Rittal –

Energy Efficiency in Cooling Systems.



Challenge and Responsibility.

We're Ready.

FRIEDHELM LOH GROUP

RITTAL®

It’s important to talk about energy efficiency.

And it’s our job to put the resulting ideas into practice.

Energy efficiency is a key topic of the future for industrial production processes and IT infrastructures. In view of increasing problems with the global climate and the environment, coupled with rising energy prices, it is essential that existing resources are used more efficiently. As a leading manufacturer of enclosure system, server rack and Data Centre climate technology, we are not just preparing to face the challenges and responsibilities of the future. Our investments in recent years have, without a doubt, led to above-average energy efficiency. The chief focus of our development goals is to improve the overall efficiency of our products. This is important because discerning customers make investment decisions based on the principle of TBU (Total Benefit of Usership).

Our cooling systems undergo additional neutral assessments by external experts to check both their energy efficiency and overall efficiency. To this end, we work closely with independent test institutes.



For the future of our children.
Rittal corporate principle, no. 9:

“We are aware of our responsibility to the environment and the world in which we live. We want to help shape and improve them.”

Rittal fulfils three energy-efficiency requirements.
Technology you can rely on.



The new efficiency label from Rittal in accordance with DIN EN ISO 14021 identifies all cooling systems that make a significant contribution to environmental protection.
These cooling systems far exceed the requirements of DIN 3168.

Energy efficiency at Rittal covers several dimensions. That's why we have augmented our efficiency label with three area markings:
ENERGY, WASTE and **PERFORMANCE.**



Reduced energy consumption through a higher level of efficiency



Reduced consumption of filter media through the use of waste-reducing nanotechnology.



Sustained high level of efficiency in contaminated ambient air through the use of nanotechnology.

RITTAL TOP THERM PLUS

Rittal's TopTherm PLUS high performance cooling systems meet all three requirements of the new efficiency label.

Fraunhofer IPA Institut Produktionstechnik und Automatisierung

TÜV NORD

DMT

In cooperation with Fraunhofer IPA, TÜV Nord and Deutsche Montan Technologie (DMT GmbH).
The Fraunhofer Institute for Production Technology and Automation worked with Rittal GmbH & Co. KG to draw up an environmental manufacturer's declaration in accordance with DIN EN ISO 14021. The environmental declaration was devised in collaboration with Fraunhofer IPA to describe the ecological benefits of specific Rittal products. The verifiability of the environmental manufacturer's declaration was ensured through the application of reproducible evaluation procedures such as DIN 3168 in combination with the ASHRAE dust contamination test (ASHRAE standard 52.2). These combined checks were conducted by DMT GmbH and TÜV NORD. The environmental manufacturer's declarations are marked with Rittal's efficiency label icon. In future, Rittal customers will be able to identify the ecological benefits of specific cooling systems at a glance.

Our formula for greater efficiency:

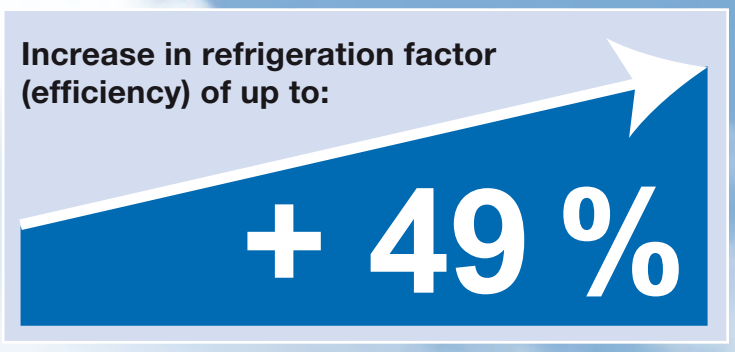
Reduce energy consumption. Increase efficiency.

