

# The "Power" of a Module: How Power Modules are reshaping data center infrastructure



Datacenter Forum Oslo, March 20<sup>th</sup> 2025

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# Who is Eaton?

We are a global **intelligent power management** company doing business in more than **160 countries** with annual sales of over **\$24.9 billion USD**.

- Around 94k employees
- HQ Dublin, Cleveland & Switzerland
- Data Center, Utilities, C&I

We make what matters work.\*



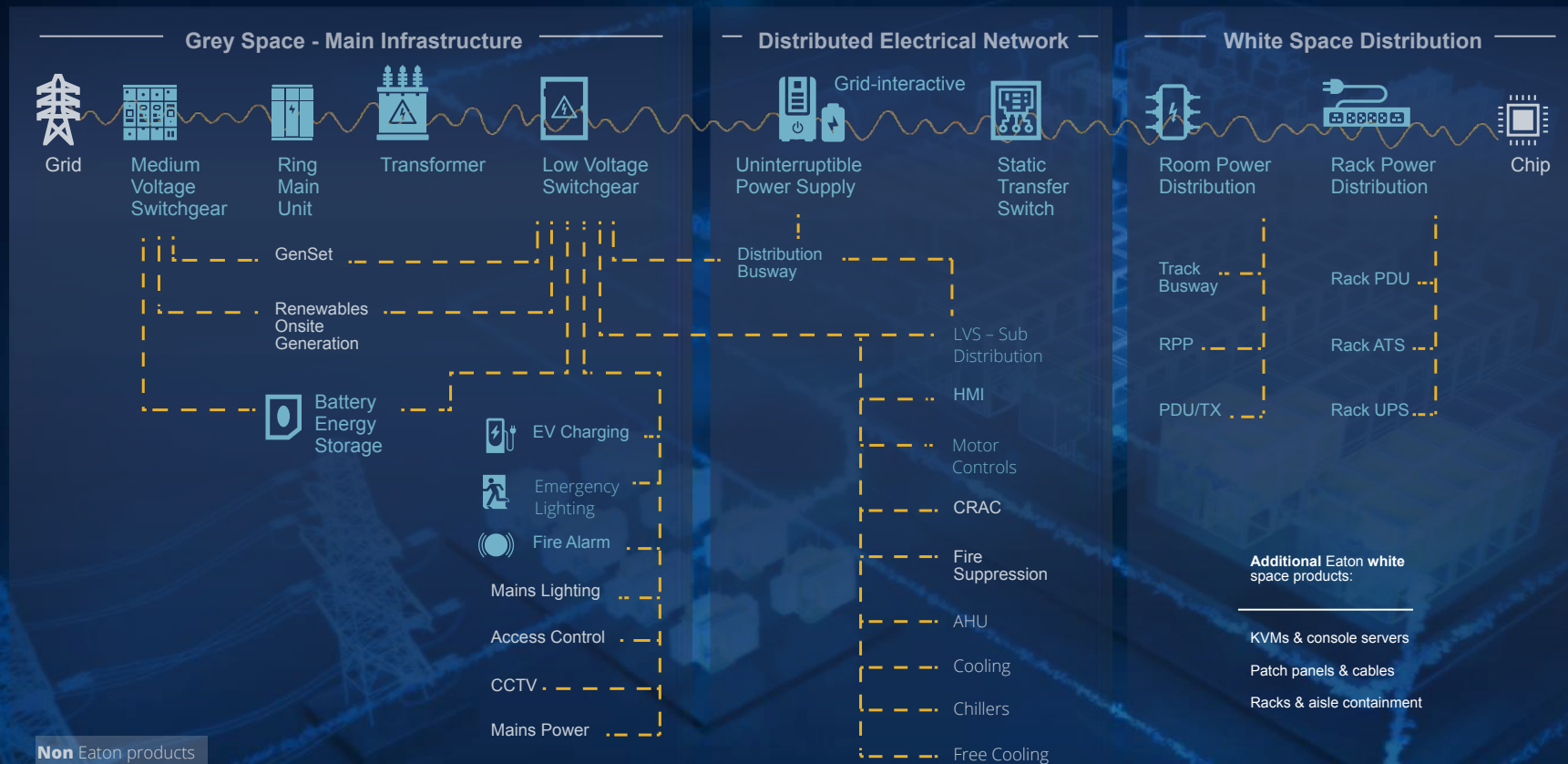
Powering Business Worldwide

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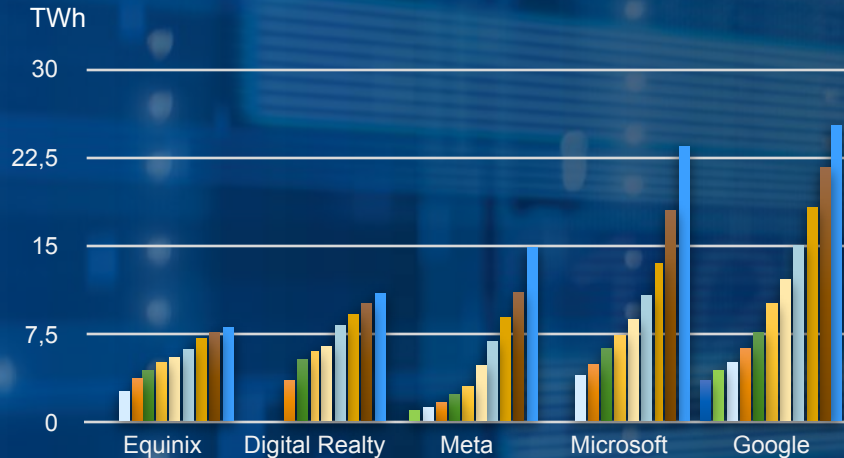
## Digital layer – Brightlayer Data Centre suite



## Digital layer – Brightlayer Data Centre suite – BMS, EPMS, Data Centre Performance Manager (DCPM)

# Energy is the fuel for data and data is the fuel for AI

## ► “Big 5” hyperscale energy growth 2013-2023



900MW

14% CAGR

Estonia

Source: Published sustainability reports

1300MW

15% CAGR

Lithuania

1700MW

31% CAGR

Croatia

2700MW

22% CAGR

Azerbaijan

2900MW

19% CAGR

Slovakia

## ► Data centres are some of the largest single blocks of demand growth in most grids.

### Size

100-300MW

### Comparison

Small city– Guildford, Angers, Columbia SC

300 -1000MW

Liverpool, Miami, Boston, Florence, Dortmund

2500MW

Birmingham, Brussels, Houston

5000MW

Los Angeles, Sydney, Ireland, Minnesota

Data centre demand (TWh): Non-AI versus AI



Note: This is an extrapolated scenario that extends the IEA's forecast from 2023 to 2026 through 2030 using a combination of 2021-2023 historical growth and their proposed growth rate from 2023-2026.

