

Chillventa Specialist Forums 2022 **Chillventa Fachforen 2022**

**CONNECTING
EXPERTS.**





CONNECTED REFRIGERATION

A unique web application to manage
multiple refrigeration installations

Data intelligence for refrigeration : sustainable, economical and efficient.



Measure



Analyze



Optimise

The impact of refrigerant leaks

- Break in the cold chain, loss of products
- Risk of production stoppage and business interruption
- Costs of refrigerants refills and operator interventions
- Environmental damage
- Installation under loaded :
 - Degraded performance
 - Increased energy consumption (+10 to +30%)
- Image risk for the company/brand



Refrigerant	R404A
Global Warming Potential (GWP)	3921
Refrigerant charge	900 kgs
Average annual leakage rate	15-25%
Emissions in tons of CO ₂ equivalent	≈882 t eq.

Connected Refrigeration

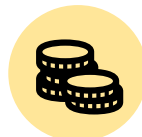
- Real-time and remote monitoring of your customers facilities
- Intelligent leak detection (using indirect method)
- Energy monitoring
- Alerts can be set remotely
- Summary scorecards
- Tips for improving performance
- Coaching and steering assistance
- Remote technical support in intervention



Performance



Environment



Savings

How it works – PolarBox & PolarVisor

PolarBox :

- One device to monitor up to 4 refrigeration units
- Adapted to indoor or outdoor liquid tank
- Wireless external temperature sensor using LoRa
- Optional display and mobile control
- Numerical temperature sensors
- Secured and dedicated internet connection

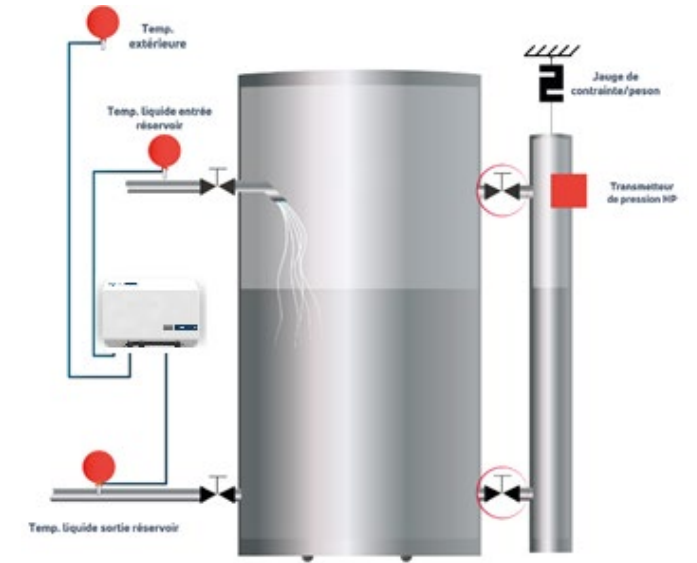
PolarVisor :

- Monitoring web app, compatible with both old and new devices generation
- Easily usable by refrigeration specialists and final customers
- European servers and secure connections, GDPR compliant



Leak Detection :

- Leak detection by indirect measurement method with Expert System
- Sample every 5 seconds
- Algorithmic analysis of the normal operation of the refrigeration unit
- Reference level determined at the end of the learning process
- Real-time leak detections
- email alert in case of refrigerant leak
- Up to 80% savings in refrigerant (vs. traditional method) src: study ADEME



Connectivity :



