

# Webinar – Data Center Technologies

Investor Relations – March 2024

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GVP & President DCT, Stefan Aspman

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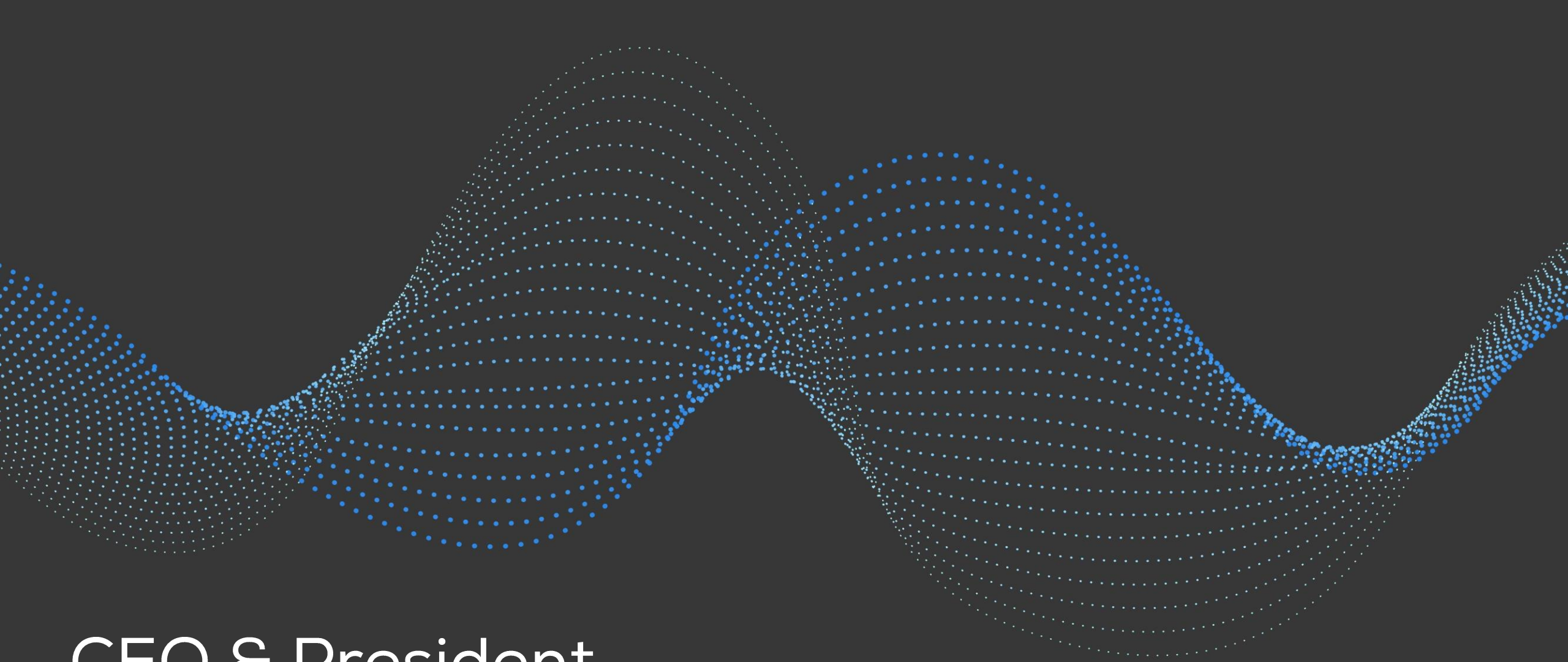


# TODAY'S FOCUS

← DATA CENTER  
COOLING MARKET

OUR OFFERING &  
HOW WE  
DIFFERENTIATE →





CEO & President,  
Klas Forsström



# Expansion of DCT

## History

### Step 1

- Strengthened market position through new product launches & broadening of customer base
- Expanded production footprint in Americas
- Expansion into EMEA through acquisition

## Today

### Step 2

- New SyCool versions developed for both air & liquid cooled servers
- Steady growth through expansion of customer base and existing customers
- New factory in Cork, Ireland 2024

