Rittal – The System.

Faster – better – everywhere.

The New Cooling Unit Generation Blue e+

World's first.

The **Blue e+** cooling unit series – the ultimate in efficiency.

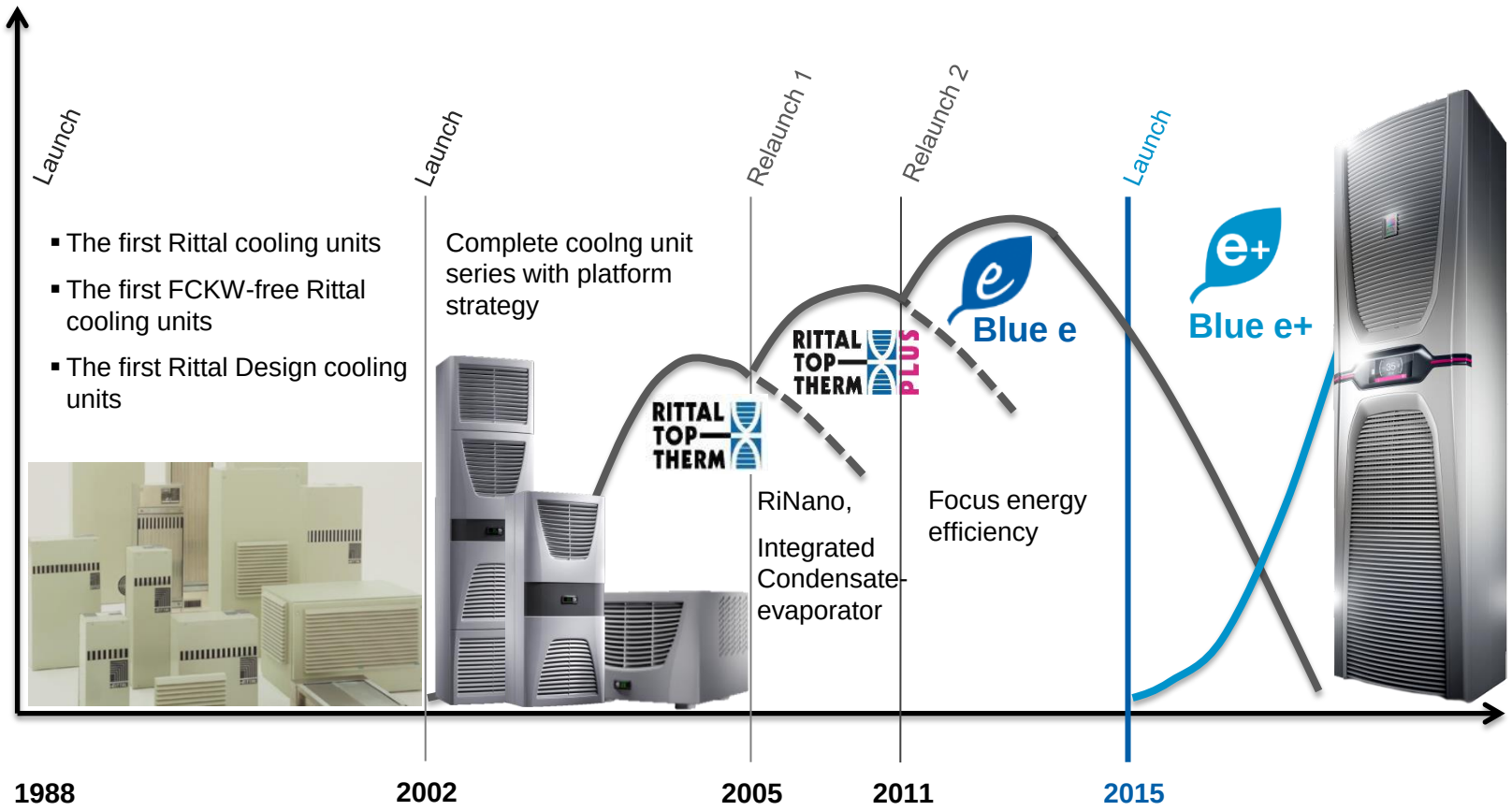
The new Cooling Unit Generation Blue e+

Enclosure Climate Control

Sensitive electronic components in enclosures have to be protected and cooled.

The new Cooling Unit Generation Blue e+

The e+ Factor.



The new Cooling Unit Generation Blue e+

The e+ Factor.

Efficiency.

Revolutionary energy efficiency due to hybrid technology

Save up to 75%.

Longevity.

Longer service life due to component-friendly cooling

Constant temperature inside the enclosure.

The e+ factor.

Versatility.

More flexibility due to multi-voltage support

International usage.

