

HIGH DENSITY COOLING SOLUTIONS

by knürr

www.knuerr.com

CoolTherm®

Server cabinet technology
with outstanding benefits

... up to 35kW cooling capacity



Blade server optimized!



knürr
environments for electronics

Setting benchmarks. Being the standard!

IT as the basis for business processes is subject to constant change. With it, however, the requirements of infrastructures also continually change. The rising cost-relevant pressures on companies therefore demand flexible, and more importantly, expandable solutions that make it possible to react to the respective current require-



Forschungszentrum Karlsruhe

ments. The objective here is to reduce investment costs to a "no more than necessary" level, with the precondition, however, of also being able to integrate the investments made into future concepts.

Knürr provides the perfect platform for setting up a scalable solution of this kind.

Knürr is one of the first global manufacturer to offer an integrated solution concept for heat loads from 1kW to 35kW per rack.

This enables financial IT investments in accordance with current requirements, and further expansions for future challenges are also possible at the same time.

Intelligent power distribution systems, unique cable management and parallel expanding and adaptable fire protection solutions complete a tailor-made scalable solution.

Servers, storage and other IT components are constantly becoming more efficient and at the same time more compact in their construction, and increasingly require less space. A data center's infrastructure requirements change considerably, especially in tackling technical and physical heat load issues and in providing the thermal management required to overcome these.

Knürr has been dedicated for over ten years now to developing individual solutions that are necessitated by the complexity of high availability data centers and IT rooms.

Essential here is the awareness that this is not achieved just by developing and producing proven-in practice racks, but rather by focussing on an all-encompassing view on the scalability of the individual heat loads, supported by innovative and equally future-oriented components, preferably from the Knürr product portfolio. CoolTherm® has set a benchmark that is now widely-used and recognised in the industry, and as a result has matured to become the standard. CoolTherm® therefore ranks as one of the best performing components of a perfected complete IT solution.

... up to 35kW cooling capacity



Blade server optimized!



The **CoolTherm®** from Knürr defines standards that will continue to apply long into the future.

With highly developed innovative systems (based on the highest possible quality) and the enhanced thermal management presented by “**High Density Cooling Solutions**”, CoolTherm® sets the benchmarks when it comes to economic efficiency (TCO).

See for yourself what the benefits of this revolutionary efficiency and the already tried, tested and proven safety in everyday operations in IT rooms and data centers mean to your company.

Knürr is an expert solution provider for data center infrastructures.



The CoolTherm® server rack platform comes in different varieties, equipped with customer-specific options...

Uninterruptible Power Supply (UPS)

Liebert UPS systems to protect against power failure, power fluctuations and for maintenance work. It provides high availability, modular power supply systems for the most diverse processes and applications – for individual server racks, ranging from small IT rooms through to complex data centers.

Automatic door opener

Automatic front and rear door opening in case of overheating in the rack and fire extinguishing at room level. Effective intervention options in emergency situations.

Remote Monitoring System (RMS)

All procedures can be constantly monitored:

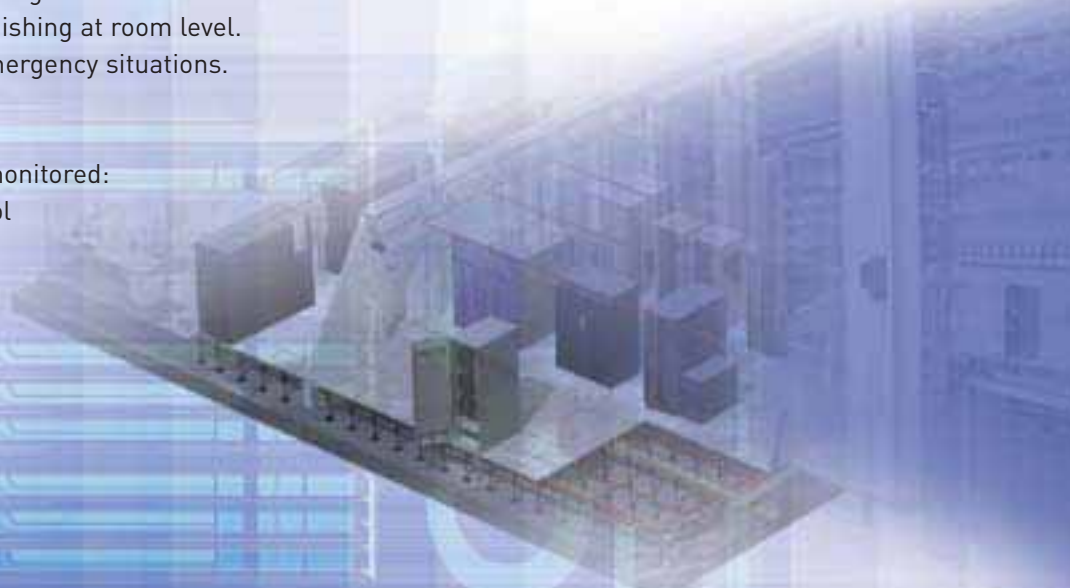
- ▶ Temperature development/control
- ▶ Fire detection
- ▶ Humidity detection
- ▶ Leakage detection
- ▶ Fan operation
- ▶ Door functions
- ▶ Vibrations

Fire detection and extinguishing

Independent and highly-effective extinguisher systems at rack and rack suite level.

