Systemair Group

Sustainable Data Center Cooling

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Systemair in brief & in Data Centers offering

Established at HQ in Skinnskatteberg, Sweden

1974

Turnover –Annual net sales in mill. EUR

890

Number of countries with own sales companies

54

Number of production facilities in 20 countries

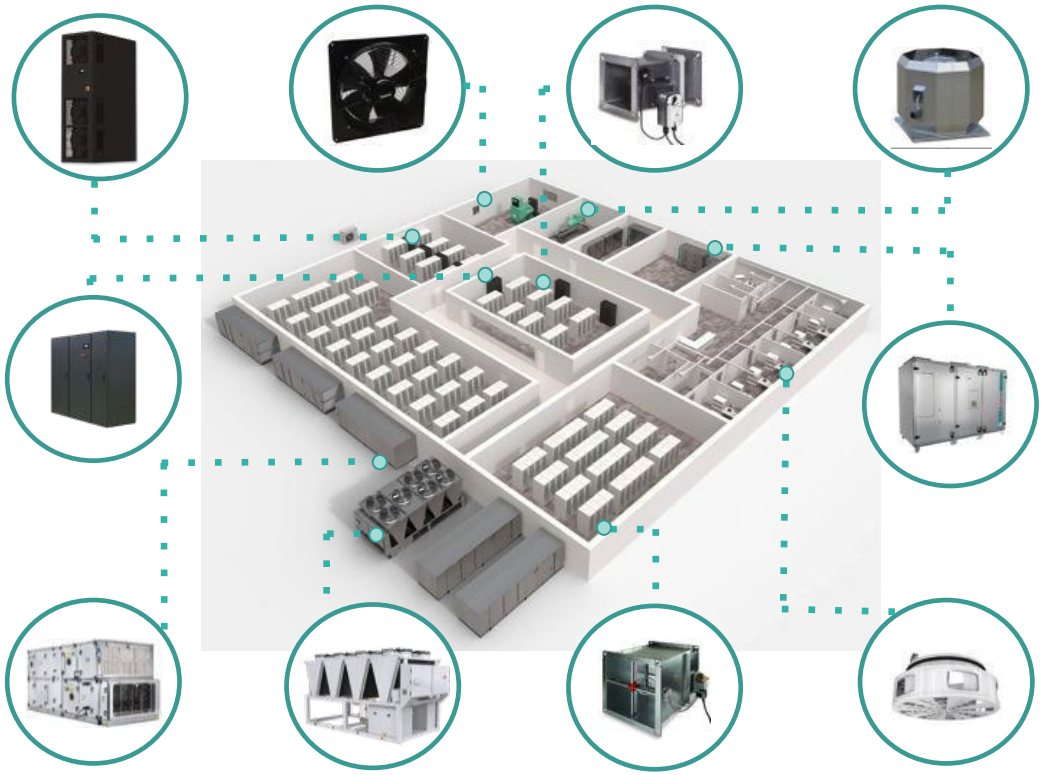
29

Number of new products and solutions during 2018/19

160

Countries exported to

>135



Data Centre cooling impact

- Data Centres represent around 3% of world power consumption and discharge ~ 200 million metric tons of CO2 annually
- Cooling is one of the top issues in current data centres and critical to their availability
- Cooling & ventilation represents 30-40% of power consumption in a data centre
- Huge influence in overall data centre efficiency