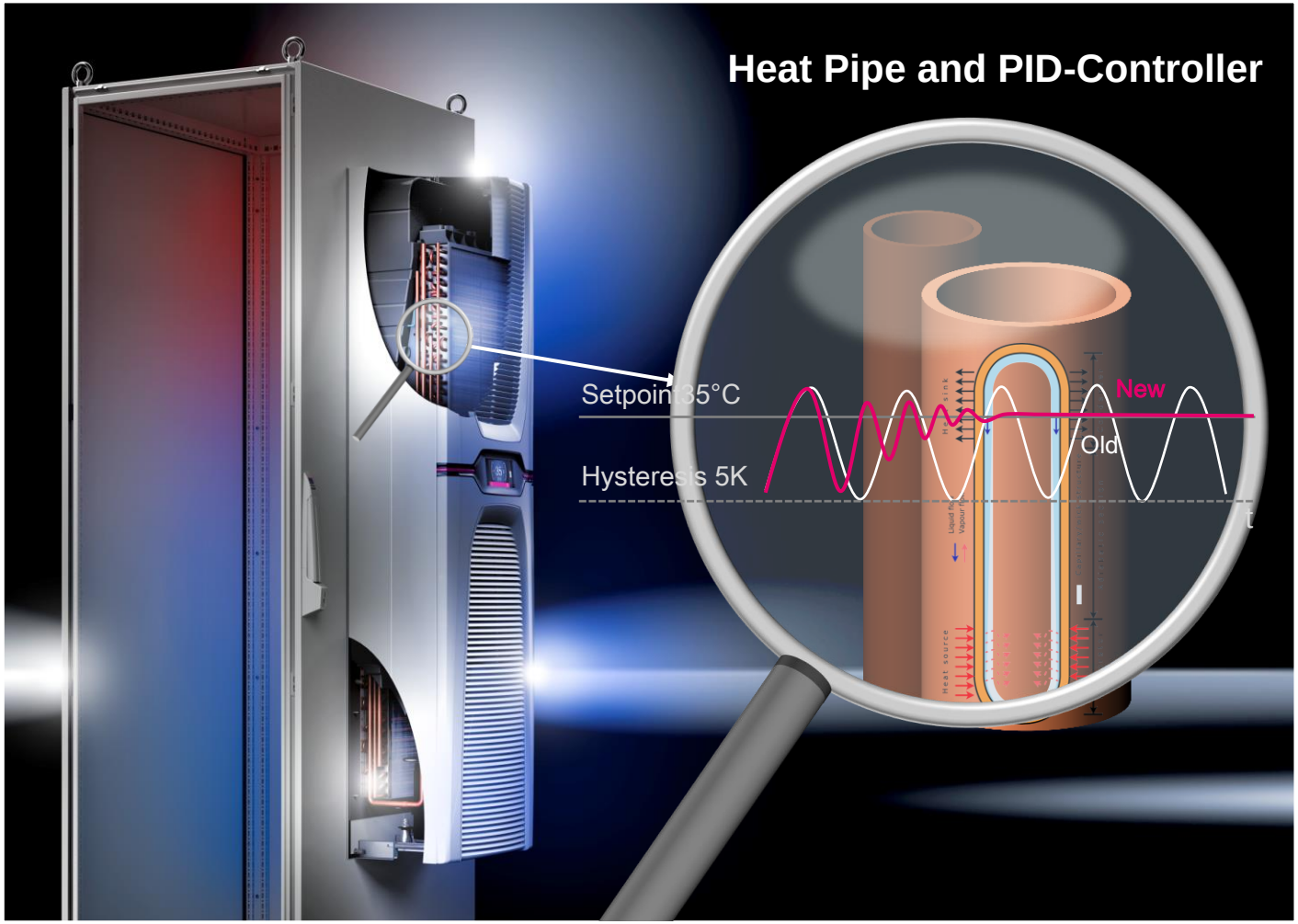
User friendliness.

Intuitive operation due to touch display and intelligent interfaces

Faster informed.