Floor stand for IT rooms without raised floors

Where a raised floor is not available, racks can be equipped with a floor stand that enables power and water supply from below.



Front

Features

Cooling concept for IT applications with high dissipated heat losses – for blade and rack servers.

- V35 high performance air-to-water heat exchanger
- Channelled airflow in the entire rack
- Heat loss discharge via cooling water
- Fans with temperature-dependent speed regulation
- Three-way valve for regulating the cooling water flow (optional)
- Fans, n+1 redundant
- Alarm management
- Redundant high-performance power distribution for supplying servers (optional)
- User-friendly and service-optimised

Advantages

- Autonomous server rack; independent from environmental conditions
- Secure and reliable cooling capacity of up to 35kW per CoolTherm® (blade servers)
- Highest packing density for high-performance servers, consequently, up to 80% surface space saving in the data center
- Reduced room and building requirements (thermal management, raised floors, room heights)
- Highest possible leakage safety with strict separation of heat exchangers and server installations
- Up to 30% improved cooling system energy efficiency
- Highest planning security with freely selectable scalability
- Significant Total Cost of Ownership (TCO) reduction



High-performance power supply.

cooling capacity	Width	Height	Depth	Useable height	Useable depth	Weight	Water content	Electrical data
10kW	700mm	1800mm	1200/1300mm	29 HU	740/840mm	290kg	5.9kg	200 – 264V 1000W
	700mm	2000mm		33 HU				
	700mm	2200mm		38 HU				
15kW	800mm	1800mm	1200/1300mm	31 HU	740/840mm	310kg	7.9kg	200 – 264V 1400W
	800mm	2000mm		35 HU				
	800mm	2200mm		40 HU				
	800mm	2400mm		44 HU				
22kW	800mm	2200mm	1200/1300mm	37 HU	740/840mm	340kg	9.9kg	200 – 264V 1800W
	800mm	2400mm		42 HU				
35kW*	800mm	2200mm	1200/1300mm	37 HU	740/840mm	340kg	9.9kg	200 – 264V 1800W
	800mm	2400mm		42 HU				

Spread chilled water: 12/18°C *12/22°C
 Air temperature to server: 22°C *25°C
 Air temperature return from server: 35°C *50°C
 Connection heat exchanger: 1" female thread
 Connection condensate tray: 5/8" water hose connection

Pressure loss (heat exchanger): 0.5bar
 max. operation pressure heat exchanger: 10bar
 max. absolute humidity on site: 8g/kg
 Standard colours: RAL 7021 (black grey)
 RAL 7035 (light grey)

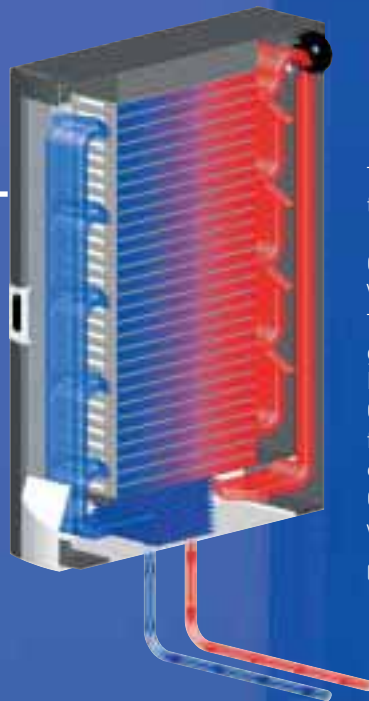
Back



Optimum ventilation, temperature-dependent and speed-controlled.



Easy fan exchange while doors remain closed.



The impressive **CoolTherm®** technical concept:

Closed air circulation with V35 air/water heat exchanger. The dissipated heat is therefore not given off as an additional load on the IT room (as is usual). Connection is made installation-friendly to a building or rack-own cold water system. Operation and service are performed with no difficulty whatsoever.

(Smaller cross-section shown)



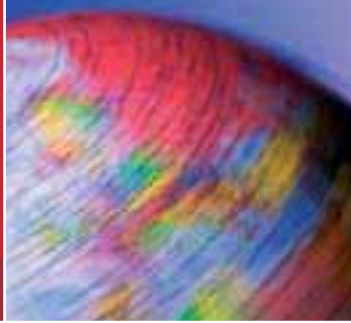
V35® high performance air-to-water heat exchanger.