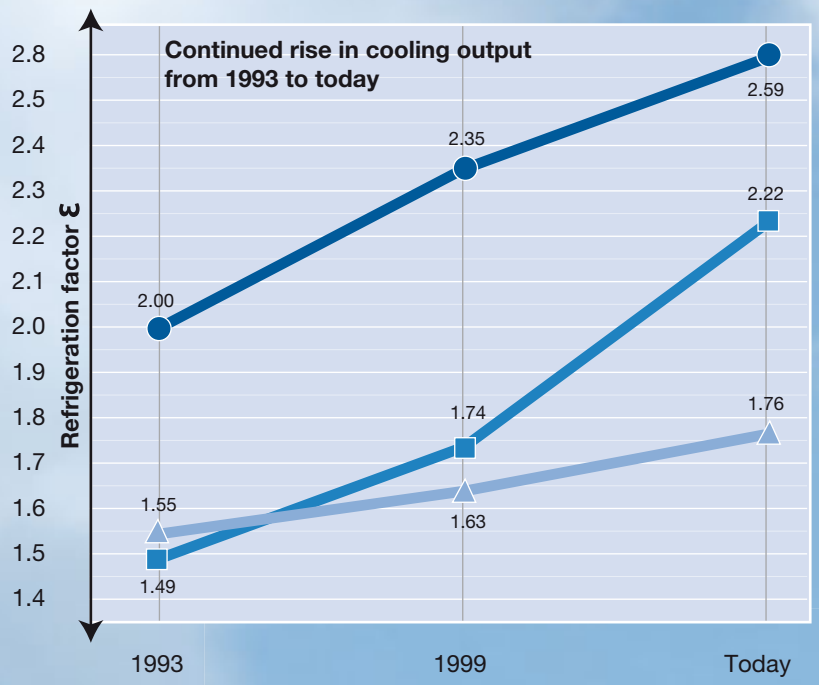


The rapid rise in heat losses caused by the increasingly powerful technology used in production processes can only be counteracted with highly efficient cooling systems. Against this background, the focus is on protecting the climate and cutting energy costs. For many years, Rittal has dedicated a lot of time and money to continually improving the efficiency of its cooling technology with the aim of achieving both these goals. This success benefits customers, the environment and Rittal alike. That's why Rittal is among the top market and technology providers for enclosure system, server rack and Data Centre system climate technology.

$$\varepsilon = \frac{\dot{Q}_K}{P_{el}}$$

ε = refrigeration factor (efficiency)
$\dot{Q}_K$ = useful cooling output [W]
P_{el} = rated output [W]





Wall-mounted units in cooling output class 1500 W (SK 3298/SK 3305)

Wall-mounted units in cooling output class 2000 W (SK 3390/SK 3328)

Roof-mounted units in cooling output class 3000 W (SK 3299/SK 3386)



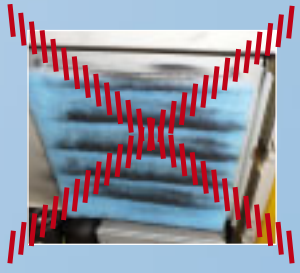
Rittal TopTherm PLUS with RiNano technology:

No filter mats.
No contaminating dirt.
No expensive disposal.

No cooling output without “air transport”. After all, the heat that diminishes performance must be dissipated and cooling air fed in. The higher the heat, the greater the demand for air volume to be “moved”. In industrial operations in particular, the air is often so contaminated with dust and dirt particles that the filter mats used in traditional cooling units have to be replaced and disposed of in a very short space of time. This is where Rittal TopTherm PLUS with RiNano technology comes into its own. There is no need to use filter mats with these cooling units. This not only saves valuable materials, it also cuts the amount of time and money usually spent on disposal. It reduces energy consumption and lowers operating costs.

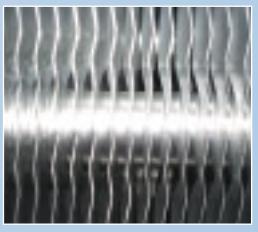
That’s not the only benefit for the environment. Electrical condensation evaporation and greater use of CO_2 refrigerants shows that Rittal offers the ideal combination of ecology and economy.

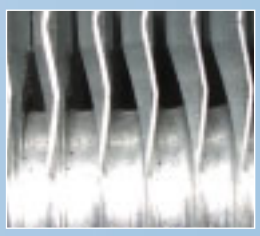


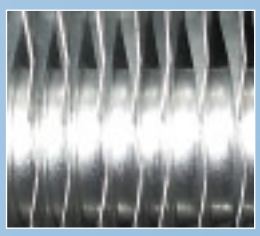


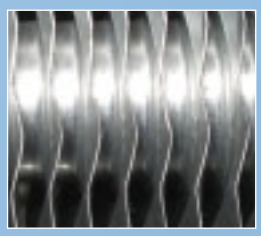
Dirty filter mats significantly reduce the efficiency of cooling units.

