

Pioneers in green solutions for the Maritime and Offshore Industry

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Outline



We are a
**global leader
in the energy
business.**



~ 1/6

of global electricity generation
is based on our technology.

> 50%

of our portfolio is based on
technology that is relevant in
a decarbonized energy world.

We are present in

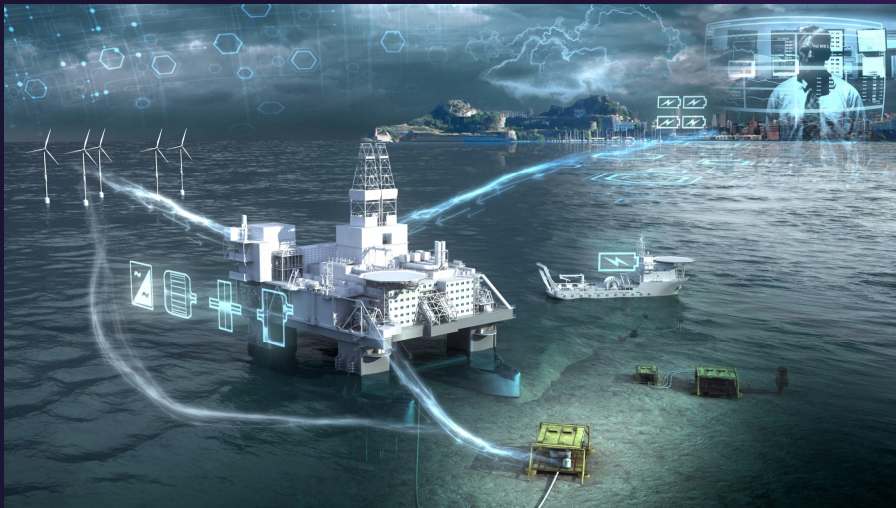
> 90 countries.

91,000

employees work as a team
to energize society.¹

¹ Number of employees as of September 30, 2021
May 2022

How can we meet
the growing demand for electricity
while protecting our climate?



This is where we
come in.