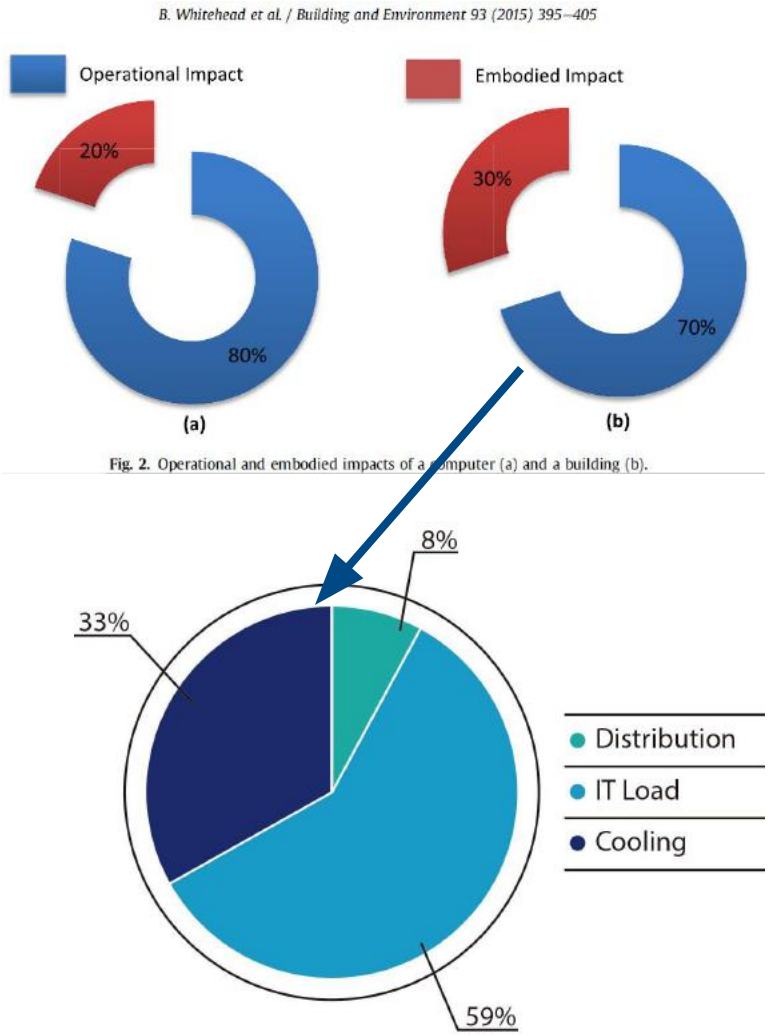
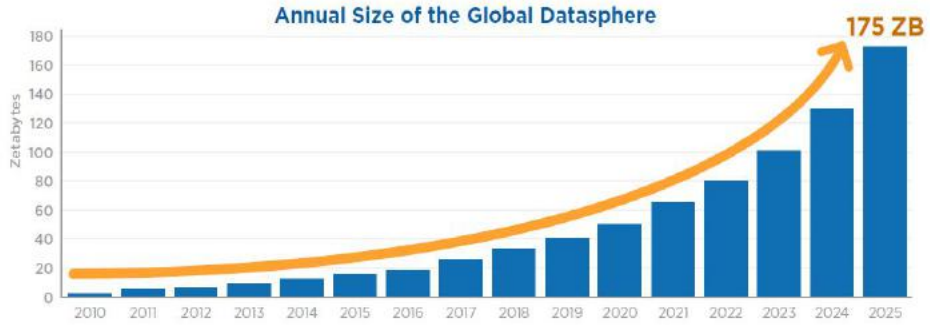


Figure 1 – Annual Size of the Global Datasphere



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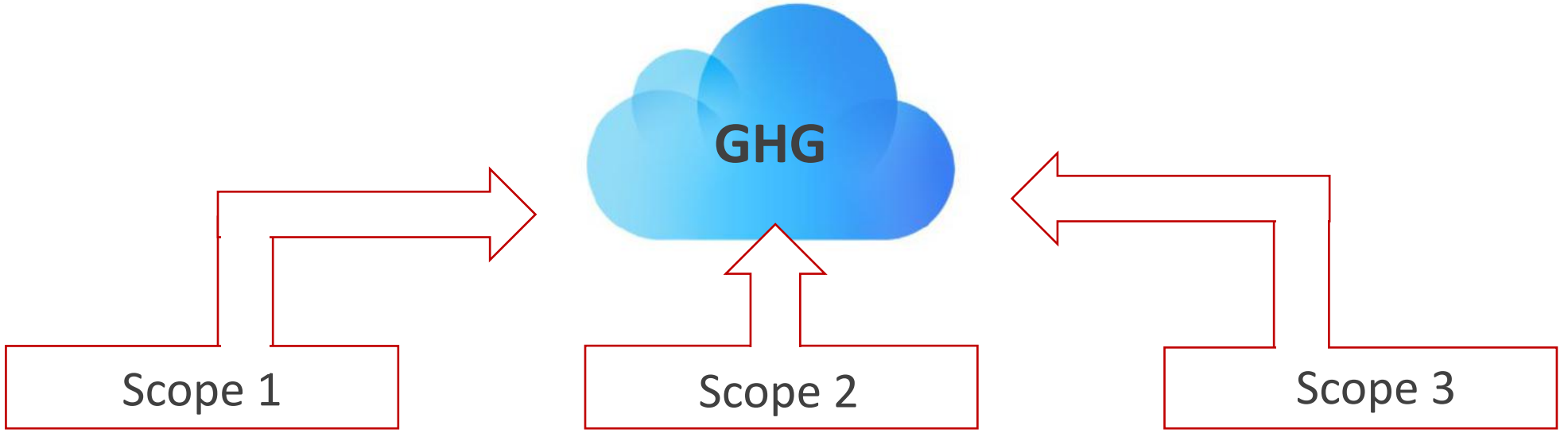
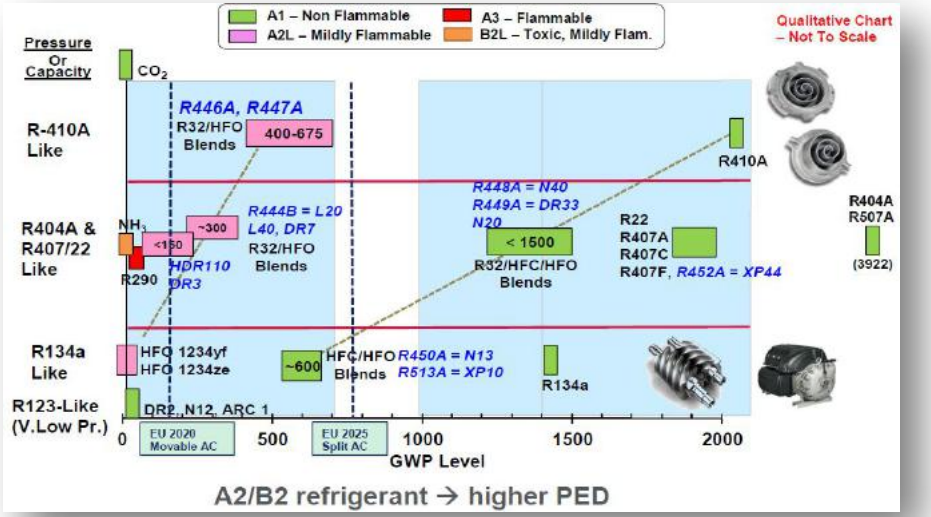
Greenhouse gas emissions by Data center

