



# Perfect Cooling



A perfect climate for high performance servers

## ► High Performance Cooling – Modular, scalable, efficient

Despite a dramatic rise in climate control requirements, cooling practice in many companies has changed little in decades. Traditional room temperature control concepts soon reach their limitations. The consequence: High on-going operating costs, low levels of efficiency, a lack of investment confidence, and reduced operational reliability.

The modular configuration and scalability of the climate control innovation Rittal Liquid Cooling Package (LCP) help to minimise investment costs and maximise investment confidence, while providing sufficient scope for future extensions. The result? Solutions that are geared to your specific requirements, which may be rapidly supplemented or replaced as your needs change.

### ► Performance plus with Rittal Liquid Cooling:

- Energy saving potential with processor-controlled cooling technology
- Accurate, location-precise cooling
- Systems designed for maximum operational reliability
- Simple capacity adaptation and expansion
- Space-saving installation thanks to the high thermal capacity of water (around 3500 times greater than air)
- Spatial separation of cooling and server rack
- Active condensate management

**RIMATRIX5**<sup>®</sup>  
DRIVING IT-PERFORMANCE

The ever-rising packaging density of computer systems and the constant growth in processor capacity inevitably lead to extremely high heat generation in a confined space. The innovative Liquid Cooling Package (LCP) family from Rittal offers a way out from this “climate dilemma”.



## ► A family of liquid cooling packages

The Liquid Cooling Packages (LCPs) family allows data centres to be extended in a temperature-neutral way, without the need for room changes. As a climate control enclosure on the side panel of a server rack, LCP Standard and LCP Plus solve the problem of high power losses for each rack. LCP Extend helps to ease the pressure on the room's existing climate control system by providing additional useful cooling output. The latest dimension in high-performance cooling is the data centre solution LCP Plus with a useful cooling output of up to 40 kW per rack.

The main benefits to the user are the even distribution of cold air in front of the 482.6 mm (19") level, full accessibility, and optional cooling of one or two server racks with an LCP Standard or LCP Plus. Thanks to the rack-optimised design, the air/water heat exchanger is easily integrated into existing infrastructures. Its modular design helps to keep investment to the level currently required.

### ► Convincing benefits:

- Cooling even with the server rack doors open
- Fully usable 42 U with an enclosure height of just 2000 mm
- Completely even air distribution inside the enclosure
- Scalable, extendible and upgradable system architecture
- An LCP unit may optionally be used for one or two enclosures (LCP Standard/LCP Plus)
- Redundancy easily achieved via side mounting of the LCP (LCP Standard/LCP Plus)
- Optional remote monitoring and administration with CMC-TC (SNMP)

### Rittal Liquid Cooling Package – Perfect cooling three times over

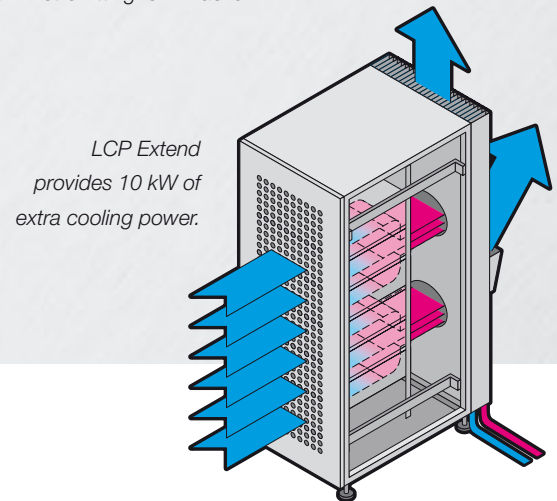
#### 1. LCP Extend

The LCP Extend is retro-fitted to the back door of the rack.