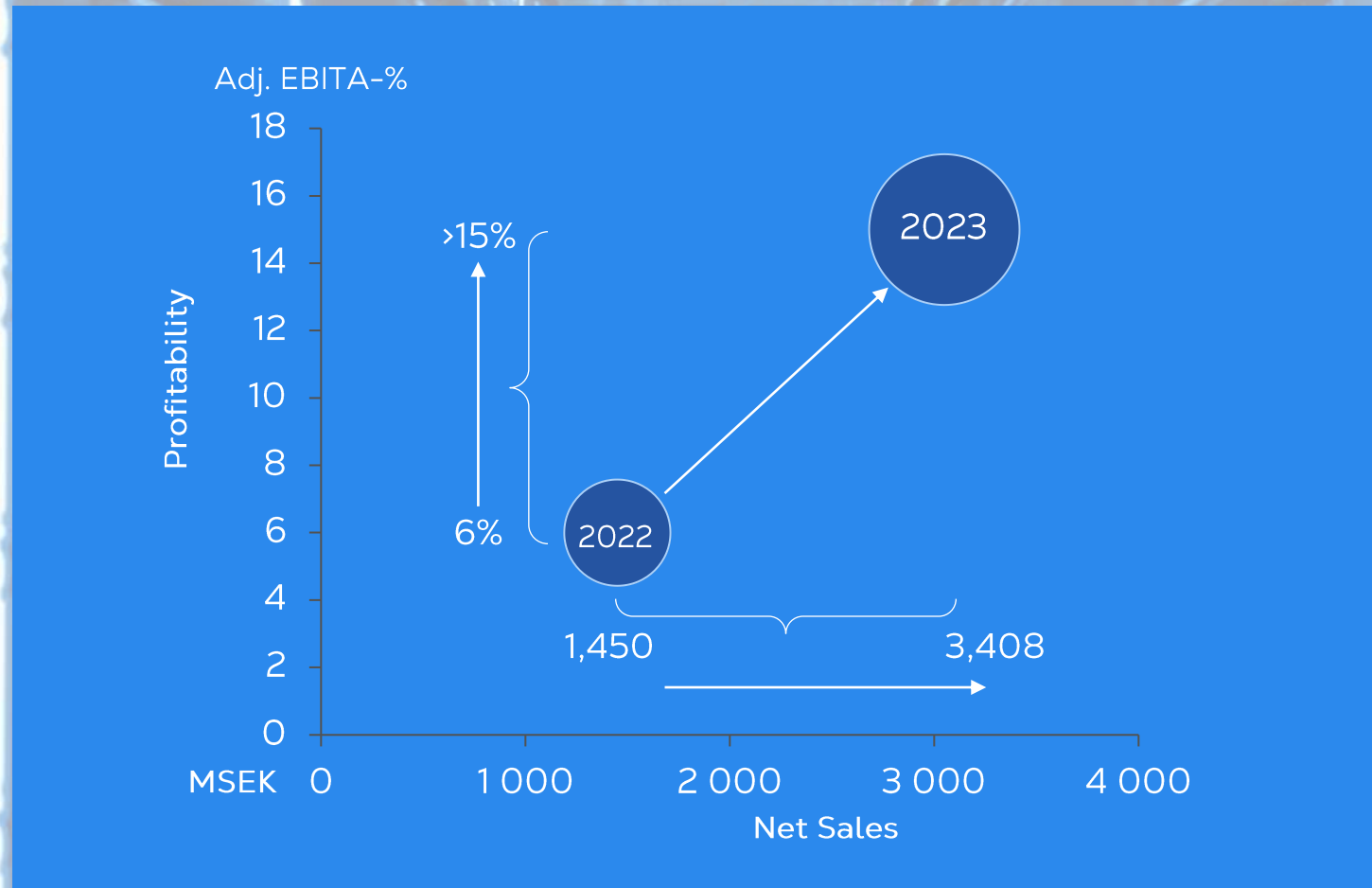
## Future

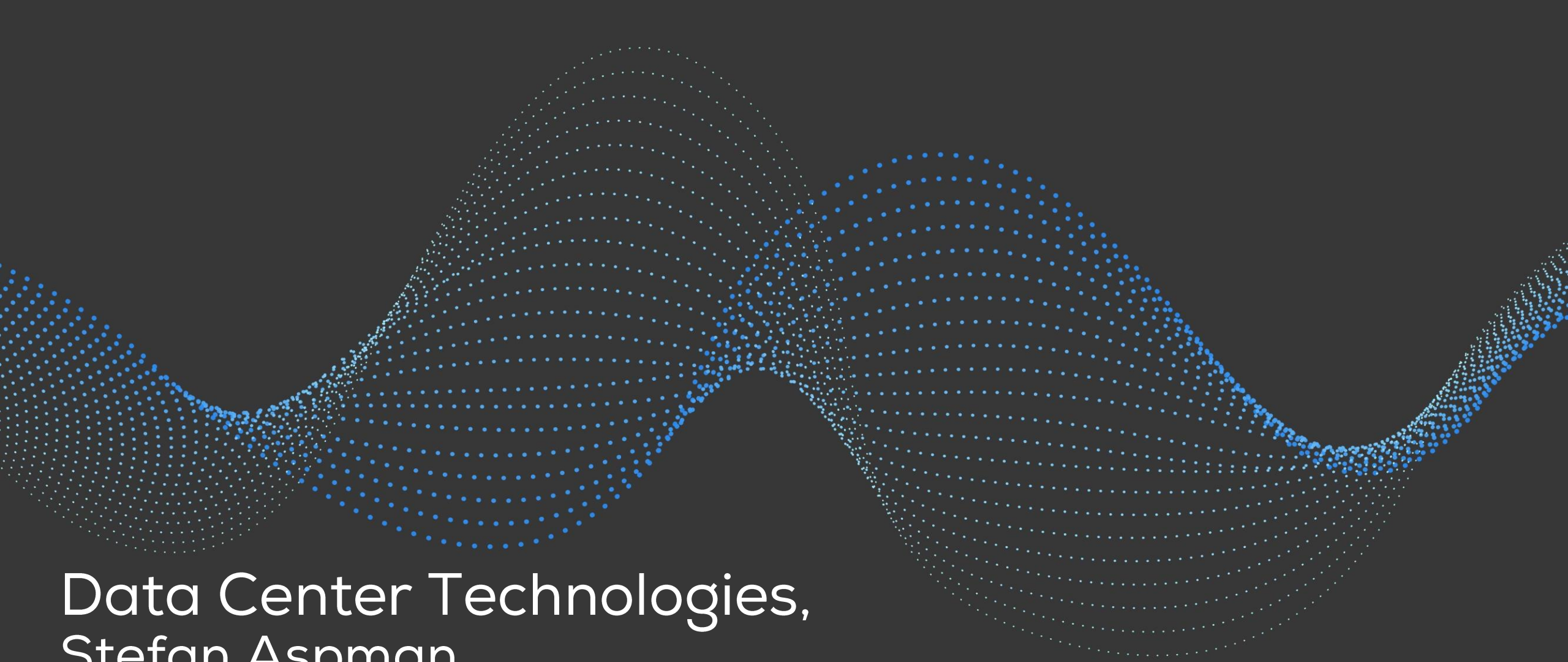
### Step 3

- Further expansion of technology portfolio through own development and M&A
- Continued investments in Service and customer facing functions