The new Cooling Unit Generation Blue e+

Efficiency



Energy Efficiency

Constant Temperature

Machine Reliabilty

The new Cooling Unit Generation Blue e+

Efficiency

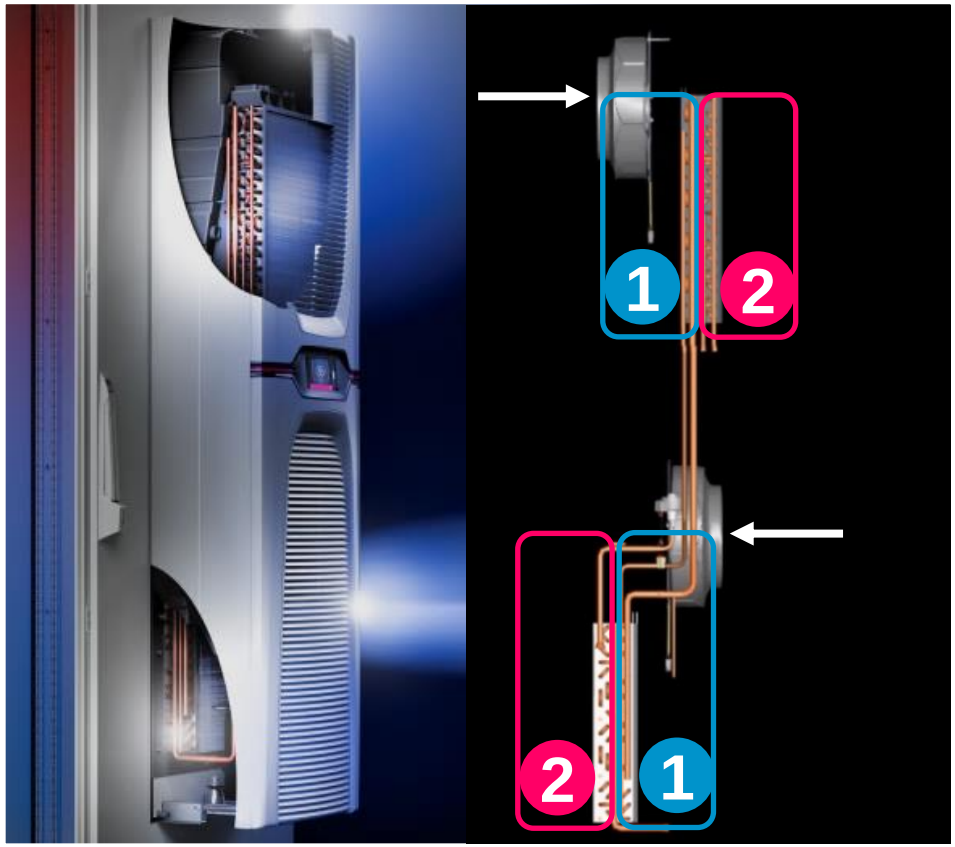
The e+ Factor:

Innovative hybrid technology

Two parallel cooling circuits working together, depending on temperature difference

1. **Passive Climate Control:**
   Heat Pipe cooling circuit

2. **Active Climate Control:**
   Compressor cooling circuit with speed-controlled components for demand-based cooling

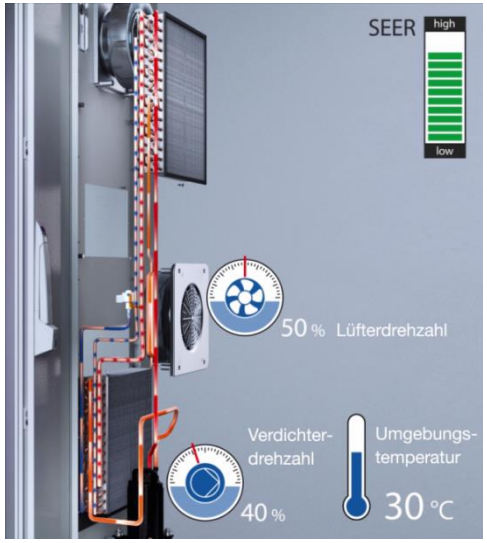


The new Cooling Unit Generation Blue e+

Efficiency

1 **Internal enclosure temperature 35°C** **2**

Heat Pipe operation	Hybrid operation	Compressor operation
Ambient temperature lower than internal enclosure temperature	Small difference between ambient temperature and internal enclosure temperature	Ambient temperature higher than internal enclosure temperature

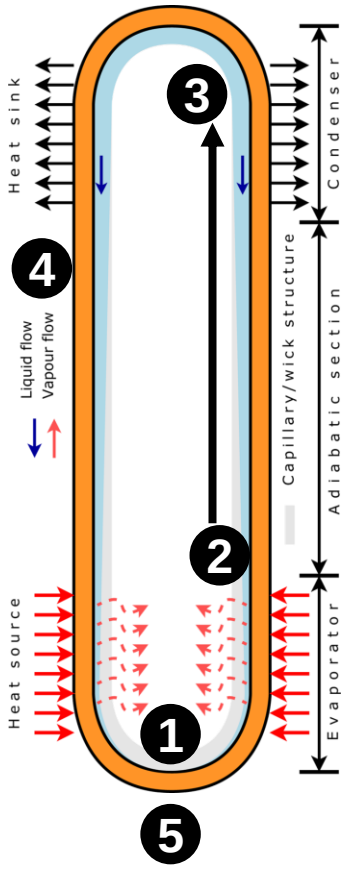


The new Cooling Unit Generation Blue e+

Efficiency

Heat Pipe:
Heat transfer system

1. Refrigerant (liquid) inside the Heat Pipe evaporates.
   Heat energy is absorbed.
2. Refrigerant (now gaseous) rises inside the pipeline up to the condenser.
3. Refrigerant (still gaseous) is cooled down inside the condenser and condenses (becomes liquid).
   Heat is dissipated into the ambient air.
4. Refrigerant (now liquid) flows, due to gravity, down through the copper pipe to the evaporator coil.
5. The cooling circuit begins again.