V35® air-to-water heat exchanger

Heat volume to be dissipated: **CoolTherm® 22kW nominal as an example**

- Water-side
 - Prerun temperature: 12°C (preferred)
 - Postrun temperature: 18°C (preferred)
 - Max. pressure loss: 0.5bar
 - Volume flow: 0.9 l/s
 - Ventilation valve
- Air-side
 - Up to 5500 m³/h
 - Air outlet: 20°C to 25°C

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to the
customer



Australia

Tel. +61 (0) 2 96 66 - 48 66
Fax +61 (0) 2 96 66 - 48 68



Austria

Tel. +43 (0) 1 - 9 70 22 - 0
Fax +43 (0) 1 - 9 70 22 - 29



Belgium

Tel. +32 (0) 3 - 450 7777
Fax +31 (0) 76 - 542 1015



Brazil

Tel. +55 (0) 15 - 3263 - 2444
Fax +55 (0) 15 - 3263 - 1024



China

Tel. +86 (0) 10 62 38 58 28
Fax +86 (0) 10 62 38 58 29



Czech Republic

Tel. +420 (0) 595 691 192
Fax +420 (0) 595 691 199



Czech Republic

Tel. +420 (0) 737 211 711



Denmark

Tel. +45 () 44 85 04 85
Fax +45 () 44 94 99 89



Finland

Tel. +358 (0) 19 - 8711 1
Fax +358 (0) 19 - 8711 500



France

Tel. +33 (0) 1 43 77 85 85
Fax +33 (0) 1 43 39 02 10



Greece

Tel. +30 2310 - 50 04 43
Fax +30 2310 - 52 59 82



Hong Kong

Tel. +852 28 51 22 11
Fax +852 28 51 20 60



Hungary

Tel. +36 (0) 1 4 21 - 30 08
Fax +36 (0) 1 4 21 - 30 00



India

Tel. +91 (0) 802 - 3 38 03 47
Fax +91 (0) 802 - 34 05 65



Israel

Tel. +972 (0) 9 - 892 44 44
Fax +972 (0) 9 - 892 44 55



Italy

Tel. +390 (0) 2 95 34 30 80
Fax +390 (0) 2 95 34 31 04



Japan

Tel. +81 (0) 4 26 - 56 - 58 11
Fax +81 (0) 4 26 - 56 - 58 08



Netherlands

Tel. +31 (0) 76 - 54 22 92 2
Fax +31 (0) 76 - 54 21 01 5



Norway

Tel. +47 () 64 83 84 40
Fax +47 () 64 83 84 50



Poland

Tel. +48 (22) 6 76 94 62
Fax +48 (22) 6 76 98 10



Portugal

Tel. +351 (21) 3 22 41 63
Fax +351 (21) 3 22 41 69



Russia UNI

Tel. +7 (095) - 780 95 55
Fax +7 (095) - 780 95 56



Russia ICS

Tel. +7 (095) - 755 68 19
Fax +7 (095) - 913 99 87



Russia OCS

Tel. +7 (095) - 995 25 75
Tel. +7 (812) - 324 28 70



Russia

Tel. +7 (095) - 517 88 39
Tel. +7 (812) - 783 55 08



Singapore

Tel. +65 () 67 73 - 1583
Fax +65 () 67 73 - 1582



Slovakia

Tel. +421 (0) 2 - 64 28 78 81
Fax +421 (0) 2 - 64 28 78 91



Spain

Tel. +34 91 - 8 89 89 41
Fax +34 91 - 8 89 84 92



Sweden

Tel. +46 (0) 8 - 59 47 07 50
Fax +46 (0) 8 - 59 47 07 69



Sweden LBW

Tel. +46 (0) 8 - 58 41 08 80
Fax +46 (0) 8 - 58 02 67 69



Switzerland

Tel. +41 (0) 44 806 54 54
Fax +41 (0) 44 806 54 64



Taiwan

Tel. +886 (0) 2 - 2276 - 10 19
Fax +886 (0) 2 - 2279 - 88 83



United Arab Emirates

Tel. +971 (0) 4 - 335 29 95
Fax +971 (0) 4 - 334 99 51



United Kingdom

Tel. +44 (0) 1480 49 61 25
Fax +44 (0) 1480 49 63 73



USA

Tel. +1 (818) 5 34 - 28 40
Fax +1 (818) 5 34 - 28 41

Regional Sales Offices



Hamburg

Tel. +49 (0) 41 01 / 40 01-0
Fax +49 (0) 41 01 / 40 01-99

Cologne

Tel. +49 (0) 22 36 / 89 00-0
Fax +49 (0) 22 36 / 89 00-99

Leipzig

Tel. +49 (0) 3 41 / 2 45 15-0
Fax +49 (0) 3 41 / 2 45 15-99

Munich

Tel. +49 (0) 89 - 4 20 04-200
Fax +49 (0) 89 - 4 20 04-199

Stuttgart

Tel. +49 (0) 71 52 / 93 67-0
Fax +49 (0) 71 52 / 93 67-99



knürr
environments for electronics

Knürr AG
Global Headquarters

Mariakirchener Straße 38
94424 Arnstorf • Germany
Tel. +49 (0) 87 23 / 27 - 0
Fax +49 (0) 87 23 / 27 - 154
www.knuerr.com

www.knuerr.com

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