Wifi



Ethernet/RJ45



4G

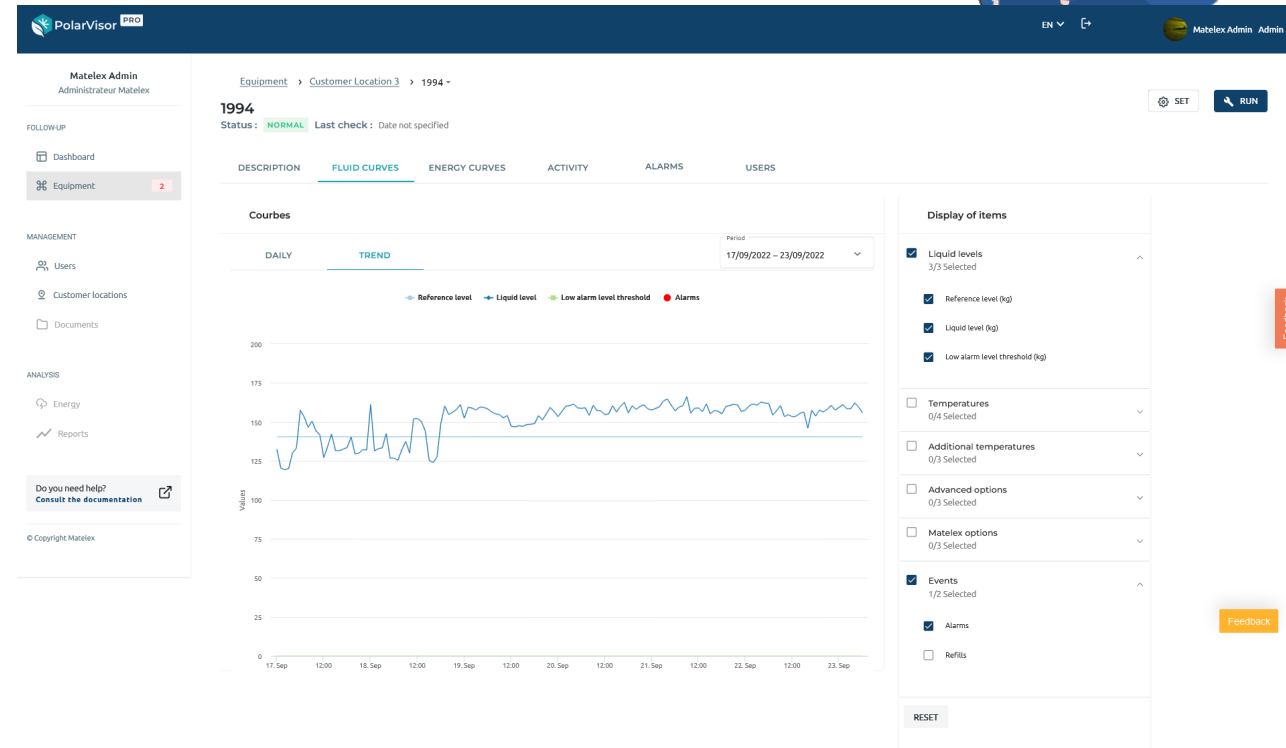
Measuring and Analysing

- **Refrigeration Expert Systems :**

- Algorithmic learning
- Analysing data to understand unit leaks
- Identifying operational drifts
- Clear reports

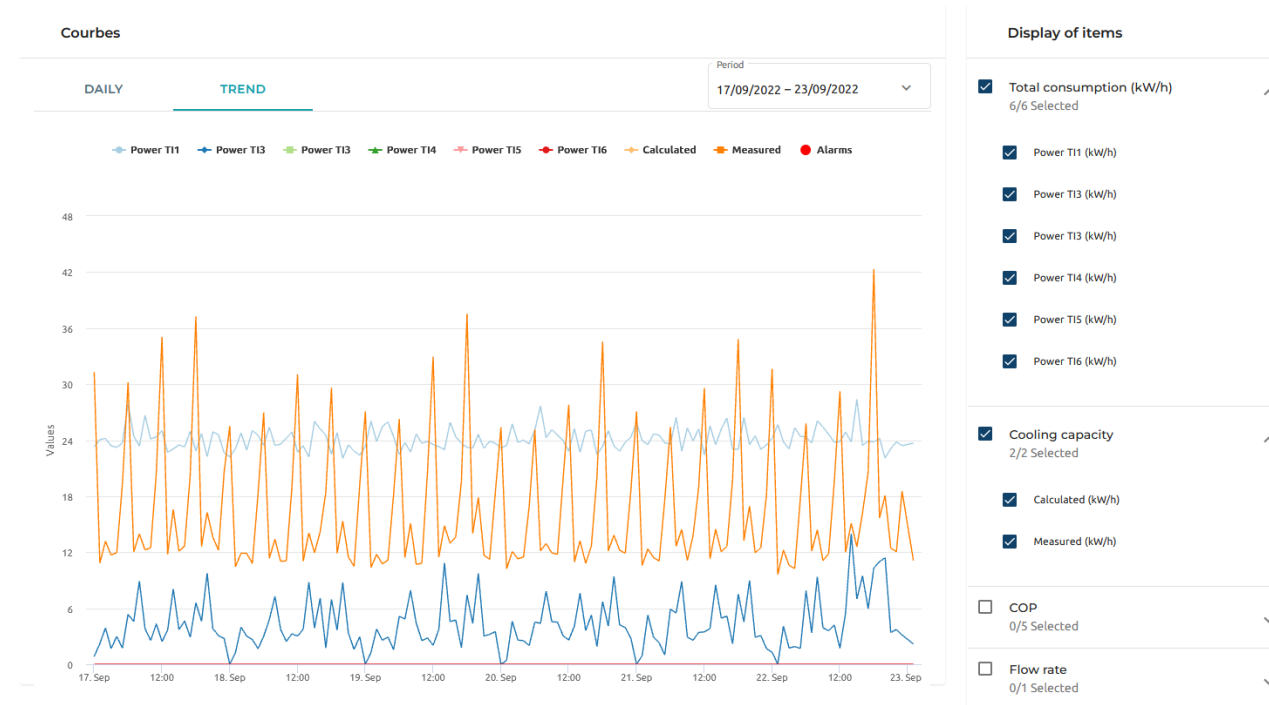
- **For real-time remote monitoring:**

- A global and shared vision between the \neq actors
- Continuous leak detection
- Energy monitoring
- Web-based facility management platform
- History since commissioning