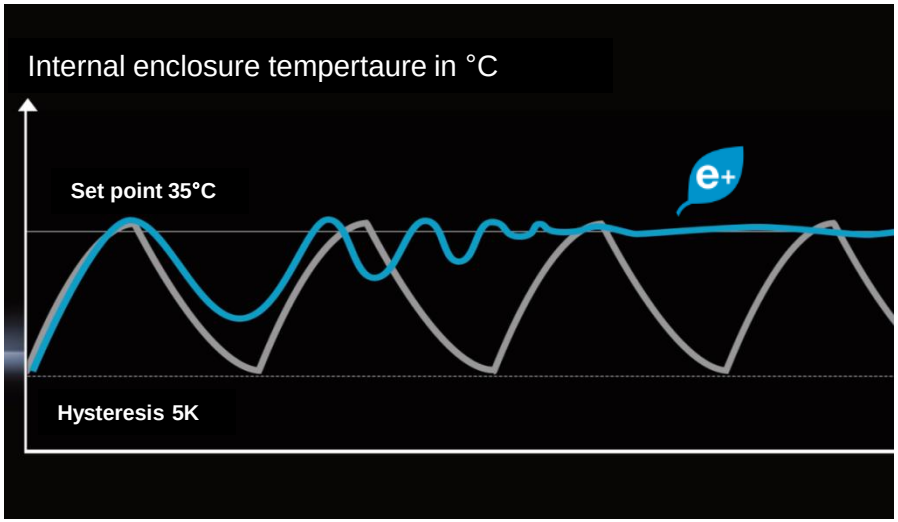


The new Cooling Unit Generation Blue e+
Efficiency

The e+ Factor:

Speed regulation for demand-based cooling

- The required cooling output in the enclosure is calculated
- Fan and compressor speed are centrally controlled via the inverter
- Protection of components due to constant cold air outlet temperature, no cycling
- The cooling unit adapts flexibly to temperature changes in the enclosure

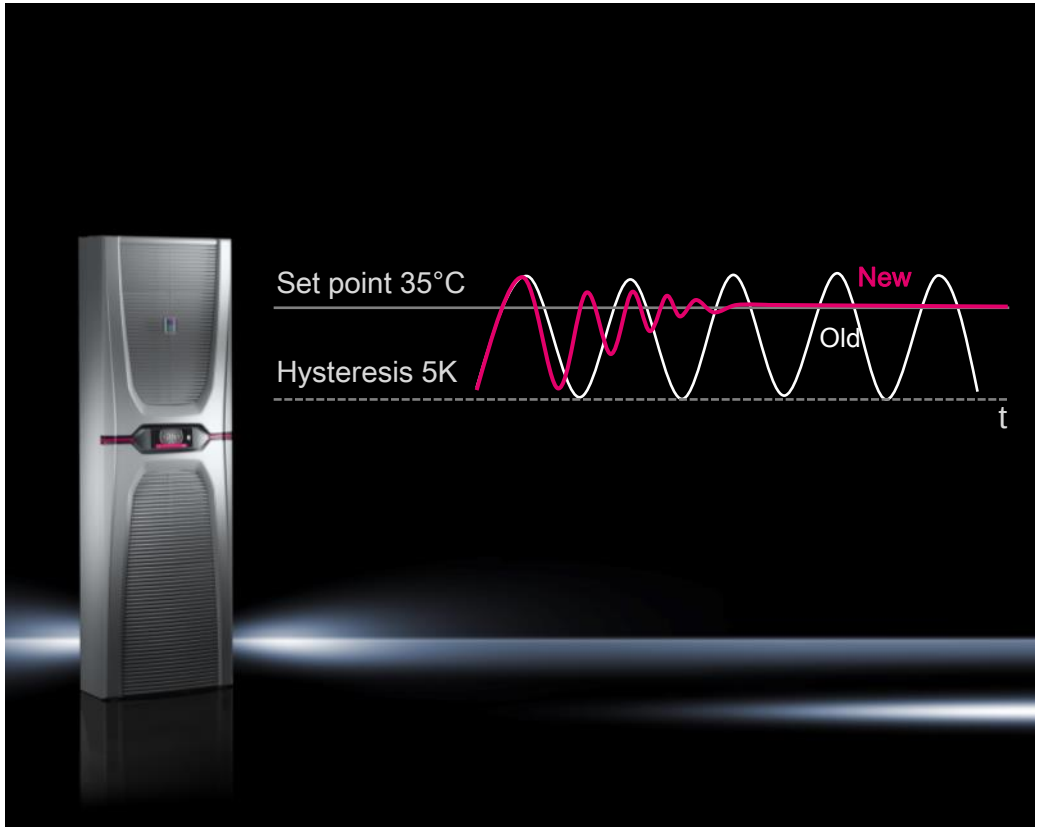


The new Cooling Unit Generation Blue e+

Longevity

The e+ Factor:

- Fast and intelligent PID-control
  - **P**roportional part
    Response to major deviations
  - **I**ntegral part
    Response to long-term deviations
  - **D**erivative part
    Response to rapid changes
- Set point control with 3 cooling modes
- High operational reliability by preventing hot spots
- Longer life durance due to component-friendly cooling



