



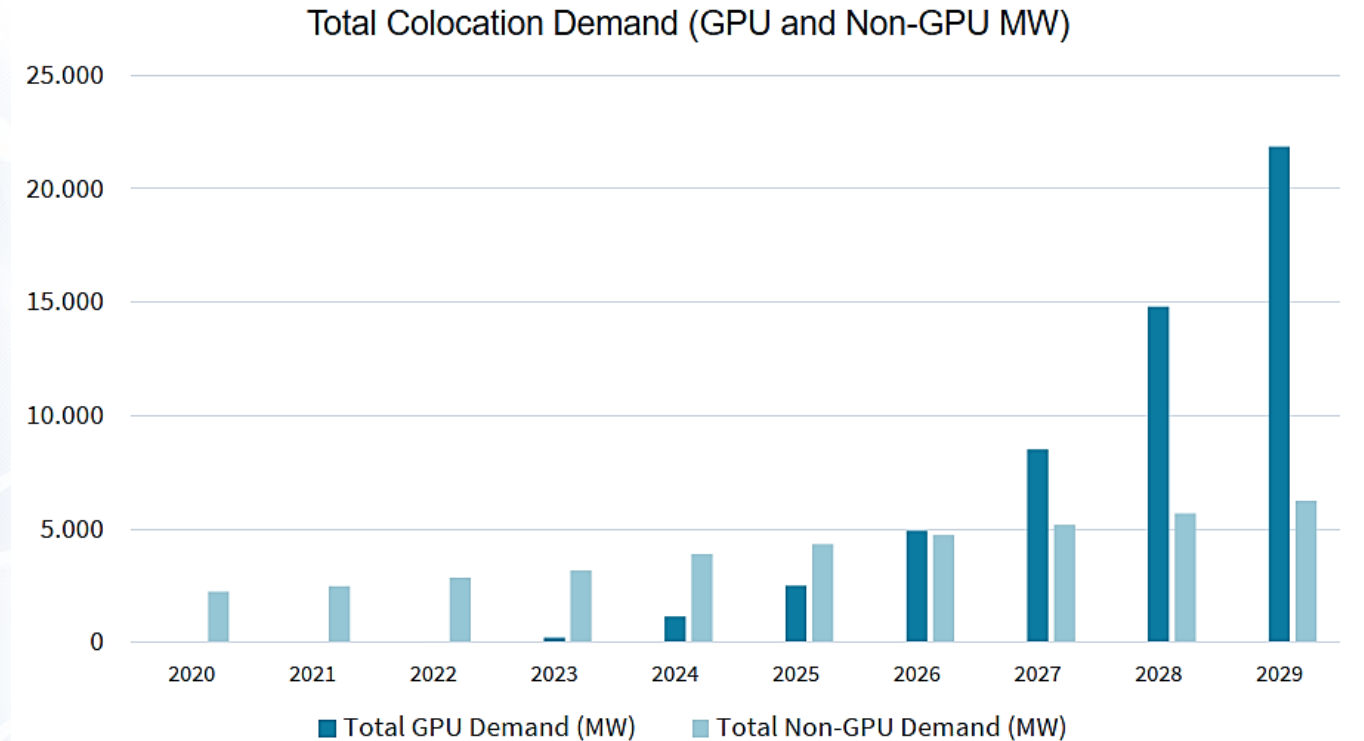
# Efficient and space-saving cooling for high-density colocation

Datacenter Forum, Copenhagen

Weiss Technik – Air Solutions

# AI demand and rack density are rising.

## The challenge of data center cooling



Source: JLL Research

- DC market is moving towards HD racks (20+ kW)
- Dedicated AI cluster up to 100 kW and more



## NVIDIA DGX H100/H200 – The current standard for AI infrastructure.

Feature	Specification
Operating Temperature	5° C to 30° C (41° F to 86° F)
Relative Humidity	20% to 80% non-condensing
Airflow	1 105 CFM Front-to-Back @ 80% fan PWM
Heat Output	38,557 BTU/hr

Source: NVIDIA

- 8 x H100/H200 Tensor Core GPUs per DGX
  - 4 x DGX systems per rack
  - Airflow: 7.510 m<sup>3</sup>/h
  - Heat load: 45,2 kW
- dT: 18 K

# Density range is driving new cooling technologies.

## The challenge of data center cooling

- 1. Is there an Air Cooling solution that can bridge up to 50 kW per rack – optimized for colocation purposes?**
  - Space saving on the footprint
  - Separated from IT infrastructure
  - Energy efficient
- 2. Do Liquid Cooling solutions mark the end of room-based Air Cooling and chillers?**