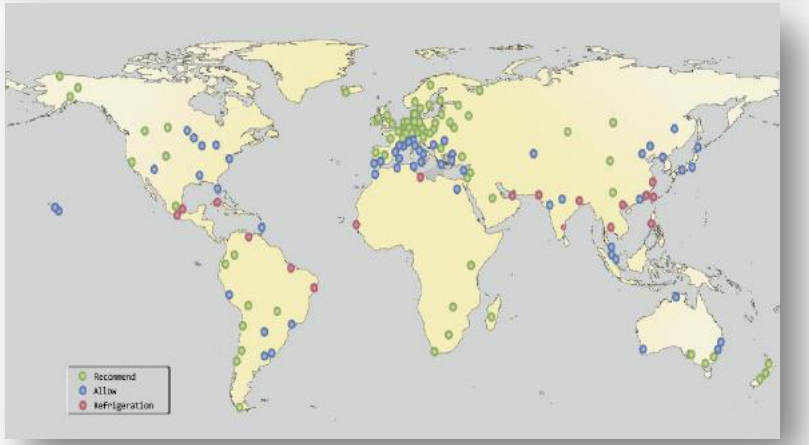


SCOPE 1. Direct Emissions.

Refrigerant

- F-gas ban - ”future proof cooling” ?
- No/limited usage of supplimentary cooling
- Right now - trend towards Indirect or direct air-cooling when possible (location, density & type of datacenter to be the divider).





(Source: Operational Intelligence)