The new Cooling Unit Generation Blue e+

Longevity

3 control modes

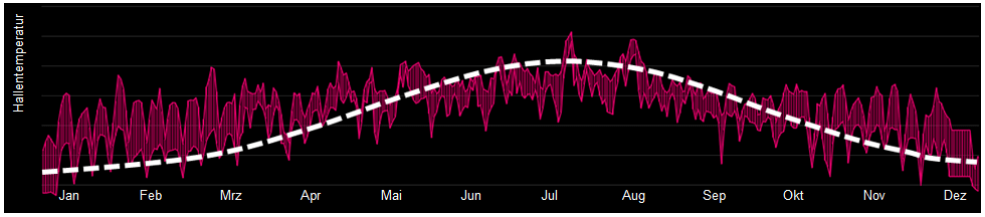
Intake temperature	Outlet temperature	External sensor
Measurement on the warm air intake (internal circuit) – factory setting Control of the average enclosure temperature	**Measurement on the cold air outlet (internal circuit)** Suitable for components which require a definite intake temperature	**Measurement at a flexible position inside the enclosure** Suitable for focused cooling of hot spots
		

The new Cooling Unit Generation Blue e+
Efficiency

The e+ Factor:

Highest SEER on the market

- SEER means Seasonal Energy Efficiency Ratio.
- Der EER (Energy Efficiency Ratio) is calculated at an assumed hall temperature of 35°C.
- In reality, hall temperatures are usually significantly lower than 35°C, and fluctuate over the course of the year.
- In order to precisely calculate energy efficiency, it is necessary to consider the seasonal temperature variation.



The new Cooling Unit Generation Blue e+

Versatility

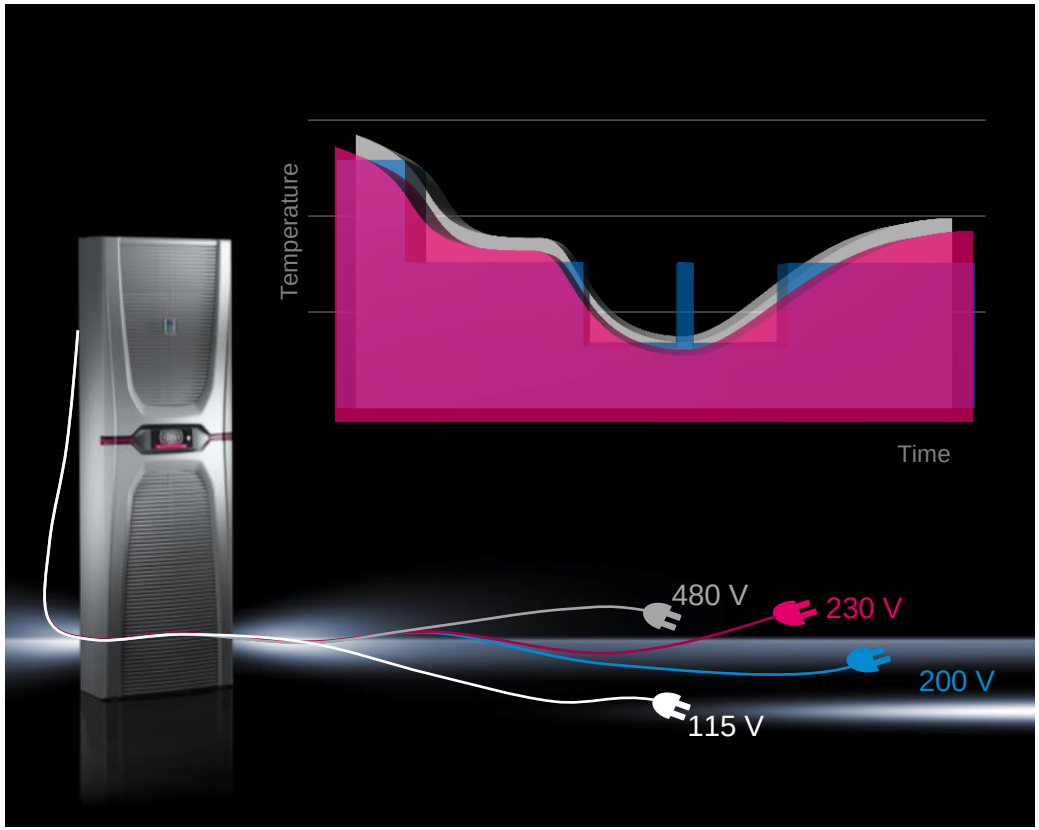
The e+ Factor:

Multi-voltage capability

- Inverter technology:

  The cooling units can be used for several voltages without installing a transformer