# Delivery on strategic intent – significant growth achieved



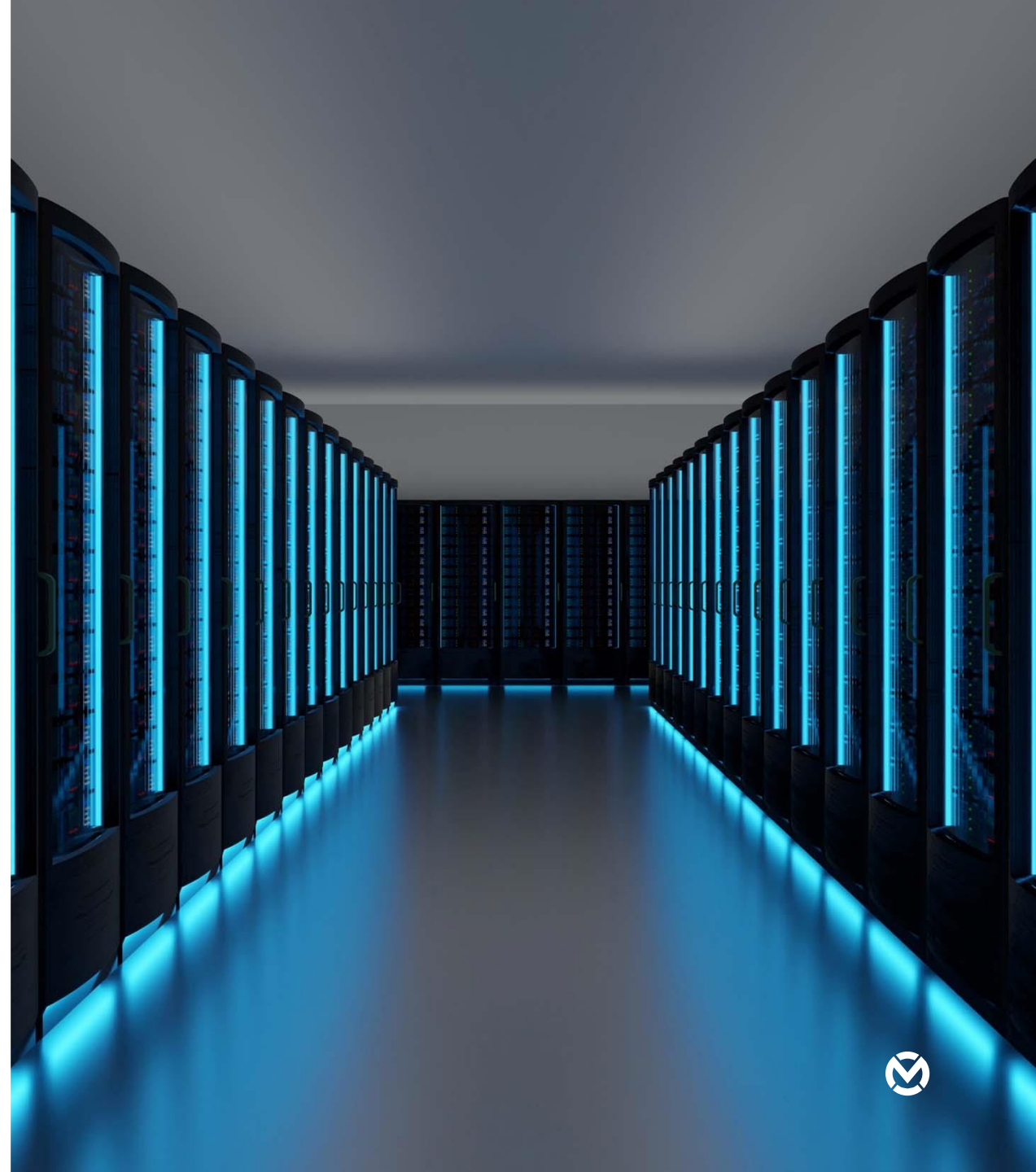


Data Center Technologies,  
Stefan Aspman  
Frank Pellegrino  
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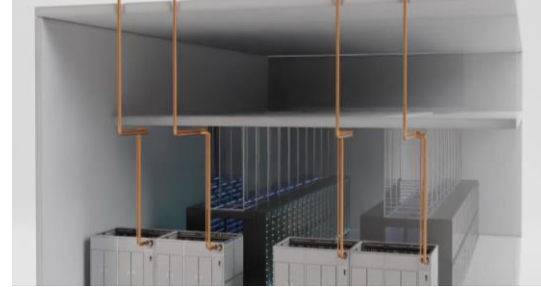
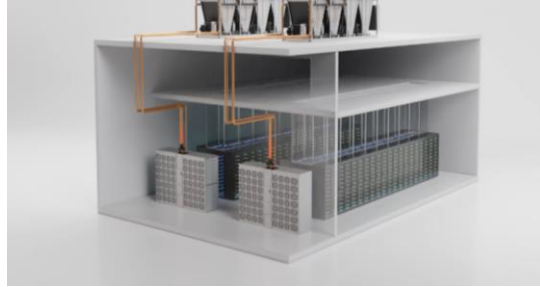
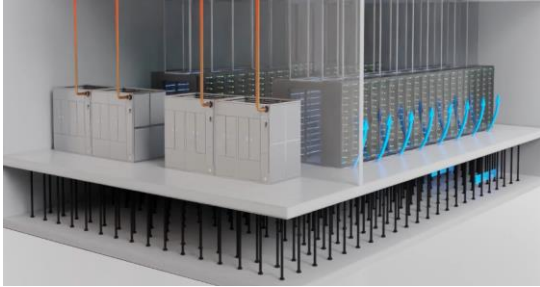
# Customers challenge - THERMODYNAMICS

- CPUs (Central Processing Units) and GPUs (Graphics Processing Units) are silicon based microprocessors which contain many millions of transistors. These transistors switch on and off billions of times per second to process data.
- Every time a transistor switches, it uses a tiny bit of electricity, and that electrical energy is converted into heat according to the first rule of thermodynamics.
- As the heat builds, the chips performance is affected in a negative way ultimately leading to potential failure.
- Therefore the heat should be removed to keep these chips in their optimal operating environment





# The basic steps of cooling and heat rejection



## 1. DISSIPATION (INSIDE THE SERVER)

Heat sinks, on-board fans or liquid cooling solutions dissipate heat away from the components

## 2. CAPTURE (INSIDE THE DC)

Heat is captured by air flow, containment, air handlers, or Cooling Distribution Units etc.