SCOPE 2. Consumed energy

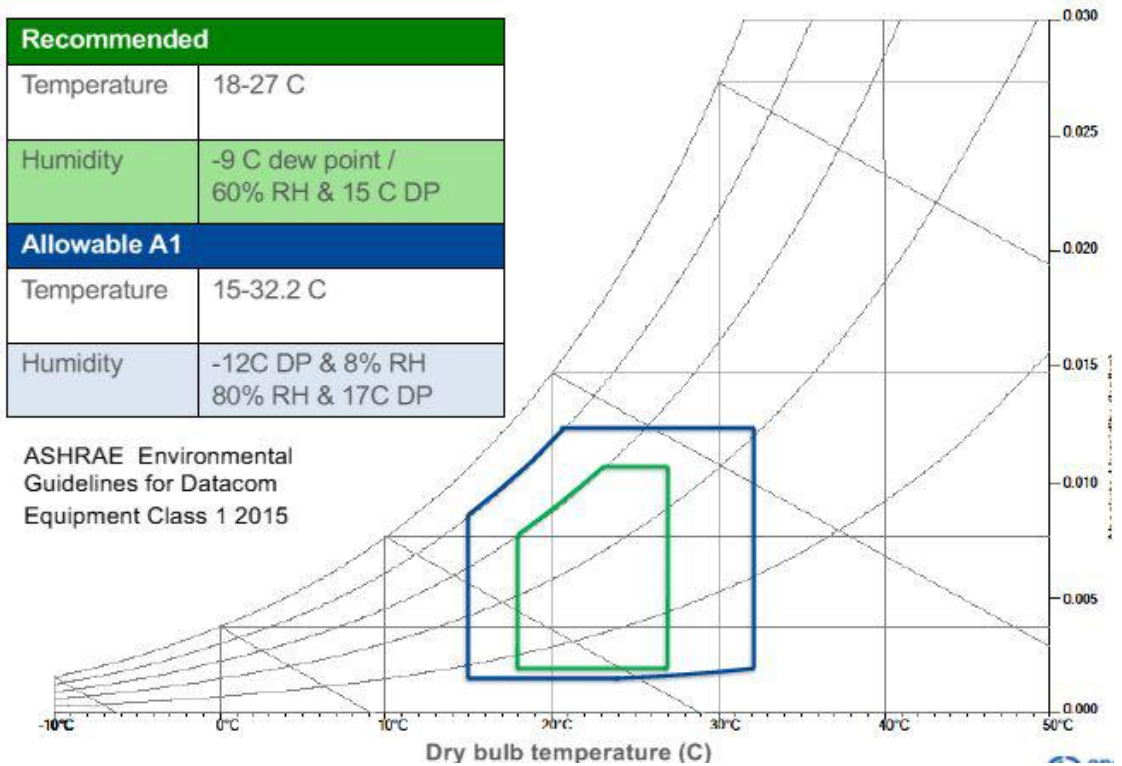
Extend temerature envelope and SLA

- Cooling temperature – we over cool and not to server specifications
- **New hardware is able to work in much warmer conditions**
- Proper Containment & air management to reduce airflow

  Ex: 200 kW with dT 12C: 49 600 m3/h

  vs 200 kW with dT 8 C: 74 400 m3/h

Recommended	
Temperature	18-27 C
Humidity	-9 C dew point / 60% RH & 15 C DP
Allowable A1	
Temperature	15-32.2 C
Humidity	-12C DP & 8% RH 80% RH & 17C DP



ASHRAE- Progressively Expanding the Thermal Envelope

2004
20-25º C
68-77º F

2008
18-27º C
64.4-80.6ºF

2011
Recommended:
18-27º C
64.4-80.6ºF

Allowable: 15-32º C
59-89.6º F (Class A1)

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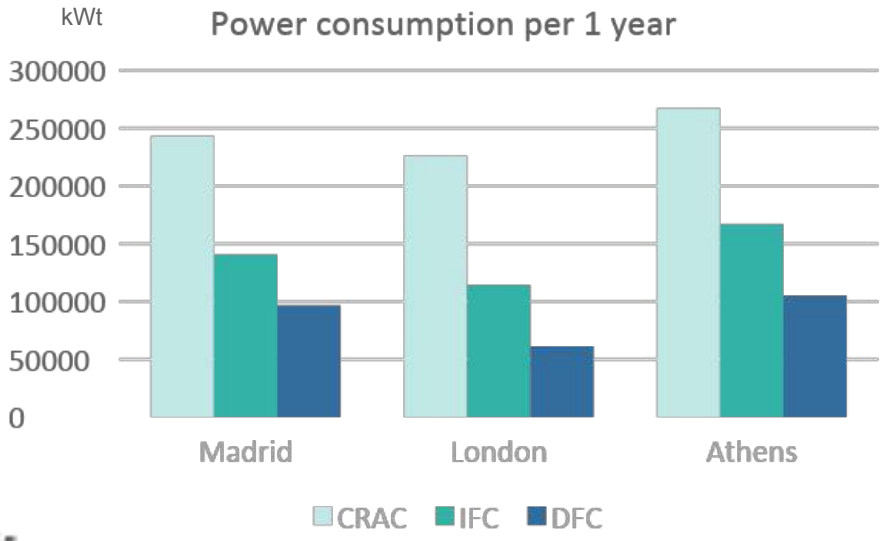
SCOPE 2. Consumed energy

Solutions comparisson

- Compressor is the most energy hungry component in the cooling unit.
- Free-cooling techology is aimed to reduce or even avoid compressor usage



SCOPE 2. Consumed energy

Every Pascal counts

- Smaller dimensions of the cooling equipment lead to increased velocities over the coils and heat exchanger, resulting in a reduction of heat transfer efficiency and unstable temperature distribution.
- A simple exercise calculating the same system with different pressure drops, shows that just an extra 100Pa in one Indirect free-cooling unit leads to an 18-20% increase in fan power consumption and significant increase of OPEX.