- Possible voltages:
  - 110V - 240V; 1~; 50-60Hz
  - 380V - 480 V; 3~; 50-60Hz

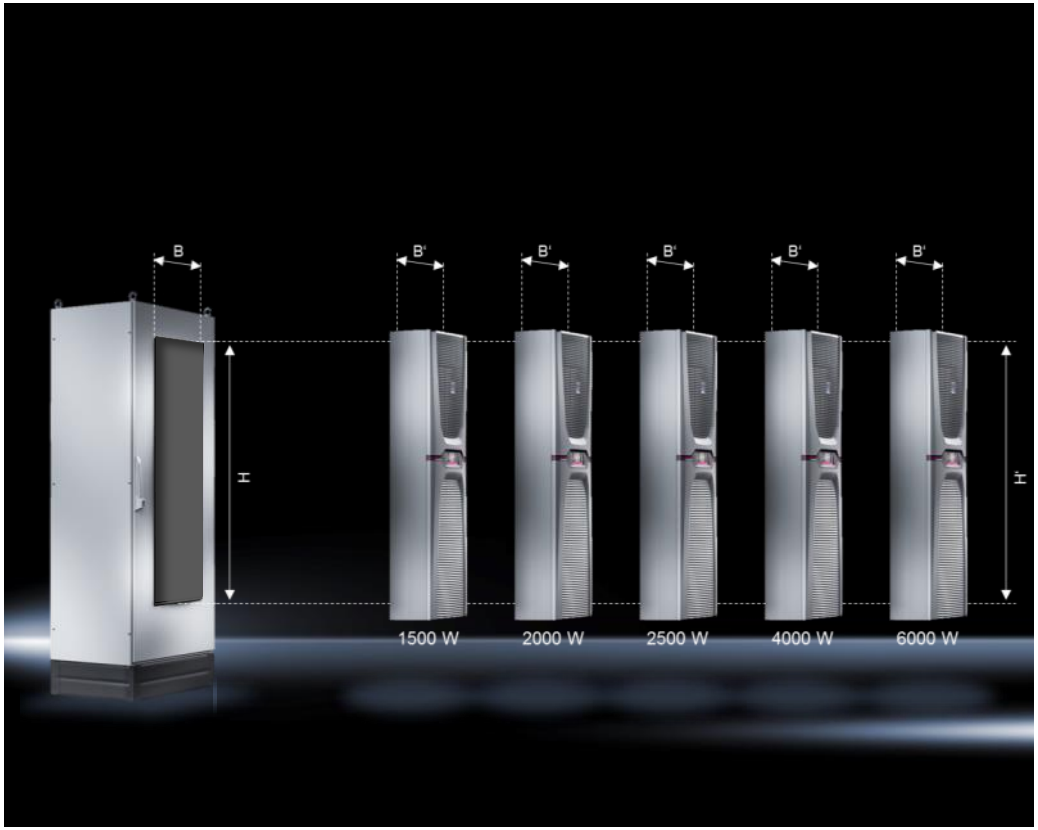


The new Cooling Unit Generation Blue e+

Versatility

The e+ Factor:

- A single version for external, partially internal and fully internal mounting (one cut-out)
- Standardized installation cut-outs for multiple cooling capacities
- Handles for convenient transport and positioning, provision for lifting eyebolts and mounting clips for easy installation

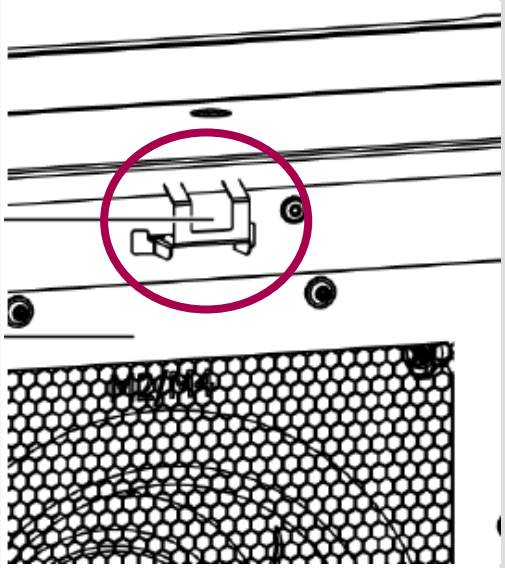


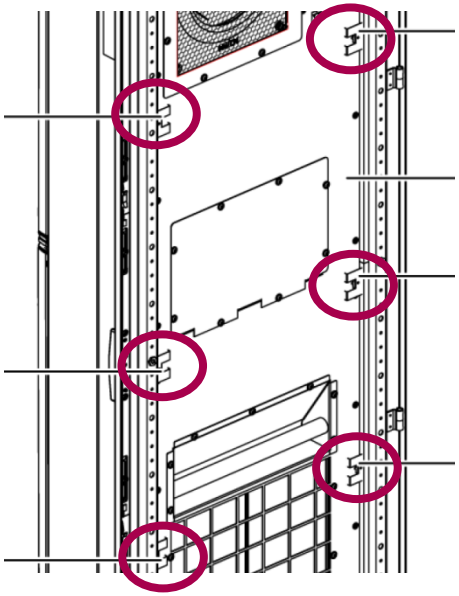
The new Cooling Unit Generation Blue e+

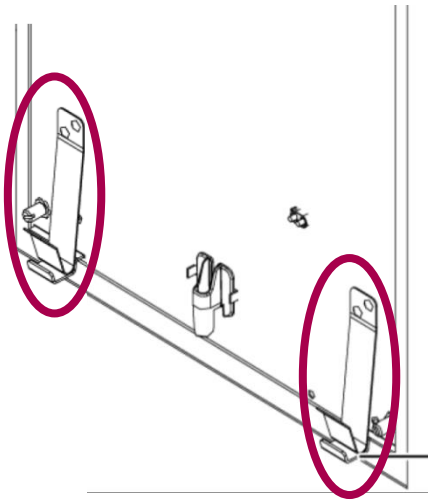
Versatility

Mounting assistance

Clips	Thread bolts	Angle for fully internal mounting
Prevents the cooling unit of turning over	Cooling unit fits directly on the door	For secure hold of the cooling unit