## 3. TRANSFER

Air, water or other refrigerant carries heat away

## 4. RELEASE (OUTSIDE THE DC)

Outdoor condensers, cooling towers, or heat exchangers release the heat

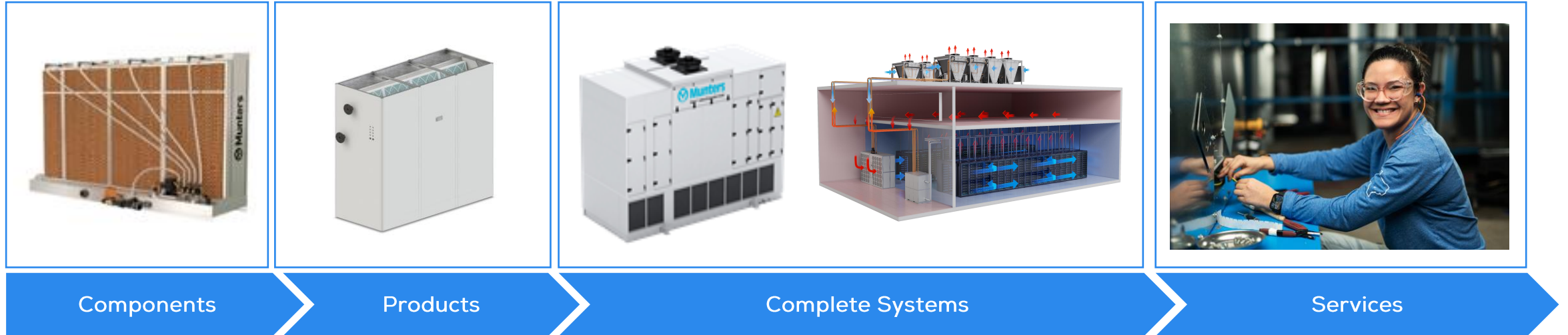


# OUR FOCUS

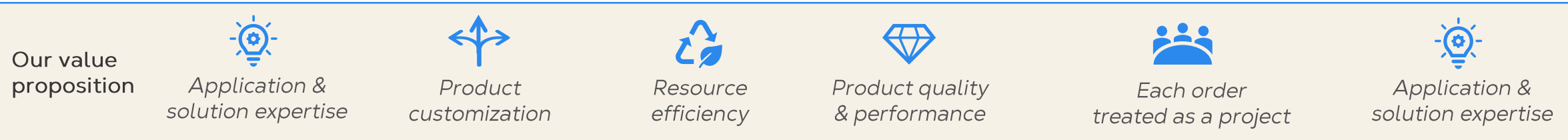
Creating customer optimized thermal management solutions