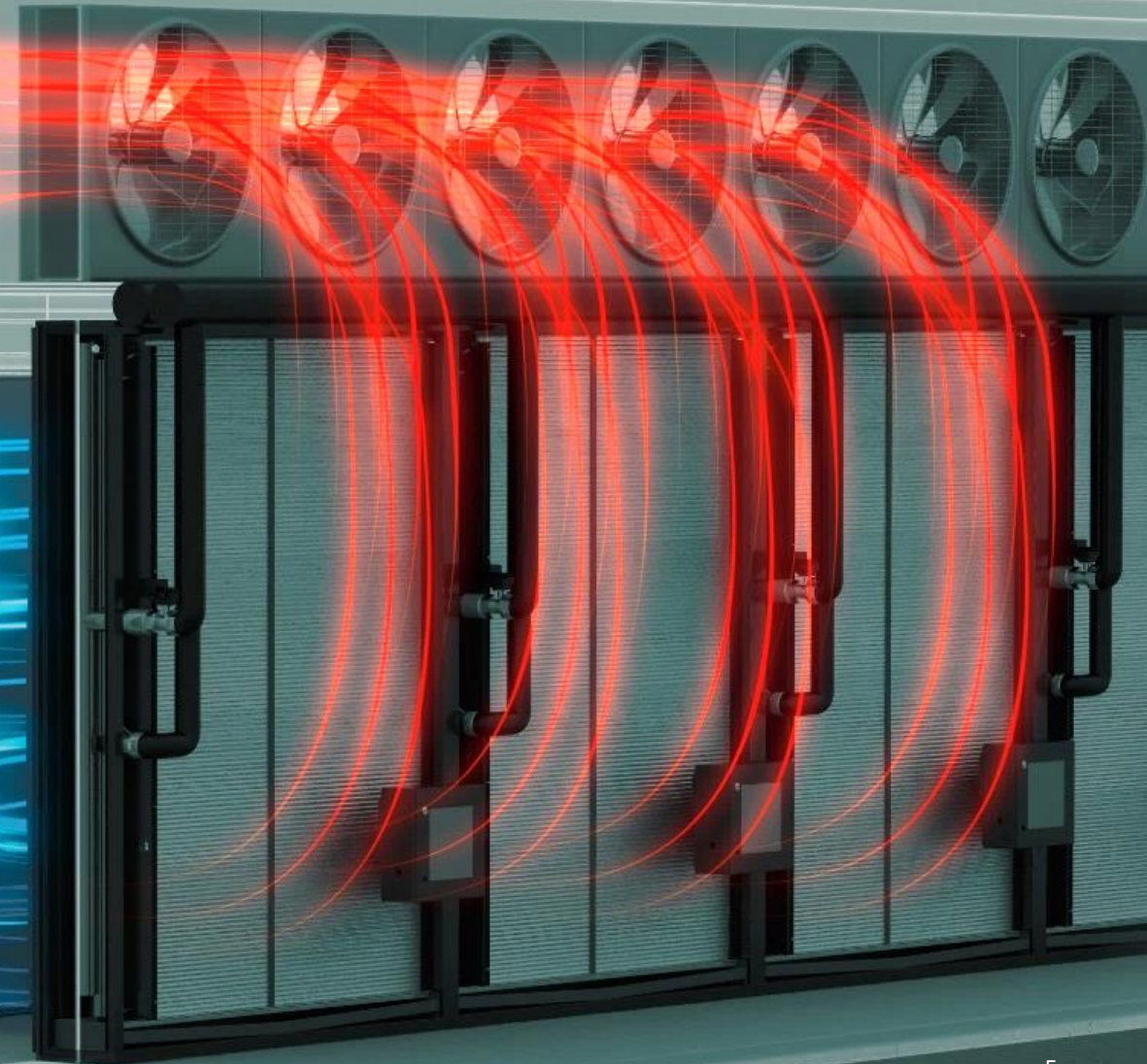


## Cooling wall system

Built-in solution that maximizes cooling potential

- Utilizing almost the entire room height/width
- Transforming service corridor into a walk-in cooling chamber
  - Enlarged coil and filter surfaces
  - Reduced internal pressure losses
  - Minimized floor space requirement