The new Cooling Unit Generation Blue e+

Easy Maintenance

The e+ Factor:

- Maintenance-friendly filter mat replacement, tool-free
- Integrated filter mat control
- High traceability of important parts with separate QR-Codes

The new Cooling Unit Generation Blue e+

The e+ Factor

- In Standard IP55 or Type 12 / Type 3R (internal circuit)
- Ready to use from -30°C to 60°C
- Increased operational reliability
- No reduction of enclosure protection class

Approvals:

- Fast and complete supply of information for design verification to IEC 61439
- The new cooling units have the following approvals:

c UL LISTED

GS geprüfte Sicherheit

EAC

CCC

TÜV NORD
TÜV NORD Systems GmbH & Co. KG
Performance tested acc. to EN 14511
Enclosure cooling unit Rittal TopTherm series
Periodic product testing
SEGP-0326/11

The new Cooling Unit Generation Blue e+

User-friendliness

Touch-Display

Quick Diagnosis

Service App

The new Cooling Unit Generation Blue e+

User-friendliness

The e+ Factor:

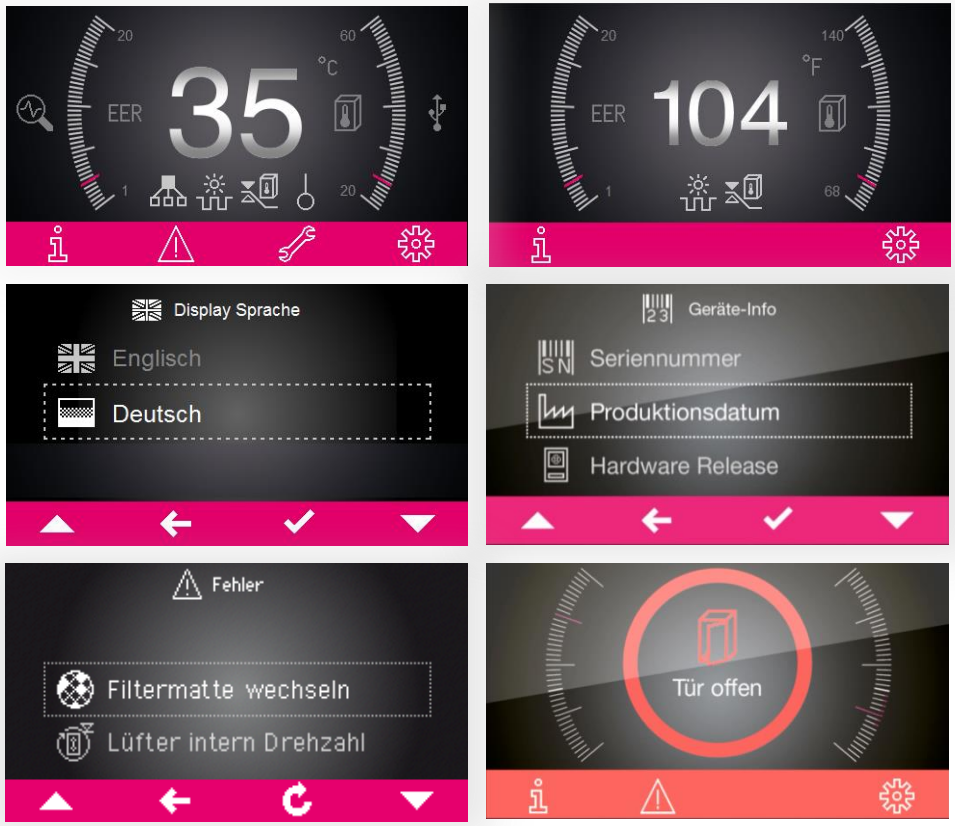
- User-friendly operation due to
  - Multi-lingual, industrial-grade touch display
  - Clear text output
  - Intelligent interfaces
- Multicolor TFT-display
- Resolution: 480 x 276 pixels (4,3“)
- Actual operating status and detailed status display
- German and English pre-installed, further languages can be uploaded

The new Cooling Unit Generation Blue e+

User-friendliness

Touch Display Functions

- Permanent status display, internal temperature, temperature monitoring and current efficiency
- Current and preventive maintenance display
- Prioritized system messages (3 escalation levels):
  - Failure
  - Note
  - Warning
- 3 failures overwrite the start screen:
  - Door open
  - Error
  - Error on a master-slave-unit