- 10 kW additional cooling power
- Air volume max. 3000 m<sup>3</sup>/h
- Rear door for 600/800 mm wide and 2000 mm high racks

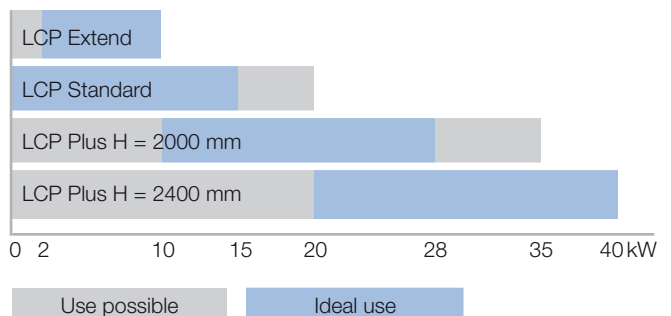


LCP Extend – Retro-fitting for IT racks.



Cooling output    Dimensions (WxHxD)    Usable height

1. LCP Extend	10 kW		42 U
2. LCP Standard	20 kW	300 x 2000 x 1000/1200 mm	42 U
3. LCP Plus	28 kW	300 x 2000 x 1200 mm	42 U
LCP Plus	40 kW	300 x 2400 x 1200 mm	51 U



# ► The new performance class

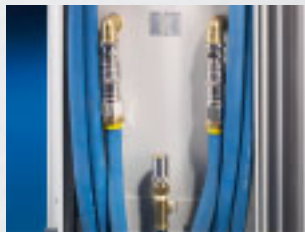
## 2. LCP Standard

The modular, upgradable and temperature-neutral LCP offers a cooling output of up to 20 kW with three cooling modules per rack.

- 15 kW with a water inlet temperature of 15 °C
- Air volume max. 3000 m³/h
- Modular assembly
- No water in the server rack



Base tray. With integral condensation and leak management.



Fasteners. Splash-free quick-release fasteners facilitate retrofitting and maintenance of individual modules while the system is operational.

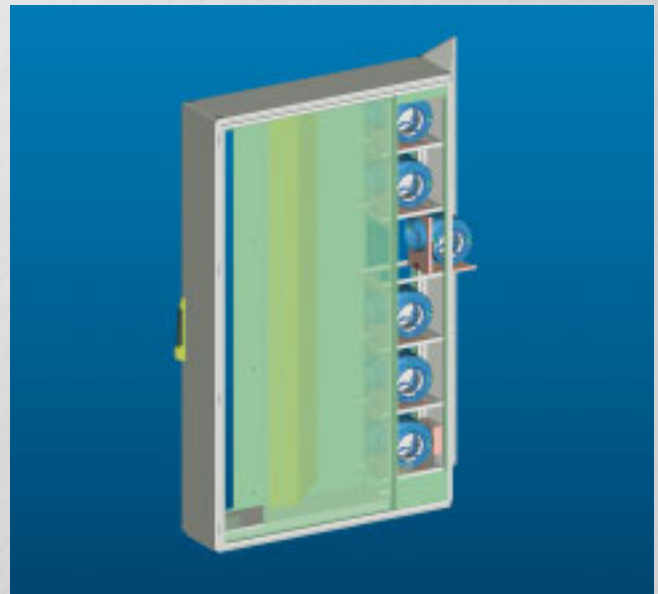


Cooling module. Scalability of the LCP thanks to modularity of the heat exchanger.

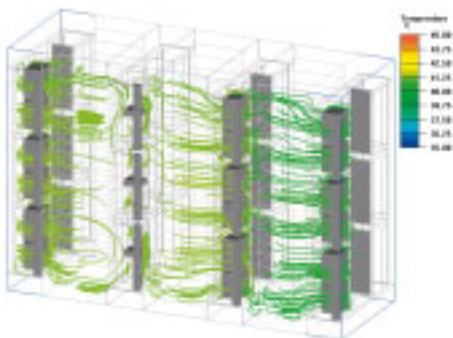
## 3. LCP Plus

The data centre solution LCP Plus with a useful cooling output of up to 40 kW per rack.