**Best-of-class room-based air cooling – highest capacity per footprint and minimal power consumption!**





# Air-conditioning for a data center in Norway. Vindur® CoolW@ll® – Case Study

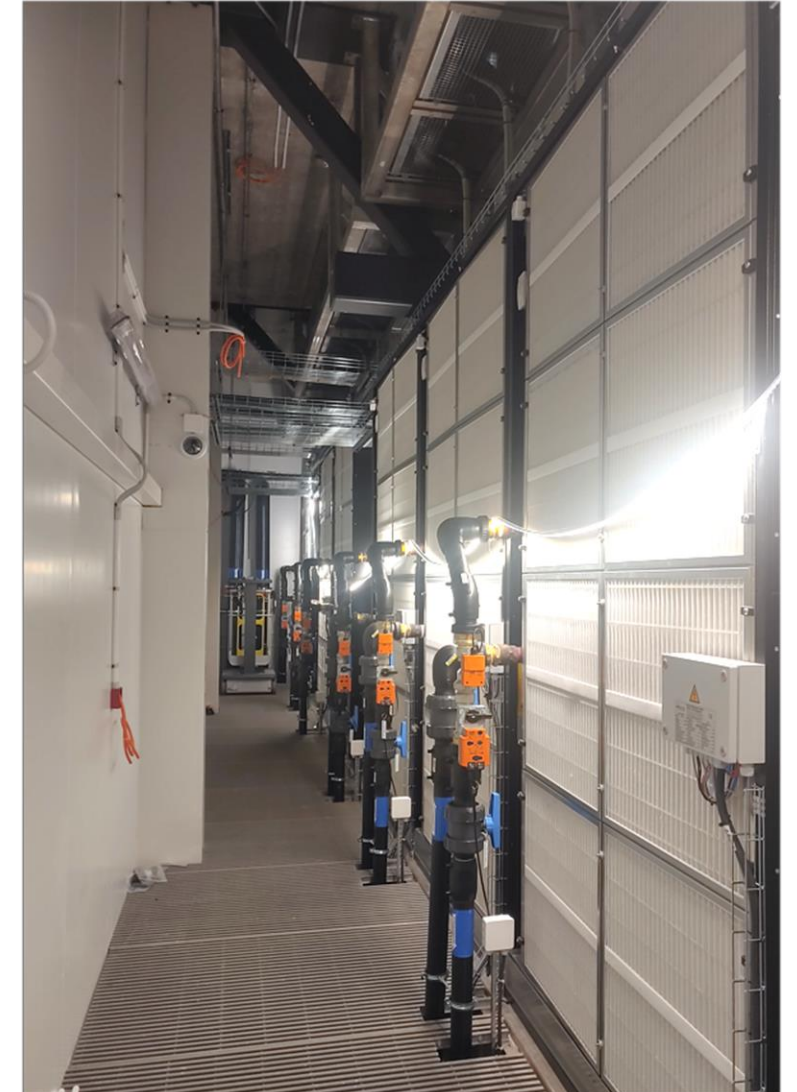
## The challenge

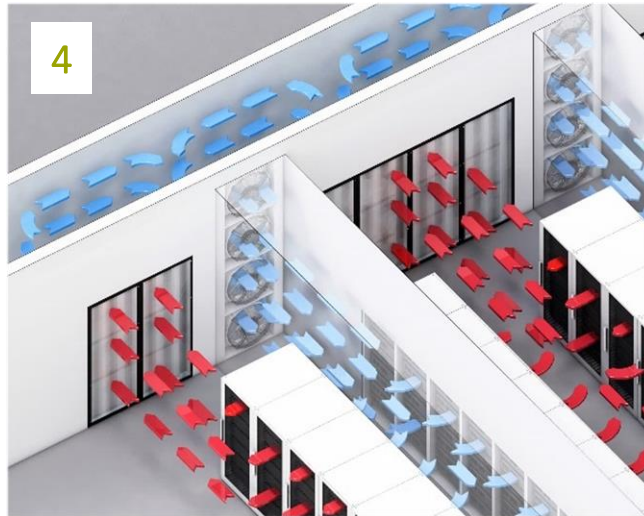
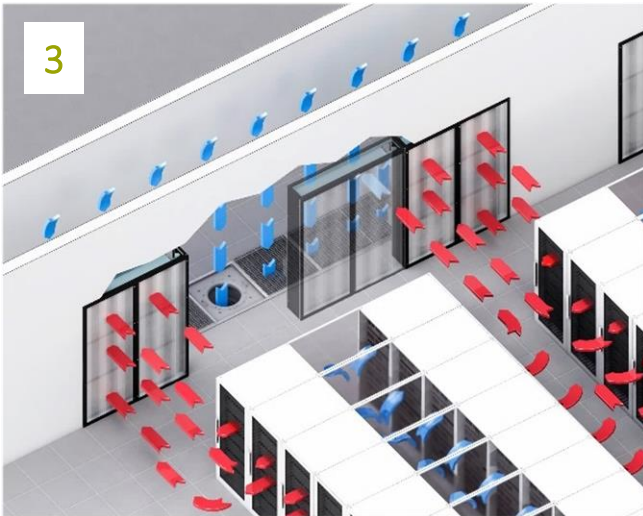
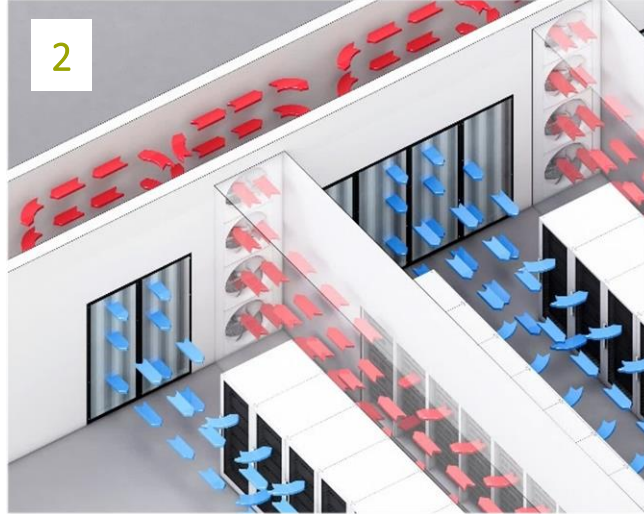
- Air-condition a state-of-the-art data center in Kristiansand
- Efficiently manage heat loads of 32 kW per rack in a limited space