The new Cooling Unit Generation Blue e+

User-friendliness

The e+ Factor:

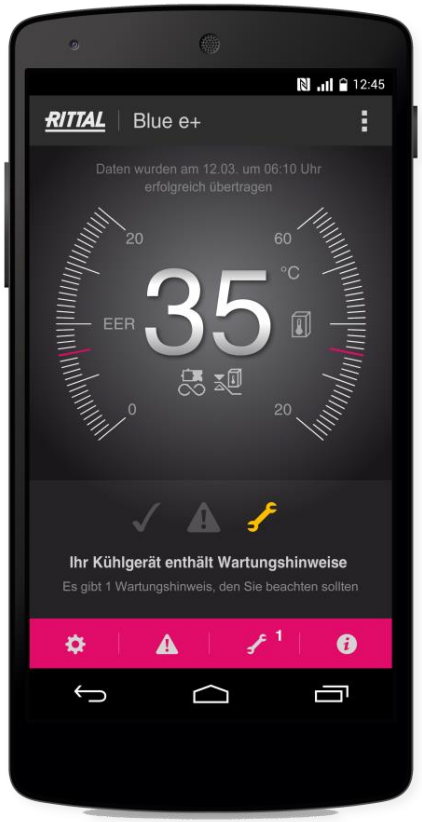
- Quick diagnosis with Smartphone App via Near Field Communication (NFC)
- Remote monitoring via Ethernet and device analysis with RiDiag via USB interface
- Detailed function analysis and parameter setting capabilities via diagnosis software RiDiag

The new Cooling Unit Generation Blue e+

User-friendliness

Blue e+ App

- The NFC interface transfers data up to 1.4 cm
- Access to most recently saved data / or factory setting
- Access restriction via PIN request (PIN of cooling unit)
- Complete set of parameters with log file via NFC transfer in max. 10 sec.
- Identical displays and menu prompting as on device display
- Identical maintenance/error displays as on the display.
- Additional information on maintenance and troubleshooting
- Fault signals, spare parts and maintenance enquiries may be sent directly to Rittal from the app
- Device parameter setting as on the display, transfer via NFC
- Device data may be saved directly on the smartphone



The new Cooling Unit Generation Blue e+

User-friendliness

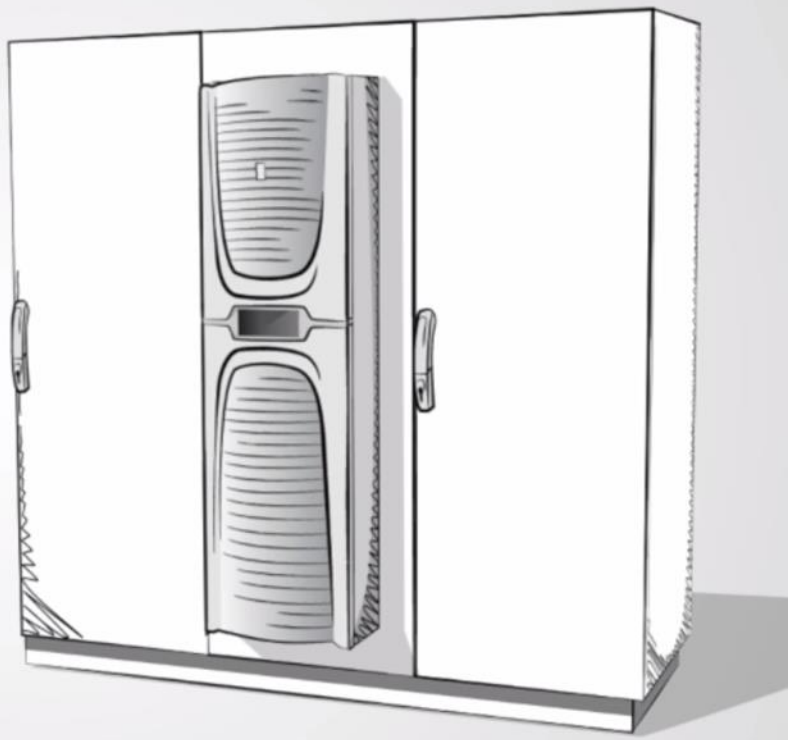
Blue e+ diagnosis software RiDiag

- Secure connection via USB-interface on the unit display
- All unit information at a glance:
  - Customer data
  - Location info
  - Maintenance inquiry
  - Spare part inquiry
  - Device data *of 2 years*
  - Parameters
  - Temperature I/A
  - Device management
  - Maintenance LogBook
  - Device analyses
  - Device comparisons
  - Languages
  - Updates

The new Cooling Unit Generation Blue e+

The most efficient way to cool an enclosure

- 75 % less energy consumption
- 75 % less CO2 emission
- Longer lifetime
- Worldwide application



World's first.

The **Blue e+** cooling unit series –
the ultimate in efficiency.

Thank you.