Inside the cooling unit:
Thanks to the RiNano coating, hardly any dust particles stick to the condenser.


10 March 2006


15 September 2006


9 March 2007


15 June 2007









Condensor's air intake area:
The cooling unit works in strongly contaminated ambient air.

Maintenance costs for traditional units per year

Example: Brake disc production

Units	200
Filter changes per year	52
Costs per filter mat	€ 1.50
Costs to empty condensate collector/year	26
Time per change/empty	2 mins
Wage (gross)	€ 30

Costs per Rittal unit:

Filter	€ 130
Condensate	€ 26
	€ 156

Total maintenance costs:
Saving of € 31,200 per year

There are no maintenance costs for TopTherm PLUS cooling units from Rittal.

This is made possible thanks to the virtual elimination of filter mats and the use of electrical condensation evaporation.

Endurance test documention from a brake disc production plant in the automobile industry: Dirt from the ambient air drawn in stands no chance against the RiNano coating of the cooling fins.

The efficiency of the TopTherm PLUS cooling units is sustained in the long term. The time-consuming maintenance and costly disposal of filter mats is now a thing of the past.

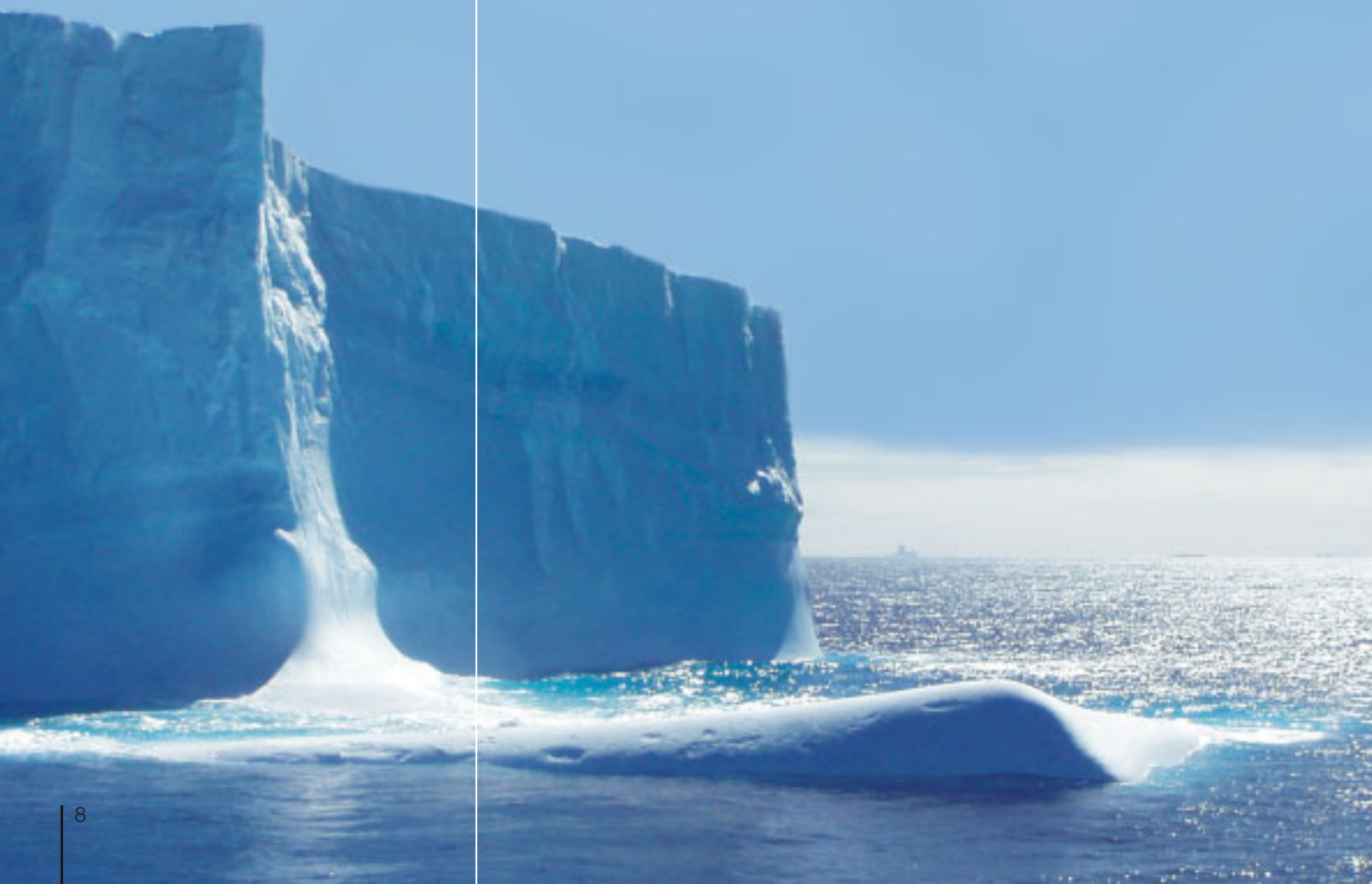
These impressive results are confirmed by further test series in other areas of industry.

