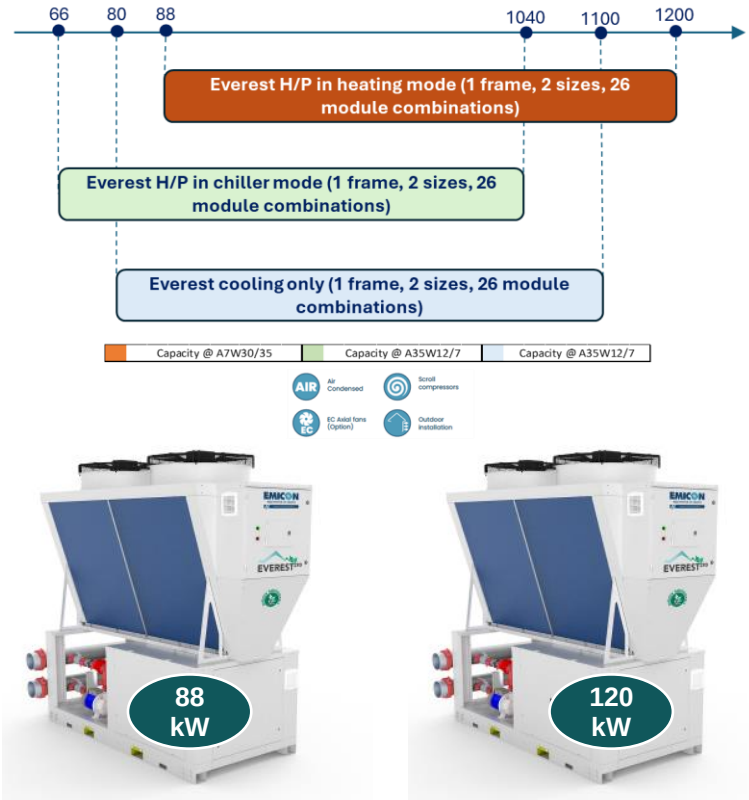
4°

Screw

MODULAR HEAT PUMPS AND CHILLERS

- Main features
  - Reversible H/P 2 & 4 pipe, cooling only
  - Scroll compressors in tandem and trio
  - 88 kW and 120 kW module*
  - 26 sizes up to 1200kW (10 modules)
  - Strong Modular design
  - Low noise version
  - High seasonal efficiency
  - Large operating envelope
  - Advanced controls and remote monitoring
  - Maximum safety
  - Plug & play
  - Hydraulic kit with tank and pump

- Main advantages
  - Low refrigerant charge per circuit
  - Redundancy
  - Easy installation and maintenance
  - Easy transportation and small footprint
  - Allows capacity increase at a later stage by adding modules