## The solution

- CTS Nordics chose Weiss Technik's patented CoolWall technology
- 48 CoolWall kits were implemented in the first building and have been in operation since last year







**Can be used with a hot or cold aisle containment and adapted to individual room heights.**

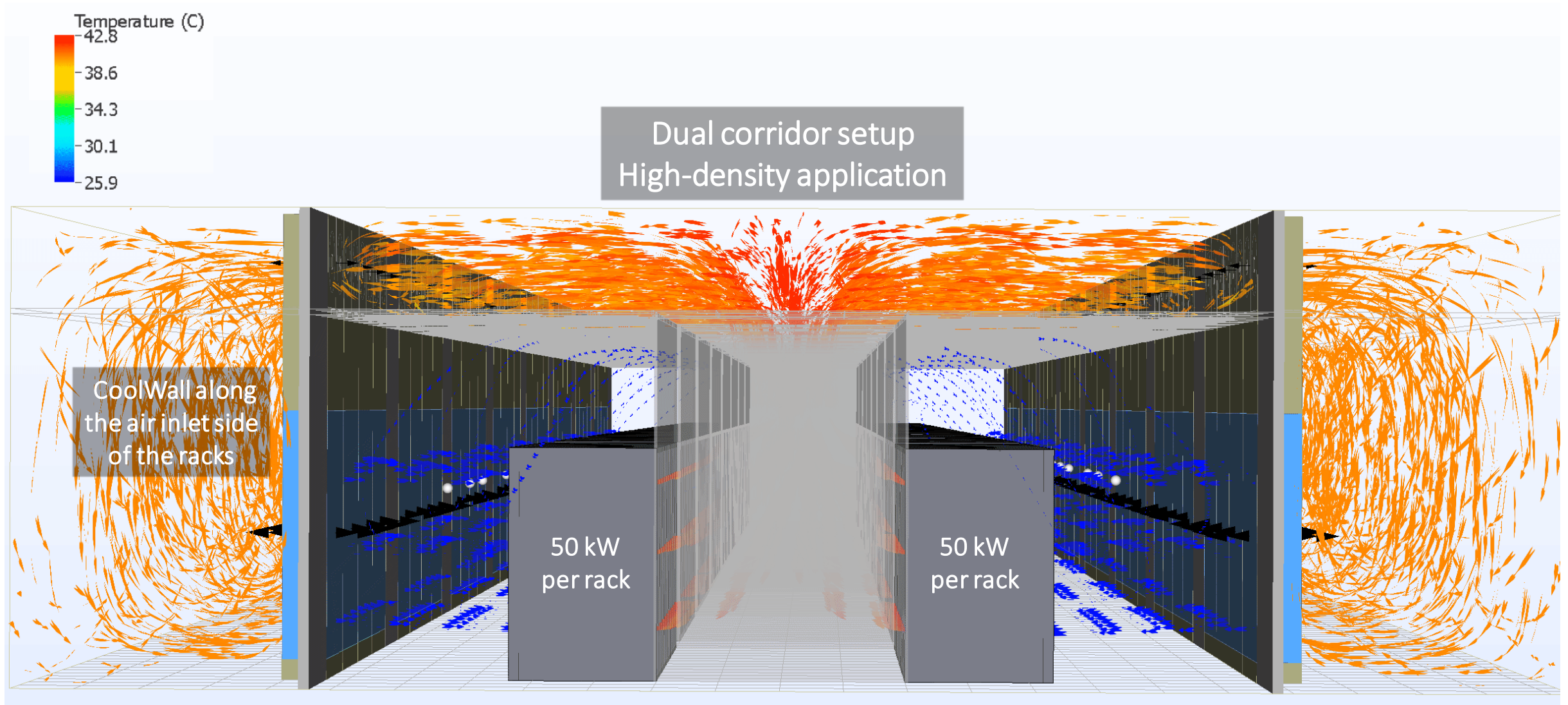
### Hot aisle

- with return air ceiling
- without air plenum

### Cold aisle

- with raised floor
- without air plenum







# Density range is driving new cooling technologies.

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Source: NVIDIA

## NVIDIA GB200 NVL72 – The next chapter in generative AI.

- 72 Grace Blackwell GPUs in one rack (liquid cooled)
- Heat load: approx. 120 kW

### Points to note:

- Liquid Cooling (cold plates, direct-to-chip) does not remove all the heat, rule of thumb is 70/30.
  - a.  $120 \times 70 \% = 84 \text{ kW}$  of heat removed by DLC
  - b.  $120 \times 30 \% = 36 \text{ kW}$  of heat removed by air
- Liquid cooling is essential for dedicated AI data centers.
- Air Cooling will still play an important role.