Source: International Energy Agency (IEA); Goldman; Accenture.



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# Time to market constrains



## Power & Energy Infrastructure

High power workloads, grid connectivity, ancillary services support, sustainable practices, operational directives



## Cooling and thermal management

Advanced cooling needs, water usage restrictions adding complexity to the system



## Site selection & Permitting

Suitable locations, regulatory hurdles, environmental impact, community social impact & acceptance



## Supply chain & Workforce

Specialized hardware delays, specialized talent gaps & construction labor shortage



# How to address the challenges with modular design



## Flexibility & Scalability

Standardized “sub-systems”, flexible designs, single structures, deployment in phases, mass production



## Sustainability & Digitization

SF6 free technology, grid interactive UPS system, less onsite travel and waste management, digital passport, solution lifecycle management, fully monitored, reduced footprint



## Faster deployment

Reduce onsite labor, pre-fabricated solutions, pre-commissioning L1-L3, faster site acceptance test, easier documentation handling and ready for BMS integration



## Reduced time to market

Reference design solutions, integrated functional test at factory, better supply chain planning, “plug & play”



# The largest SKID and POD Producer in Europe

Located in Hanekleiva, **Norway** with over 12000m<sup>2</sup>, making it the largest facility of its kind in Europe. A second, even larger factory, is opening in 2025, in Viana do Castelo, **Portugal**.