AHU
Before Ecodesign

AHU
After Ecodesign

To Sum up:

The smaller the cross sectional area is made, the higher the global impact and TCO

SCOPE 3. Supply chain

Choose Selected suppliers who Focus on sustainability

Systemair works constantly and methodically to reduce the impact on the environment from the business and our products.

We do this by reducing our own consumption of energy and materials and staying at the forefront in the use of smart manufacturing technology.

This results in high efficient products and solutions, contributing to our customers projects.

Geniox Tera

Geniox Tera

General description

- Capacity range up to 395 kW
- Compact dimensions
- Rooftop and Perimeter configurations
- High flexibility for even most challenging installation configurations
- Optional heat recovery module
- Optional Integrated DX cooling circuit
- Ready to operate in extreme outdoor air conditions

Geniox Tera

Key benefits

- Ultra efficient free-cooling with no outside air in the data center
- Low pPUE thanks to minimal pressure drops
- Low water consumption
- Minimized or eliminated need for mechanical cooling
- Optional DX module with Digital compressor for precise control even at lowest loads

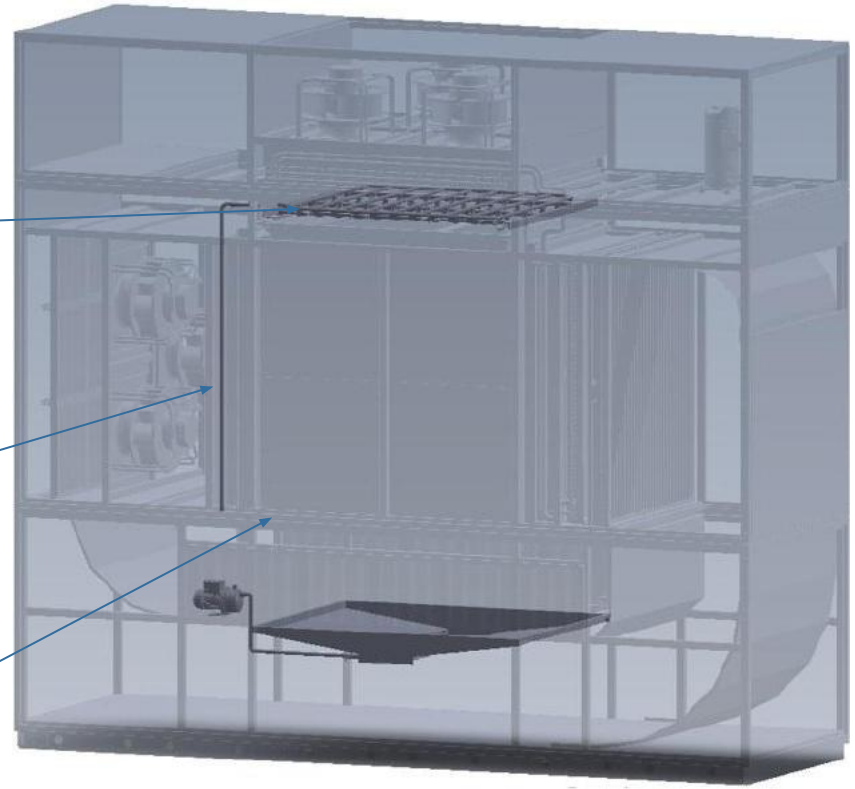
Geniox Tera

Minimize water consumption

Special Nozzles design guarantees 100% HE surface coverage with minimum water sprayed

Several stages of Water quality control and Built-in water treatment system to assure lowest water bleed-off

Optimized HE design for Reduced Air pressure drop



Systemair holistic focus on Sustainability

Embodied CO2 Emissions report

- Systemair Geniox IFC units CO2 footprint is calculated in the selection soft and will be indicated it the data sheet
- Methodology developed together with Istanbul Technical University

Heat recovery system

- Modern Systemair Test Centre is designed with Deep focus on sustainable solutions
- Heat recovery system allows to reuse heat generated by testing equipment.

Holistic Approach.” Consumer or enabler ?”

Offices

Green house

Residential

Sport complex

Data centre

Logistic centre

Shopping Mall

Restaurant

Garage

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Individual Project Approach & Location

- Every Data Center has its specific demands and features: layout, scalability, density, location, heat recovery, integration into common Eco-system, etc.
- Big data centres close to power source and good connectivity
- Smaller data centres will be placed in urban environments
- Data Centre Integration into the eco-system
- Having wide range of products, Systemair always works out the optimal solution for your Data Center.

Thank you!