- The future will be HYBRID!



## SCHUNK GROUP

Competence in materials  
engineering and machine  
building

1,448 billion € sales

100 million € Investments p.a.

68% Equity ratio

9.200 Employees

65 Locations

26 Countries

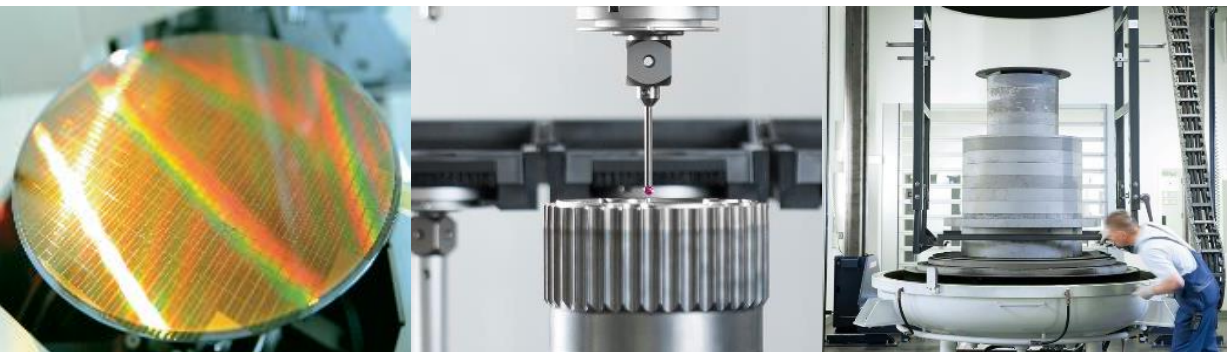


## MATERIALS ENGINEERING

- Carbon →
- Graphite →
- Fiber composites →
- Ceramics →
- Sinter metals →
- Quartz →

## MACHINE BUILDING

- Environmental Simulation
- Air conditioning and clean room technology
- Industrial ovens
- Ultrasonic welding machines
- Optical machines
- Laser machining





## We are specialists for Clean Air Solutions and Thermal Management.



### Operating rooms

Mediclean® OR clean air canopy to protect patients and OR staff



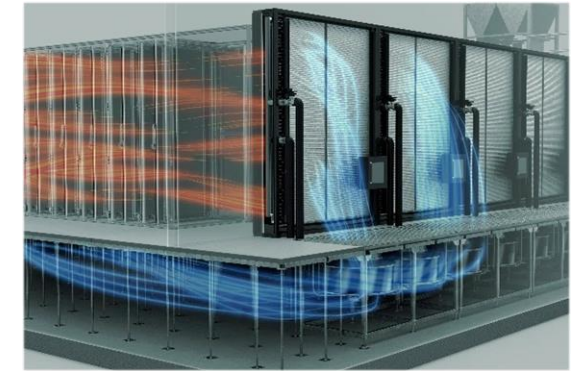
### Clean rooms

Cleanroom components and complete cleanrooms according to international standards



### Indoor Farming

Vindur® Compact for Controlled-environment agriculture



### IT air conditioning

Vindur® CoolW@II® for efficient cooling of data centers



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