# We offer a broad range of innovative solutions



← Sold to OEMs →      ← Typically sold to end customers →

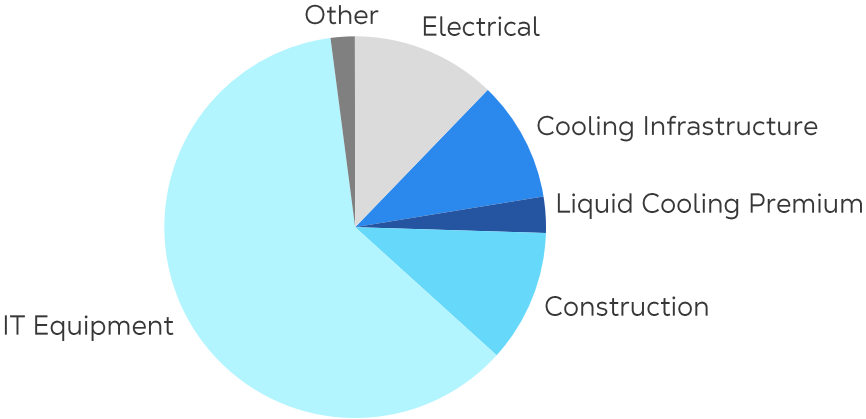


← WHAT →      ← HOW →

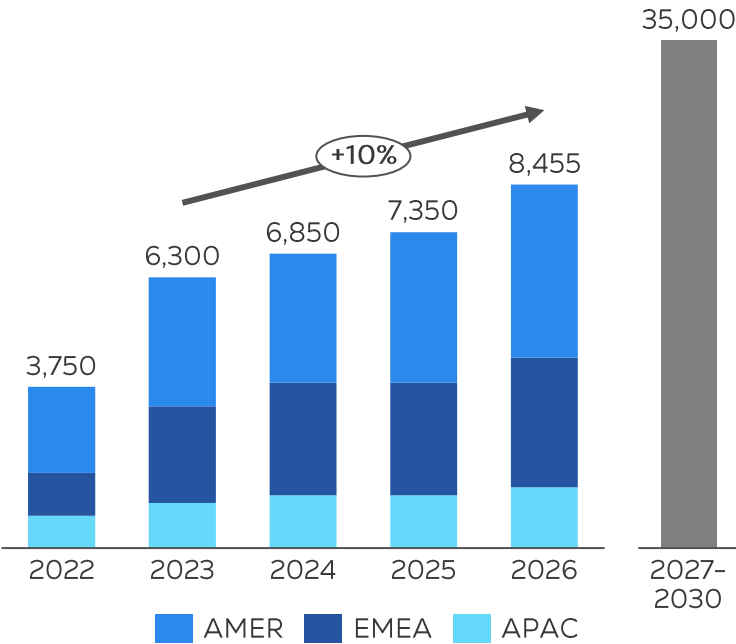


# Total market growth and our addressable market

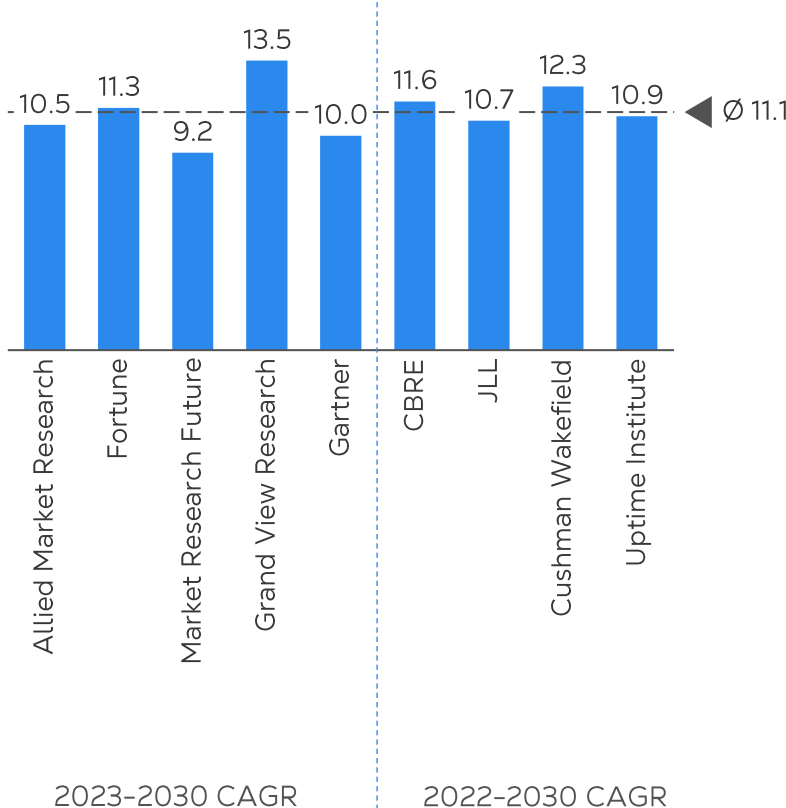