From nature, for nature:

The Rittal nano-coating ensures constant cooling output even in contaminated ambient air.

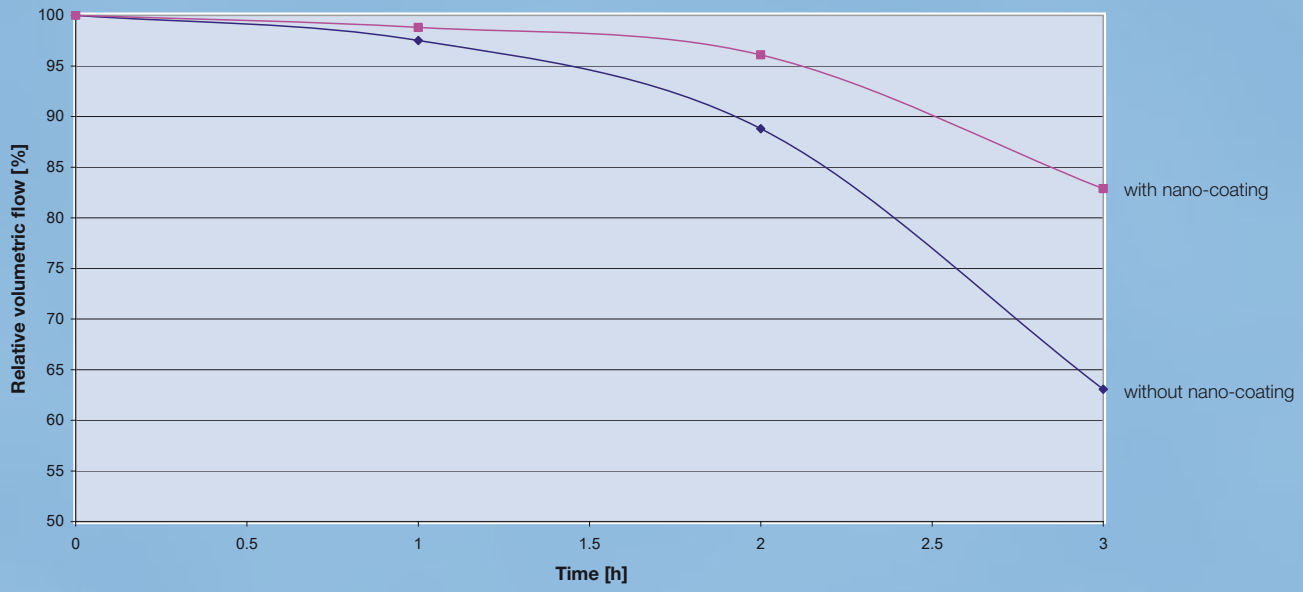
ep PERFORMANCE

Intelligent use of nanotechnology increases energy efficiency and significantly reduces CO_2 emissions. The RiNano coating on the fins of the Rittal TopTherm PLUS cooling units slows the build-up of dirt significantly. Consequently, the maintenance intervals are extended and the cooling output remains constantly higher for longer.