The company was founded in 2022 and has **successfully delivered more than 200 pods across Europe**.

In early 2024, NordicEPOD teamed up with Eaton Technologies – a global power management company, to secure further growth and capitalize on synergies.

**Built to local requirements, from the cold Nordic climate to the hot deserts of the middle east.**

 CTS Nordics





# FIRST EUROPEAN EPOD PRODUCTION OF ITS KIND

Enhancing the efficiency and quality of our  
standardized and pre-commissioned EPOD  
design with **flexible** & **mobile assembly line**.





# THE DIGITAL VALUE PROPOSITION

**Live-streamed  
functional test**



**Remote  
Test**

Follow testing live from  
anywhere or watch later.

Reduced costs and  
increased transparency.

**EPOD monitoring  
software**



**Fully  
monitored**

On-board BMS,  
tailored to each project.

Full Epod monitoring &  
functional testing.

**Unique digital quality  
record for each EPOD**



**Digital  
Passport**

Real-time production  
progress.

Comprehensive quality  
document package.

# CORNERSTONE OF THE DIGITAL VISION, IT CREATES CONFIDENCE THROUGH TRANSPARENCY



# TYPICAL POWER MODULE DESIGN LAYOUT

17.3m x 3,7m x 3,9m (l,w,h)  
47t transport weight  
50t final weight

Structure & cladding  
Fire rated EI60

Free air-cooling Transformer  
Full load operation at 30°C  
ambient

Eaton Transformer  
2,5MVA, dry type  
20kV or 22kV available

Main LV Switchboard panel & breakers  
4000A, 65kA-1s (100kA-1s available)

Eaton RMU  
Vacuum, 24kV

Lithium-ion Battery  
12x racks (6min backup)