Cooling approximately 10-15% of total DC CAPEX – with a higher price point for liquid cooling due to complexity



MW of cooling for new DC deployments



Growth rate according to industry sources

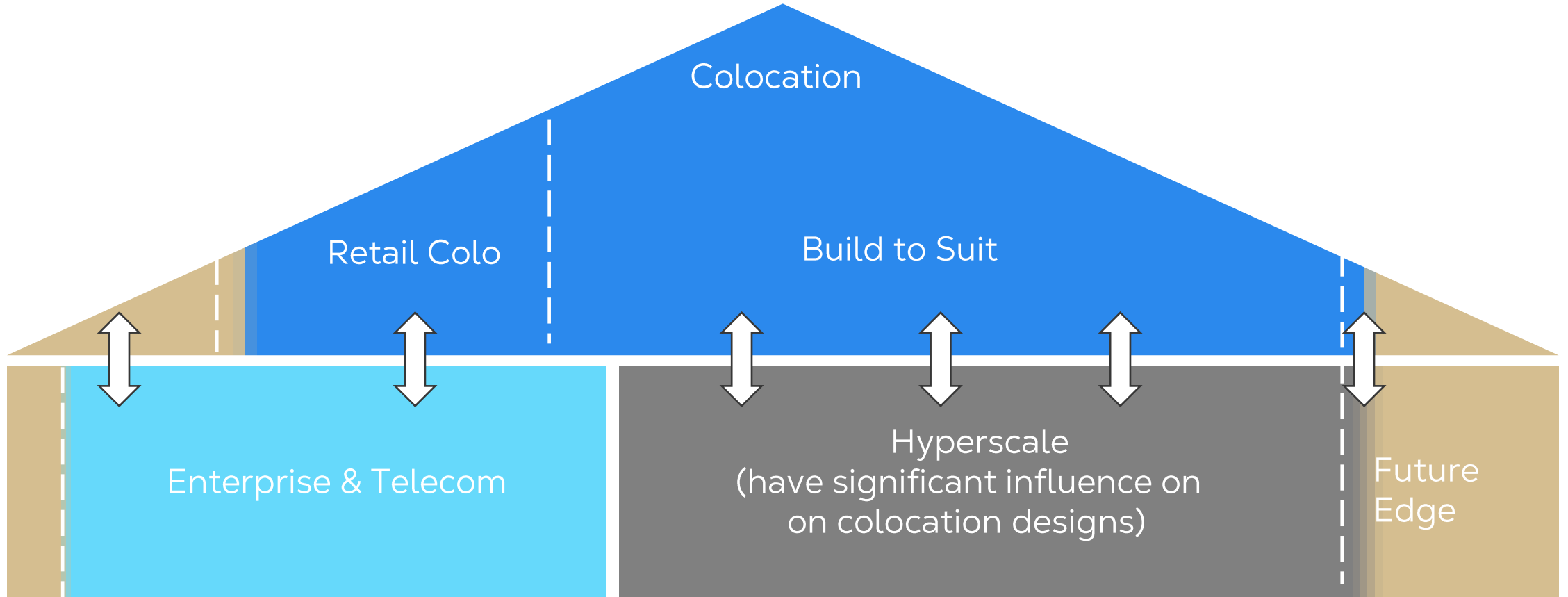


Source: Market estimates from various sources (as defined in the right graph) & Munters analysis