Relative volumetric flow on contamination of cooling units from Rittal with 500 mg/m³ ASHRAE test dust

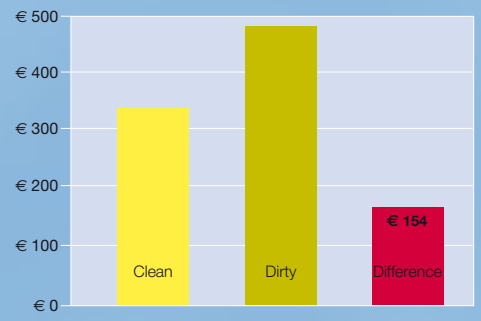
Cooling unit types: SK 3305.500 (with nano-coating) and SK 3305.100 (without nano-coating)



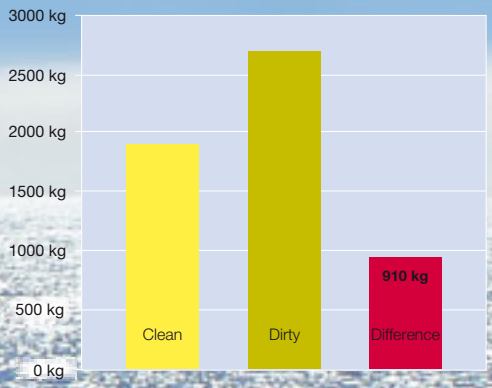
Independent tests conducted by DMT GmbH (a test centre for air hygiene) were used to simulate 24-month operation of cooling units with the same power output in contaminated ambient air.
The results confirmed that the performance of units with nano-coating was far more constant than those without.

Cut energy costs and reduce CO2 emissions.

Energy costs



CO_2 emissions [kg CO_2]



Operation under full load: 70 %
Operation under partial load: 30 %
Operating time per day: 16 hours
Operating time per year: 250 days
Energy costs per kWh: € 0.11



RITTAL TOP THERM PLUS

Total Benefit of Usership and energy efficiency:
These two factors go hand in hand at Rittal.



Exact analysis and Good planning

- Rittal Therm
- Computerised simulation of temperature and flow behaviour (CFD analysis)

Careful assembly and installation

- Project planning guidelines
- Professional application
- Practical tips

Worldwide service

- Five global service points, over 60 subsidiaries, more than 200 partners worldwide
- No matter where you are... we are already there – 24/7 when required
- Service packages
- IR thermography
- International approvals

EFFICIENCY

Rittal performs a complete business analysis throughout the product's life cycle, covering the following factors:

- Procurement costs
- Energy costs
- Maintenance costs
- Repair costs

This analysis forms an integral part of Rittal's product development, production and marketing.



Rittal's responsibility starts long before the purchase and never ends at the plant gate. This is because Rittal accompanies its products throughout their entire life cycle – from consulting services and implementation to worldwide maintenance and repairs. And there's a good reason for this: Customers don't just buy products from Rittal – they also buy efficiency and productivity!

Output confirmed to DIN 3168

- Performance data confirmed by independent test institutes

Advanced technology

- RiNano
- Integrated condensation evaporation

System solutions

- All this from a single source

In cooperation with Fraunhofer IPA, TÜV Nord and Deutsche Montan Technologie (DMT GmbH) in accordance with EN ISO 14021:2001.

- **Fraunhofer Institut für Produktionstechnik und Automatisierung**

Fraunhofer Institut Produktionstechnik und Automatisierung

- **TÜV NORD Systems GmbH & Co. KG**

- **DMT GmbH, Gebäude Sicherheit**

Benefit from the all-round competence of a strong partner:

- Industrial Enclosures
- Power Distribution
- Electronic Packaging
- System Climate Control
- IT Solutions
- Communication Systems

04/08 · E380

Rittal GmbH & Co. KG · Postfach 1662 · D-35726 Herborn
Telephone: +49(0)2772 505-0 · Telefax: +49(0)2772 505-2319 · eMail: info@rittal.de · www.rittal.com