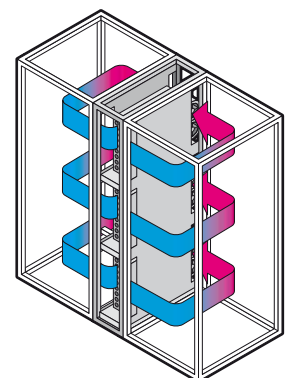
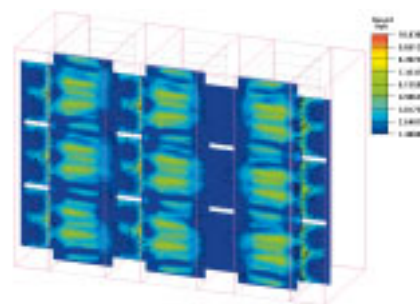
- 28 kW with a water inlet temperature of 15 °C (with a rack height of 2000 mm)
- Air volume max. 4800 m³/h
- Fan, may be replaced without the need for tools
- No water in the server rack



LCP Plus offers a useful cooling output of up to 40 kW per rack (with a rack height of 2400 mm).



CFD analyses verify the excellent thermodynamic response with LCP cooling.



With the LCP, cold air is blasted in horizontally – directly in front of each row of servers – to ensure even thermal conditions.

## ► High level of security included

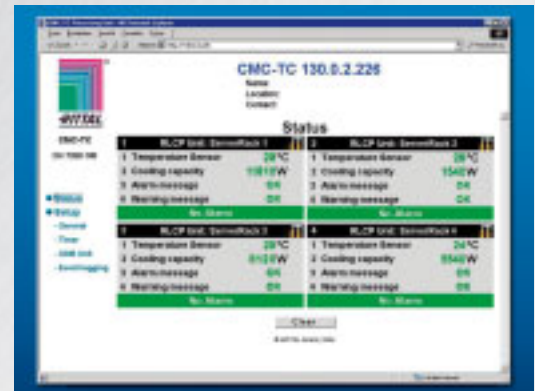


Scalability, operational reliability and redundancy come as standard with Rittal LCP. With the Liquid Cooling Package, either one or two server racks may be cooled; stand-alone and bayed siting is also possible (I) (II). Redundancy helps to ensure that the required cooling output is always available, even in the event of a malfunction.

LCP Standard and LCP Plus are ideal for a redundant water supply, thanks to the rack-optimised design (III). The IT-compatible, automatic regulation of cooling output guarantees a constant air inlet temperature for the server – even in the event of a fan failure.

The super-reliable condensate management system permits low inlet temperatures. The diffusion-sealed design of the module prevents condensation inside the rack, which in turn means reliable processes.

The LCP systems have their own controller, which can be integrated into a monitoring network via the Rittal monitoring solution CMC-TC, providing users with a comprehensive range of security solutions.



Comprehensive security solutions via CMC-TC.



I Rittal LCP is the scalable climate control concept for high performance cooling.



II With an LCP Standard or LCP Plus, two racks may also be cooled.



III The effective "N+1" technology ensures optimum redundancy.