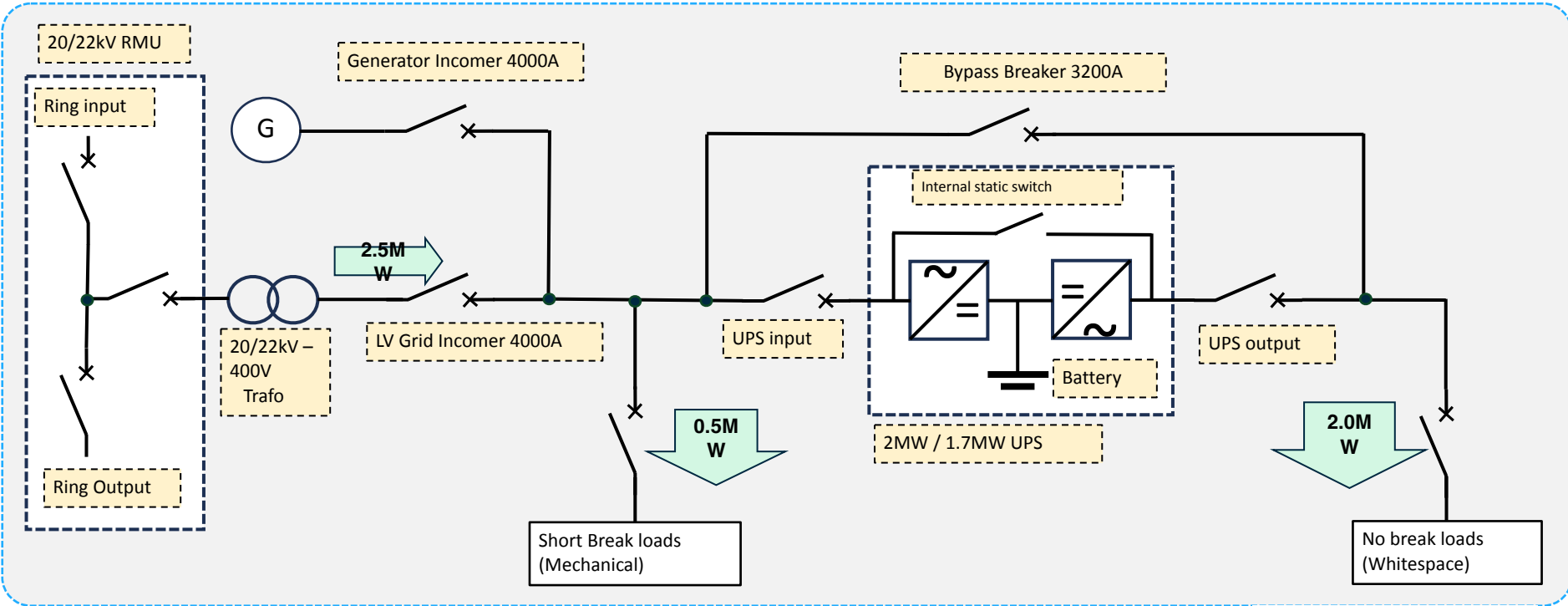
Daikin CRAH  
2x 54kW net cooling

Eaton UPS system  
2 x 1MW UPS  
(alternatively unitary 1.7MW)

Fire Suppression  
3M™ Novec 1230™



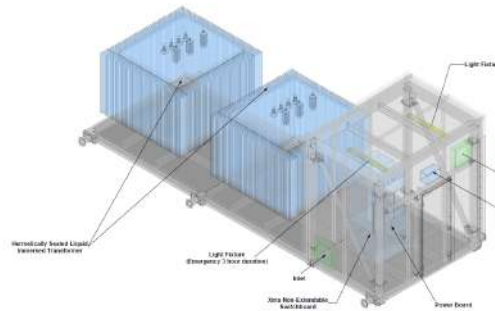
# EPOD ELECTRICAL TOPOLOGY



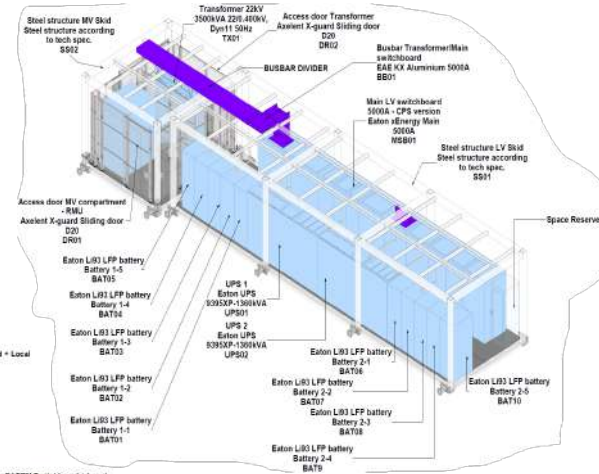
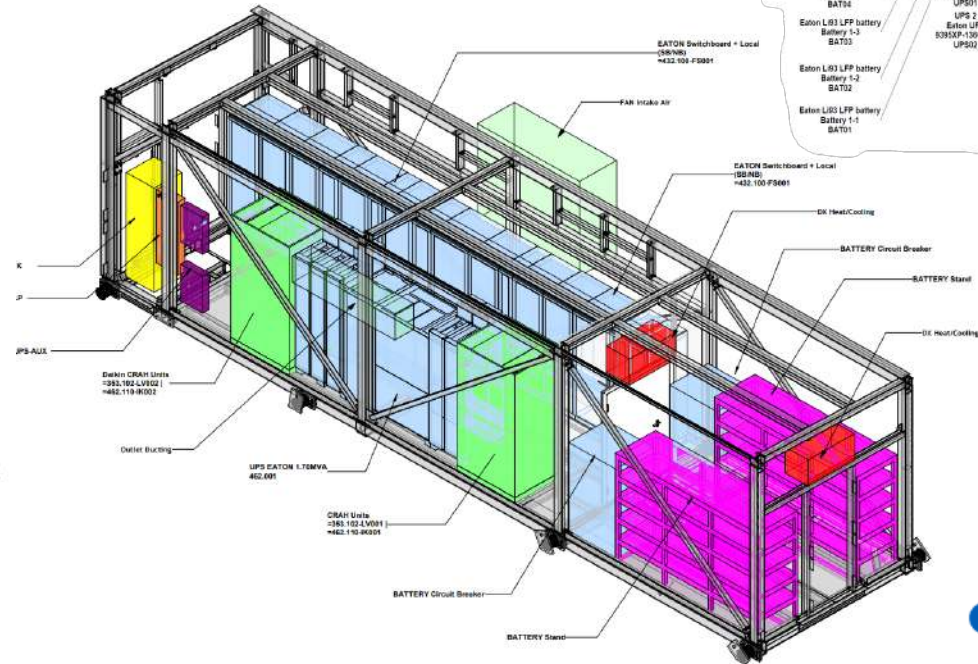