# Our customers - a connected ecosystem

Colocators main customers are Hyperscale and Enterprise customers



*Customer segments not built to scale – design to show the connections between segments*



# Market players can be divided into four main categories



# Strong market trends – disruptive development



## DIGITALIZATION

M2M  
FUTURE MOBILITY  
LOW LATENCY  
MORE USERS



## IPHONE MOMENT OF AI

GENERATIVE AI  
APPLIED AI  
FROM ANALYTICS TO  
AUTOMATION



## CLIMATE CHANGE AND RESOURCE SCARCITY

GRID RESTRICTIONS  
DROUGHTS / WATER SCARCITY  
HEAT WAVES & RECORD TEMPS  
REGULATIONS/LEGISLATIONS

# Strong market trends - disruptive development





# Changes that GPU's will bring



General computing,  
cloud services etc.



AI, high performance computing

 × 3 (30 KW)

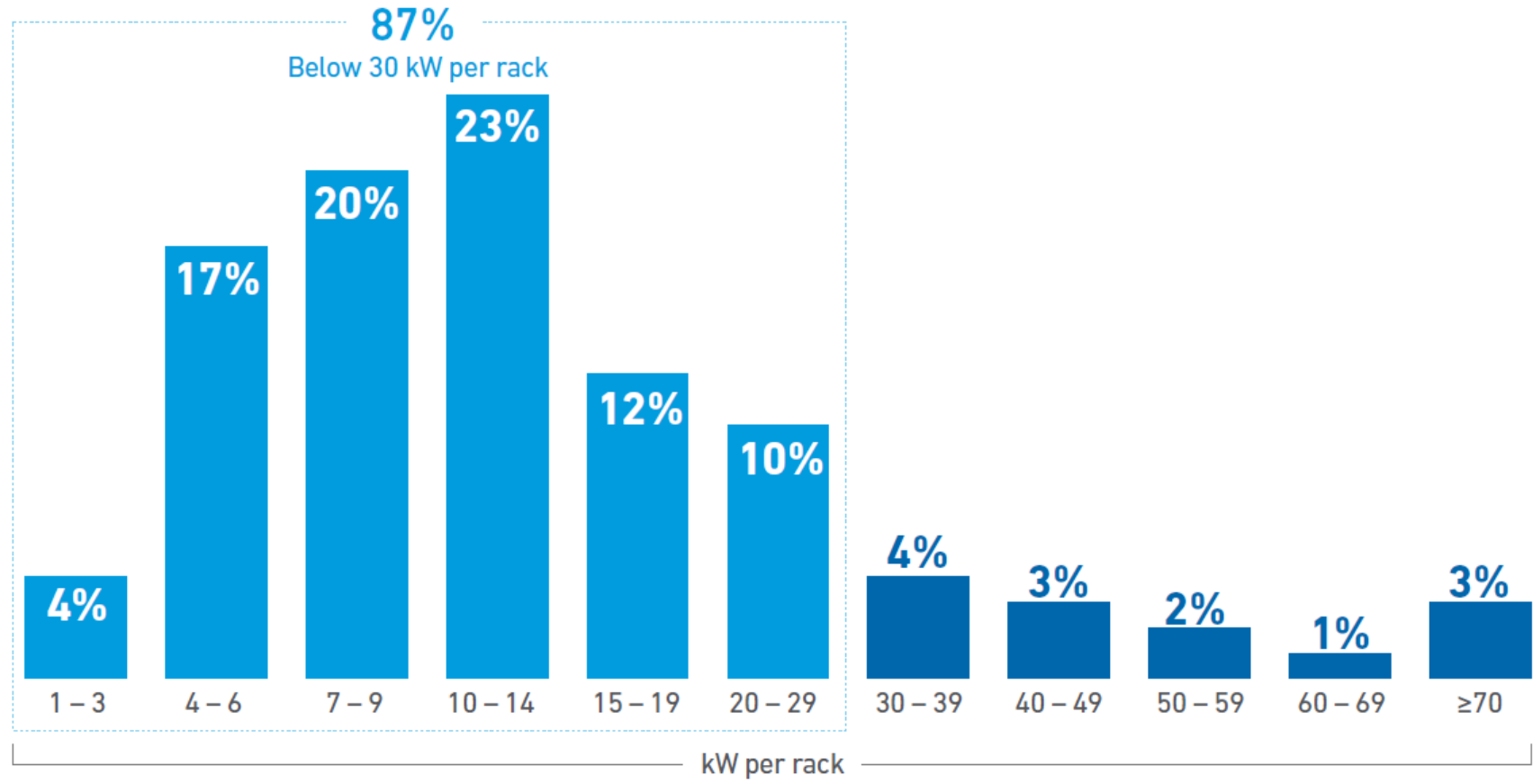
 × 8 (100 KW)