Energy Monitoring :

- Energy consumption with daily & trend curves
- Alerts in case of energy drift
- Monitoring of compressor operation: start-up frequency, operating time (short cycles)
- Alerts in case of risk of compressor failure
- Advice on improving settings
- Technical and configuration alerts
- Real time enthalpy diagram



Underloaded plants consume more energy. The right refrigerant charge contributes to the optimal operation of the plant

Optimise and reduce

- **Act as quickly as possible thanks to a panel of alerts:**

- Refrigerant leaks: email alert with estimates leaks
- Energy drift
- Risk of compressor failure
- Technical alerts

Daily leakage checks

24

79%

Refrigerant savings

- **Monitoring and setting up your installation :**

- Improved settings
- Management dashboards
- Reminders and regulatory information
- Technical support in intervention

☒ All High Pressure tanks (Horiz. / Vert.)

☒ All refrigerants

☒ New or existing installations

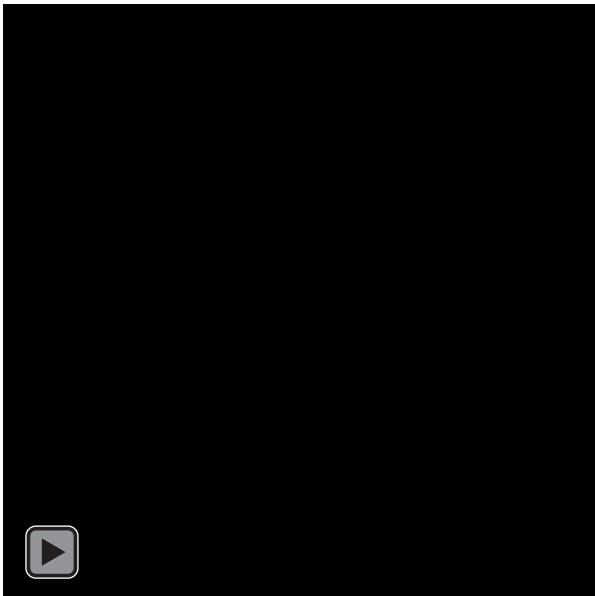
Support and training

- **Support for partners :**

- Theoretical and practical training day
- In-depth modules - 2 hours distance learning
- Remote technical support in intervention
- Augmented Reality support tool

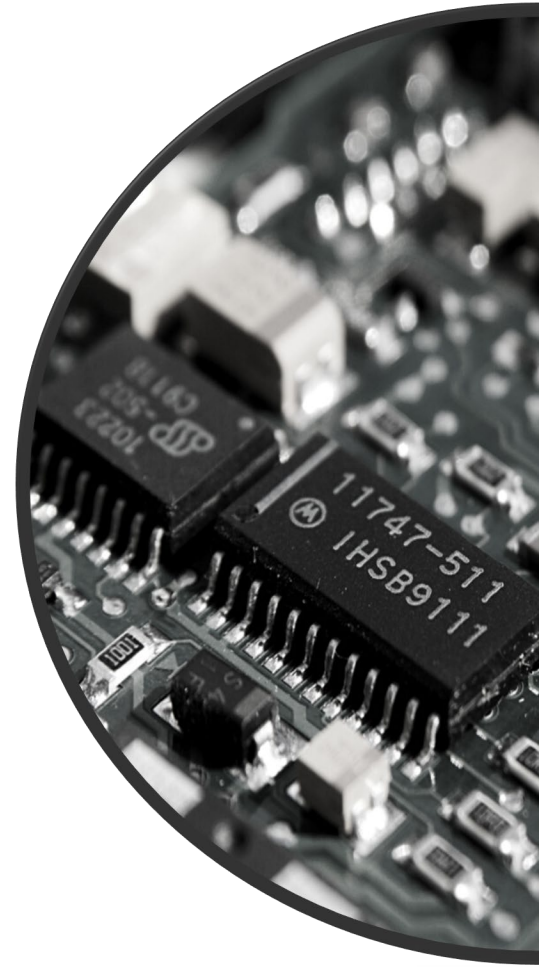


- Operators of the equipment containing fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more, shall ensure that the equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage. Reg UE N°517/2014
- The installation of this type of device makes it possible to divide by 2 the leakage checks
- Leak detection devices must be checked annually
- Any suspected leaks are investigated by direct methods



A web-based monitoring platform :

- Accessible 24/7
- Continuously monitor your facilities
- React as quickly as possible in the event of an anomaly
- Reduce the risk of equipment failure
- Ensure continuous cold production, avoiding business interruption
- Lower the carbon footprint of facilities
- Improve their performance
- Benefit from on-site or remote support



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