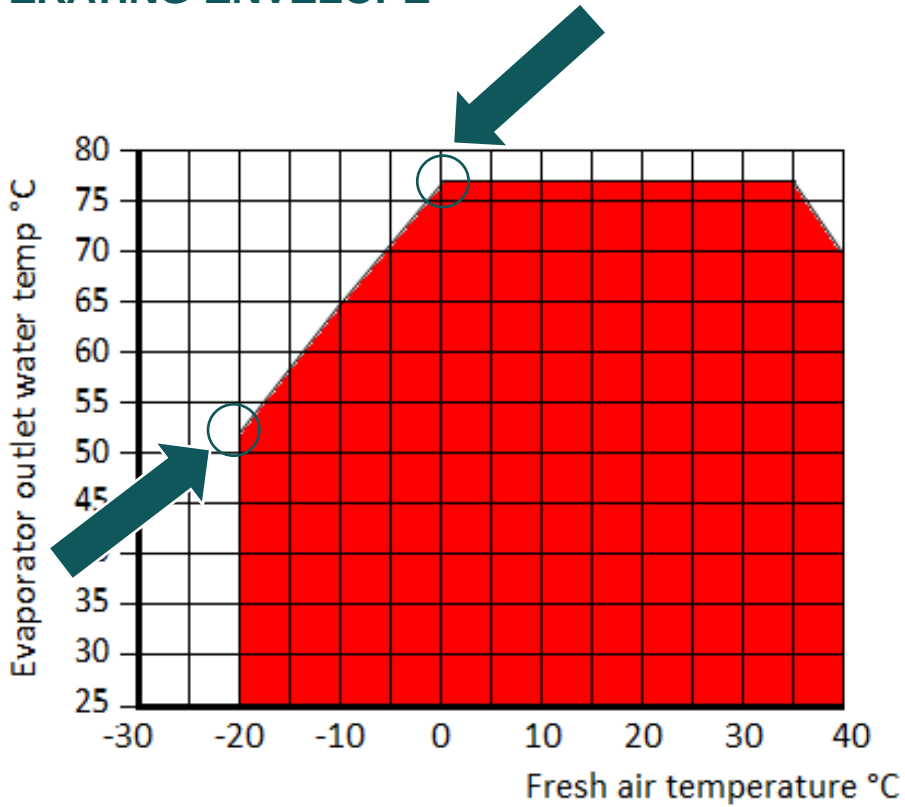


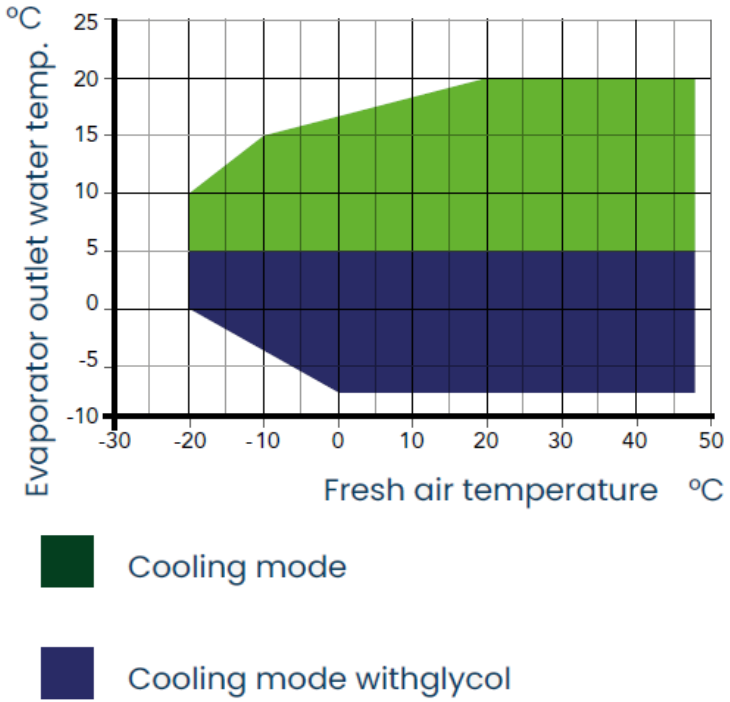
* Heating capacity @ A7W35

MODULAR DESIGN

- Possibility to combine modules of different size to achieve the desired capacity
- Capacity range 88-1200kW (1 to 10 modules)
- No spacing required between modules
- Easy connection to water headers (supplied separately)
- Advanced controls with master-slave arrangement
- Automatic master re-assignment in case of alarm
- Smart load management between modules
- Possibility to completely exclude a module in case of service

OPERATING ENVELOPE

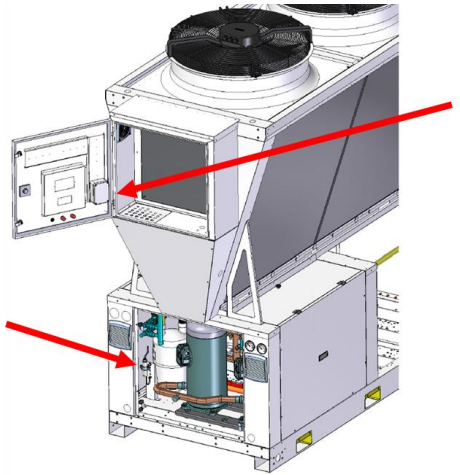




HIGH LEVEL FOR SAFETY

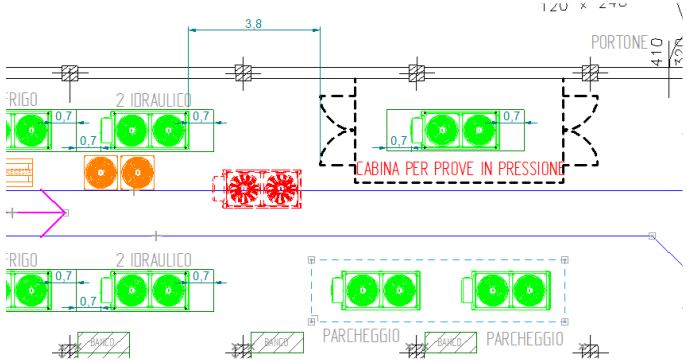
BY DESIGN:

- Leakage detection by Atex propane sensor
  - Low LFL detected: automatic reset
  - High LFL detected: manual reset
- Unit completely powered off except for sensor and Atex extraction fan
- Atex extraction fan start ventilating the compressor compartment
- External signal lamp and alert via output contact
- New generation of SELF calibrating sensors
  - No periodic calibration necessary



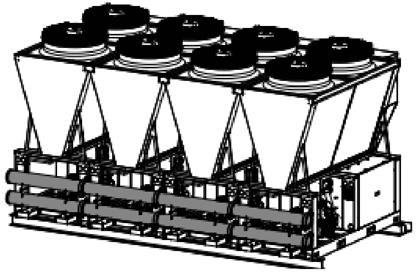
BY MANUFACTURING:

- Pressure test
- Helium test

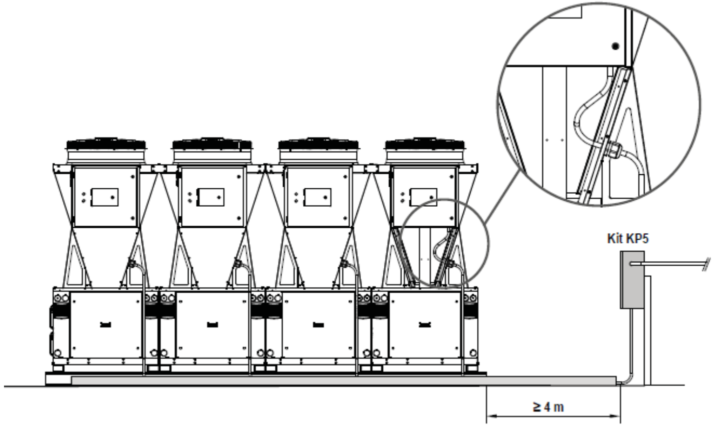


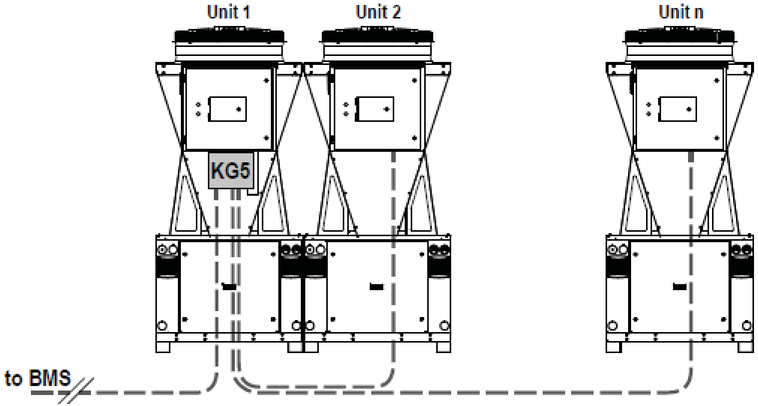
LFL = Lower Flammability Level

Easy installation



Hydraulic grooved connections
Header kit supplied



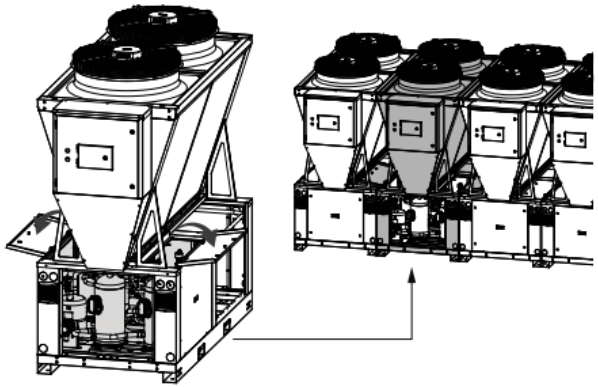


Power connection kit supplied
Single power entry

BMS connection kit supplied
Single BMS connection

Easy to expand capacity and to mantain

- High commonality on key components with modular approach
- Module slide in-out system
- Possibility to expand capacity in later stage of the project