 × 25 (300 KW)

# Power density – extremes emerging slowly

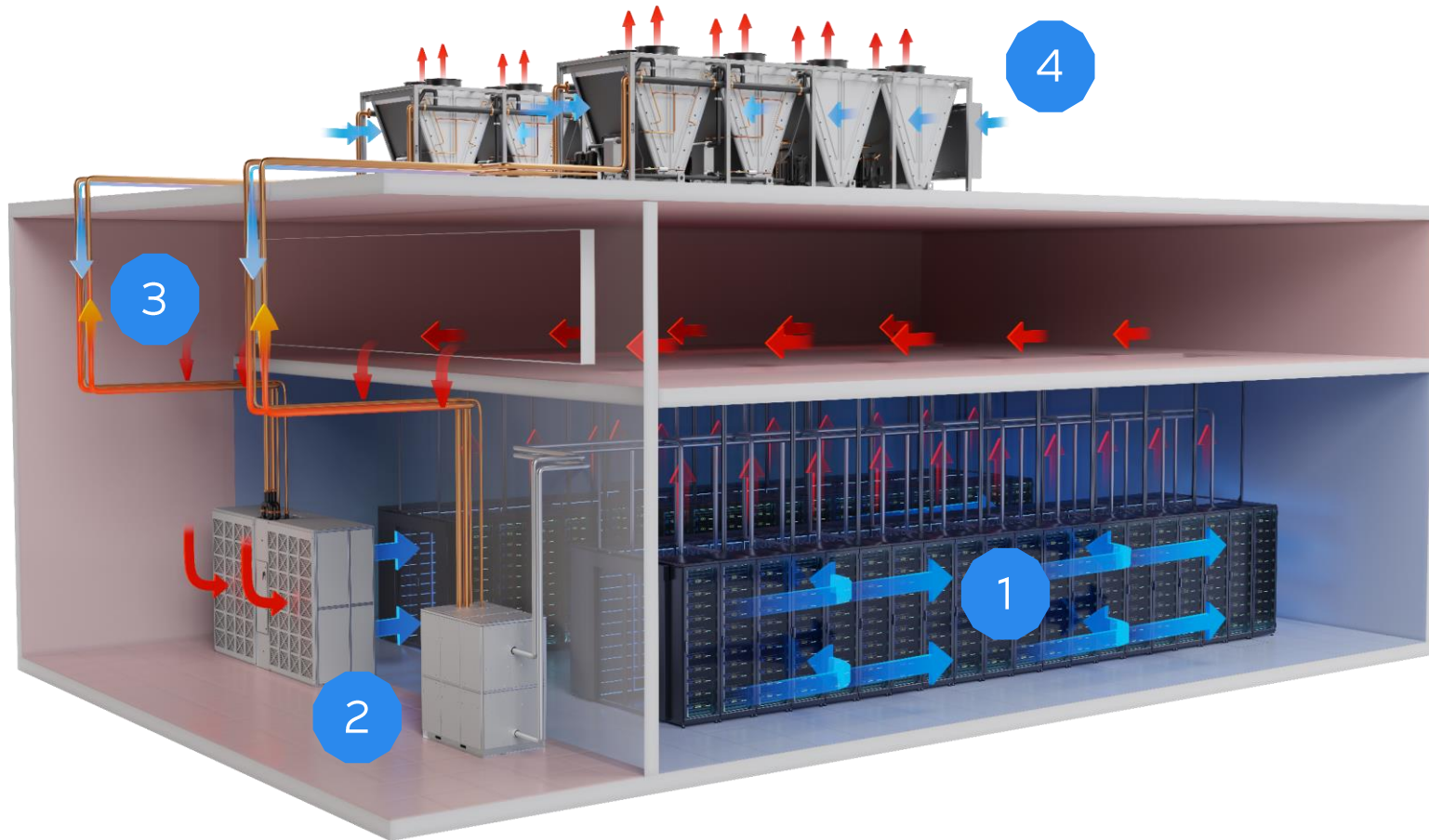
## Few have racks over 30kW, but extreme densities are emerging

What is the highest server rack density deployed in your site? (n=687)



(All figures rounded.)

# SyCool Split - How to deal with increased power density



1. **Dissipation** – taking heat from the chip to the air or the liquid
2. **Capture** – heat is captured by the CRAH (air) or the CDU (liquid)
3. **Transfer** – heat energy is transported to the heat rejection equipment
4. **Release** – heat is rejected to atmosphere or to be re-used for another purpose



# DC market key trends



AI is creating exponential demands and leading to significant planned investments



Solutions that can deploy in mass scale



Systems that are future proof for high densities, liquid cooling and edge applications



Continued focus on energy efficiency and energy recovery





# Contact details Investor Relations



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# Capital Markets Day 2024

May 21 2024, 13:00 CET

At Six, Brunkebergstorg 6, Stockholm