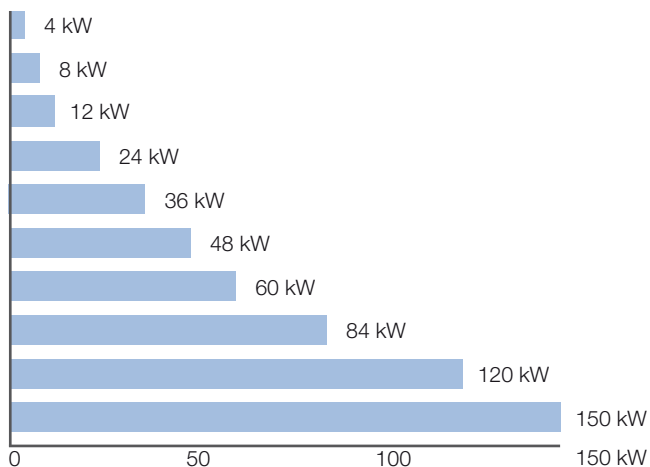
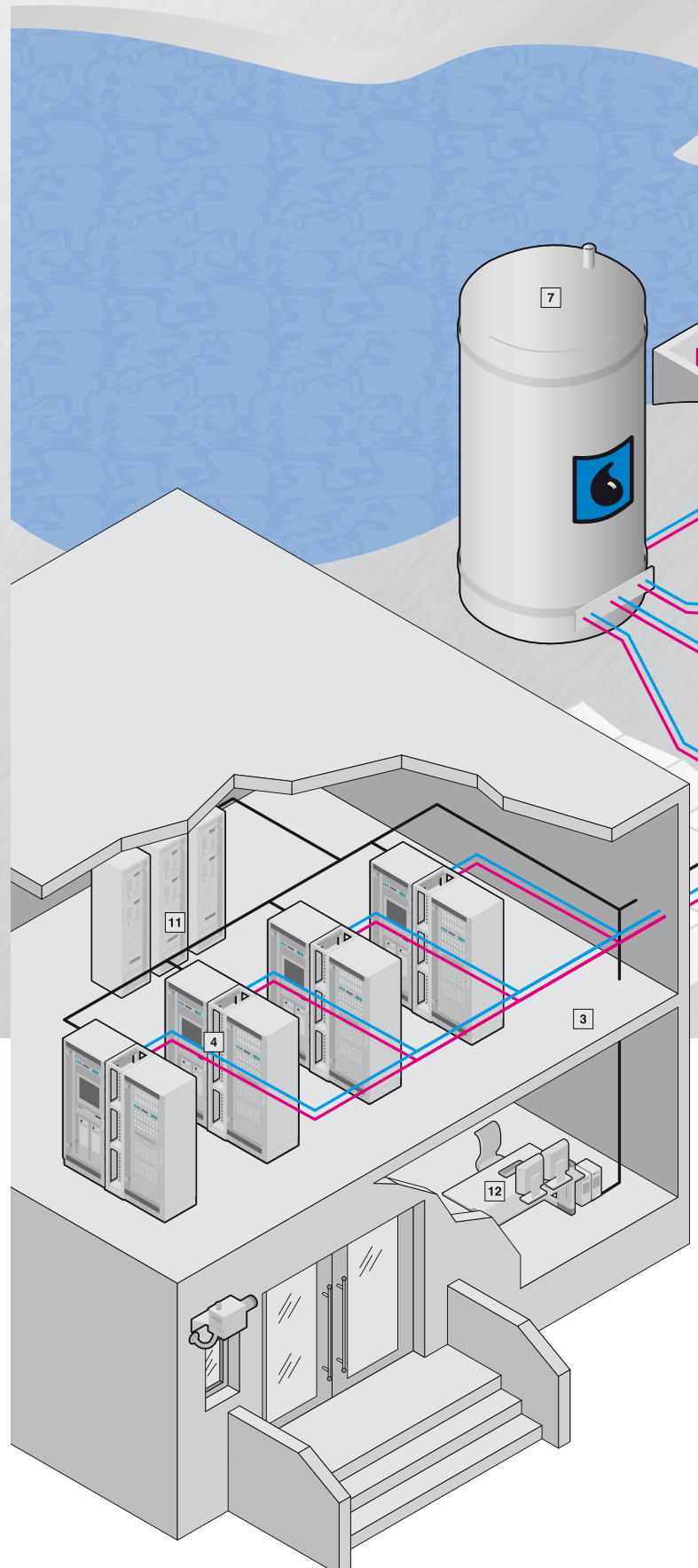
## ► Temperature-neutral data centre expansion

In data centre applications, RimatriX5 recooling systems ensure central cooling and supply of the cooling medium for liquid cooling systems, and facilitate spatial separation between refrigeration and cooling, for the temperature-neutral expansion of data centres. Recooling systems and water/water heat exchangers are optimised to the IT application conditions and may be adapted to customer-specific requirements with an extensive range of options.