Last generation
MODULAR APPROACH:Control capability

CHILLVENTA

EVEREST290

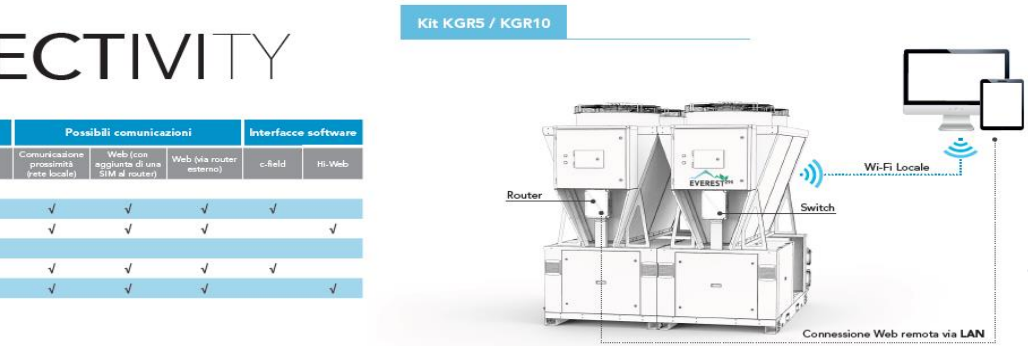
CONNECTIVITY

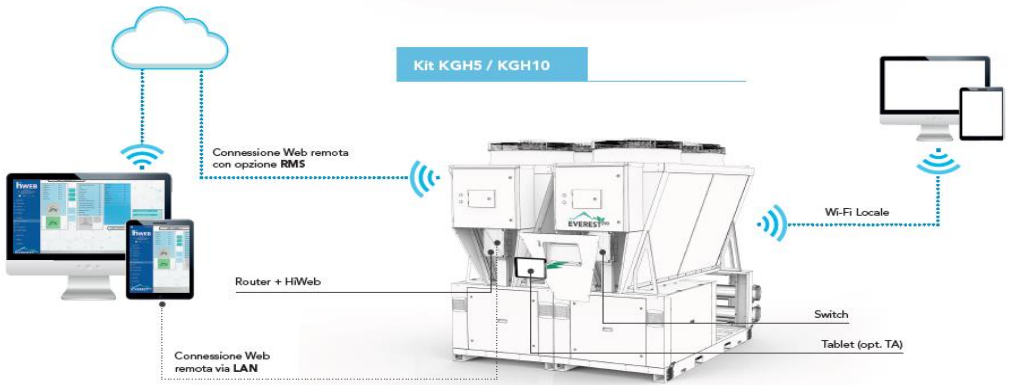
	Interfacce hardware			Possibili comunicazioni			Interfacce software	
Kit	PGD	Smartphone/tablet/pc del cliente	Tablet Emicon	Comunicazione prossimità (rete locale)	Web (con aggiunta di una SIM al router)	Web (via router esterno)	c-field	Hi-Web
KG5	√							
KGR5	√	√	√	√	√	√	√	
KGH5	√	√	√	√	√	√		√
KG10	√							
KGR10	√	√	√	√	√	√	√	
KGH10	√	√	√	√	√	√		√

KG5 - Kit quadro gateway fino a 5 unità
KG10 - Kit quadro gateway fino a 10 unità: Quadro per la comunicazione dati tra le unità che costituiscono un assieme. La predisposizione per il montaggio del quadro è sul retro della cover frontale di ogni unità.

KGH5 - Kit quadro gateway fino a 5 unità completo di Hi-Web e router Wi-Fi
KGH10 - Kit quadro gateway fino a 10 unità completo di Hi-Web e router Wi-Fi: Quadro per la comunicazione e l'interfaccia dati tra le unità che costituiscono un assieme. Consente il monitoraggio e la supervisione dei principali parametri di funzionamento dei singoli moduli e dell'intero sistema, mediante accesso a piattaforma Hi-Web da rete Wi-Fi locale (oppure da rete WEB attivando un servizio a pagamento). L'interfaccia che si può utilizzare può essere un dispositivo cliente (smartphone o tablet) oppure l'interfaccia tablet (optional TA) .

KGR5 - Kit quadro gateway fino a 5 unità completo di router Wi-Fi
KGR10 - Kit quadro gateway fino a 10 unità completo di router Wi-Fi: Quadro per la comunicazione e l'interfaccia dati tra le unità che costituiscono un assieme. Consente il monitoraggio e la supervisione dei principali parametri di funzionamento dei singoli moduli, mediante accesso a rete Wi-Fi locale (oppure da rete WEB attivando un servizio a pagamento). L'interfaccia che si può utilizzare può essere un dispositivo cliente (smartphone o tablet)





- Optional centralized display
- Remote monitoring via LAN or modem
- Connectivity to local Wi-fi

CHILLVENTA

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

CONNECTING EXPERTS.

Everest – modular R-290
2 and 4 pipes Heat Pumps