## 2.5 MW SKID

## LV POD with separate battery room



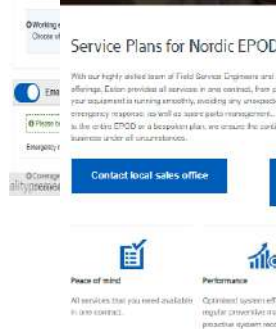
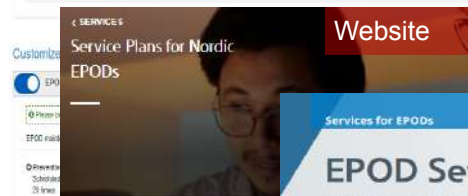
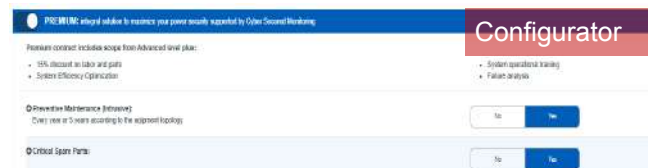
## E-house with trafo and switchboard / RMU





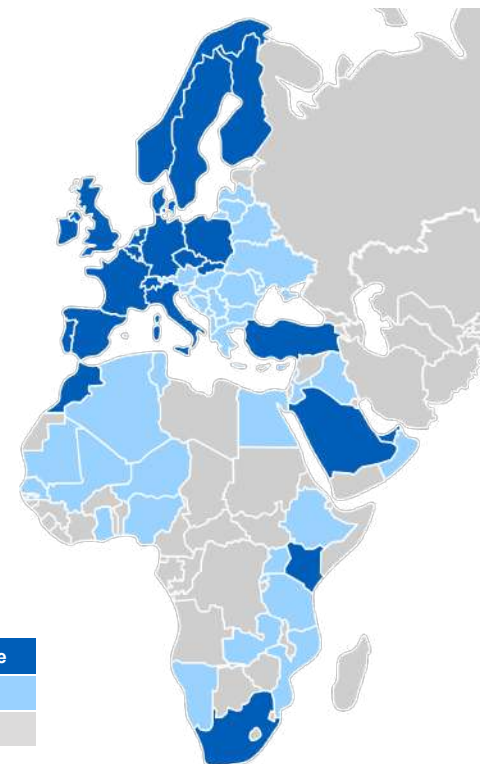


# Eaton builds upon years of experience in Service

working closely with major DC customers globally



	1	One Service Organisation 5 business lines
	25+	Country service units
	700+	Service employees
	~100	Authorised Service Partners



Eaton Service Office
Service Partners
Limited Service

# The “Power” of a Module

Time to market & flexibility with sustainability in focus



## Added customer value

Digital Passport traceability, easy onsite monitoring integration, high quality standard, reduced CO2 footprint



## Faster speed to market

Modular construction techniques, production at scale, supply chain planning and commissioning L1-L3



## Sustainable practices

Participate in the wider ecosystem supporting grid stability and leveraging green bonds from proven sustainable practices



## Lower operational expenses

Leverage flexible energy infrastructure and pre-emptive practice reducing TCO and having full Lifecycle management



# Nordic EPOD overview video







**WOULD YOU LIKE TO VISIT  
NORDIC EPOD FACTORY OR EVEN HAVE  
A TECHNICAL WORKSHOP?**



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