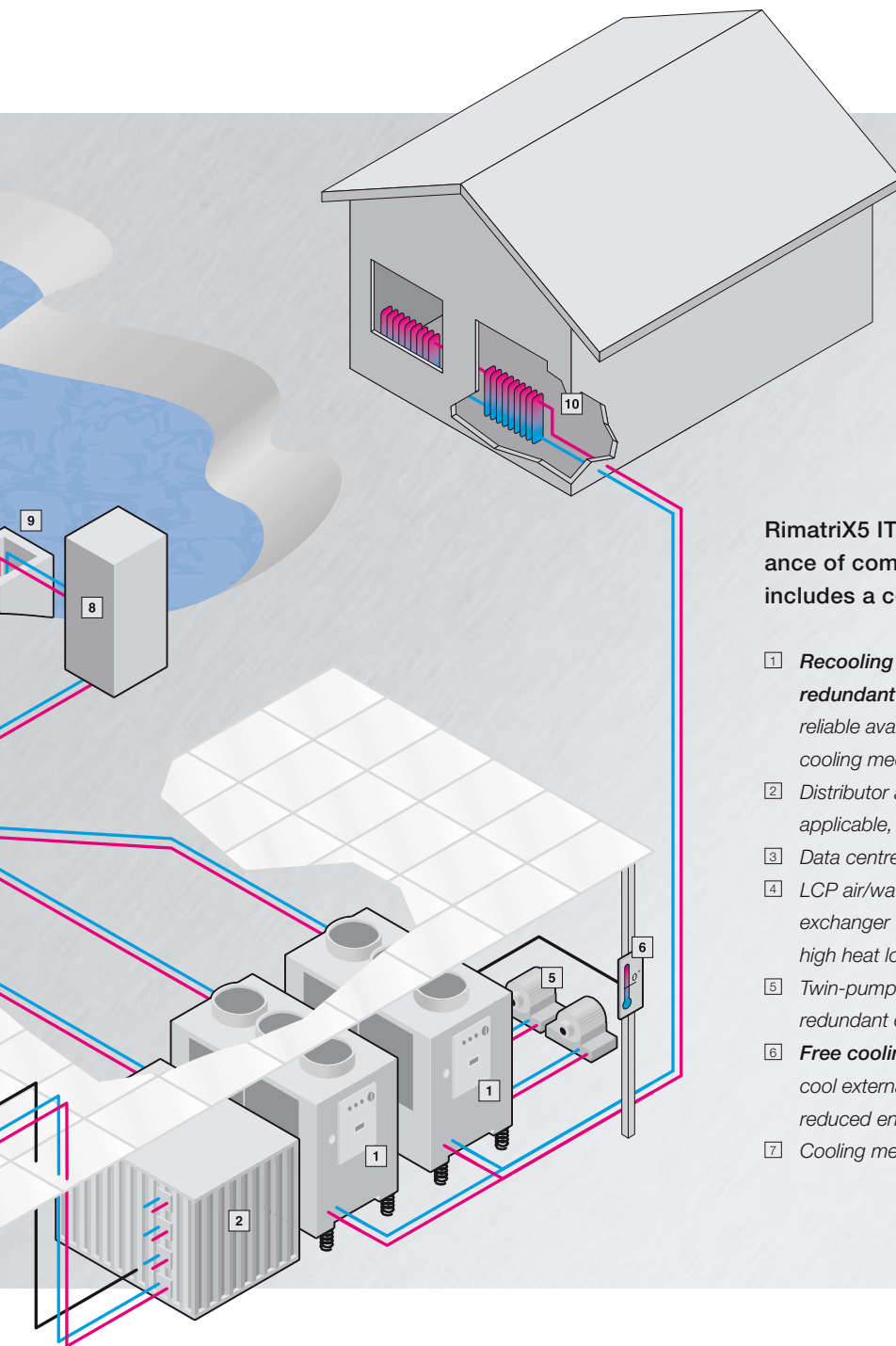
Water/water heat exchanger (left) as an alternative to a recooling system or for secondary incorporation into an existing cold water network. Benefits: The volume of water in the data centre is reduced, ensuring a predefined water quality.

Performance features of Rittal recooling systems (right) include: Pressure-sealed system, integrated automatic bypass valve, flow monitor.



Performance spectrum of RimatriX5 recooling systems.

Higher cooling outputs available on request on a project basis.



Rimatrix5 IT cooling systems offer the high performance of comprehensive system integration. This includes a complete pipeline network.

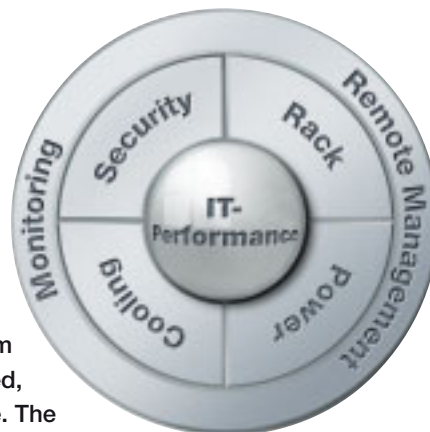
- 1 **Recooling systems in a redundant design** ensure reliable availability of the cooling medium.
- 2 **Distributor and, where applicable, pumping station**
- 3 **Data centre**
- 4 **LCP air/water heat exchanger** to dissipate high heat loads
- 5 **Twin-pump unit** for redundant operation
- 6 **Free cooling:** The use of cool external air leads to reduced energy costs.
- 7 **Cooling medium buffer store**
- 8 **Water/water heat exchanger**
- 9 **Emergency water supply:** In the event of a malfunction, e.g. power failure, a water/water heat exchanger ensures emergency cooling with mains water.
- 10 **Use of the waste heat:** Waste heat from the recooling systems may be reused by feeding into a district or process heating network.
- 11 **UPS and back-up power system**
- 12 **Central control and monitoring** of all components.

### Rittal – Your partners, from planning through to commissioning

As your project partners, Rittal offer a full range of services covering every aspect of recooling systems from A to Z – with everything from a single source. The major bonus is that the all-inclusive worry-free package leaves customers free to concentrate on their core competencies, while Rittal takes care of everything else!



# ▶ RimatriX5 – Complete solutions for a reliable IT infrastructure

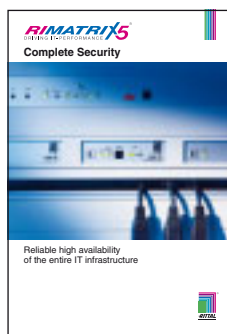


To a large extent, the performance of the IT infrastructure is reliant upon optimum interaction between individual components. Rittal RimatriX5 is the rack-optimised, holistic, scalable, super-efficient system solution for outstanding IT performance. The strategy behind the RimatriX5 concept is based on five optimum stand-alone solutions, an integral security package, plus a comprehensive range of services.



Modular energy back-up and distribution in the IT and data centre for a constant, consistent energy supply.

RimatriX5 Permanent Power



Physical rack and room protection are pivotal to ensuring high availability of the entire infrastructure.

RimatriX5 Complete Security



Holistic escalation management for the entire physical network infrastructure.

RimatriX5 Monitoring & Remote Management



A comprehensive range of services for optimum operational reliability and availability coupled with a high level of efficiency.

RimatriX5 Modular Services

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