Outline

1

Siemens Energy

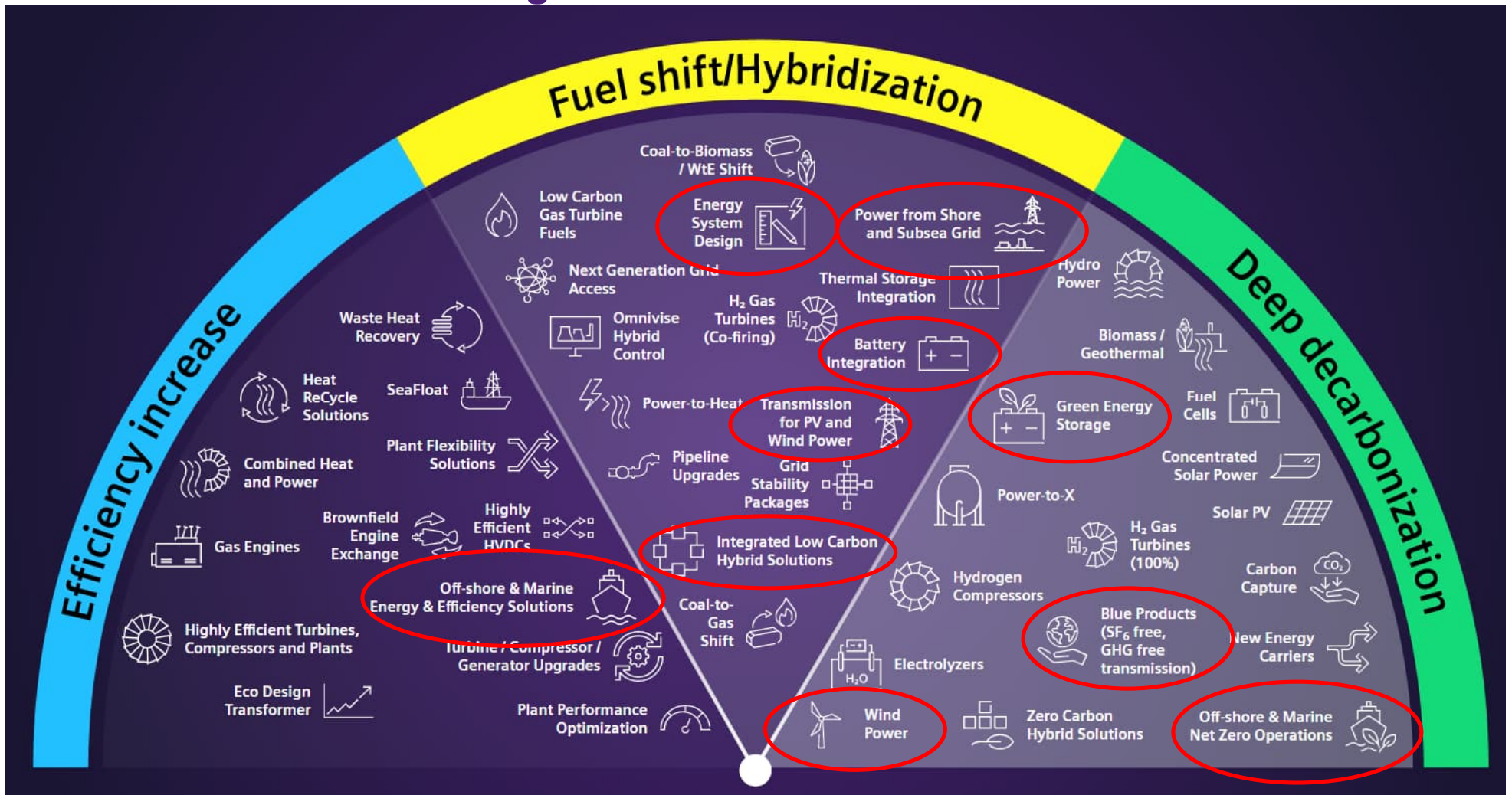
2

Green solutions
from Trondheim

3

Lean and
digitalization

Decarbonization technologies at site Trondheim





«Ship of the Year» in 2014.
The world's first electric-powered car ferry
generates zero emissions and minimum sound.

Pioneer in green solutions for shipbuilding

SIEMENS ENERGY

"Ro Vision"
well boat



"Elfrida"
work boat



"Karoline"
fishing boat



> 30 e-Ferries
in Norwegian coastal network

"Elektra"



"MF Ampere"
zero emission ferry



"West Mira"
drilling rig



"Edda Ferd"
offshore supply vessel



"Color Hybrid"



Scandlines
six hybrid RoPax vessels





Customers

NTNU



Service

Sales

RnD

Manufacturing

BA

Execution

Sales

Manufacturing

RnD

Execution

114 years in Trondheim – established 1908

Green Solutions from SE Trondheim

Electro Power Solutions for Maritime, Offshore & Grids

Subsea Power Grid & Digi Grid – Building blocks

Products & Solutions

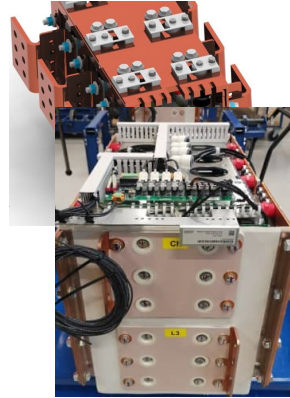
BlueDrive PlusC and BlueVault



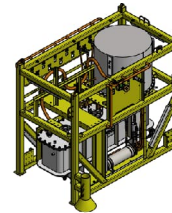
UPS



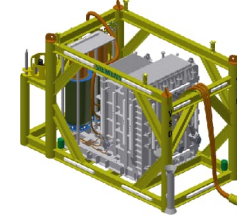
Standardized modules (CGC, CES, ILC, ...c)



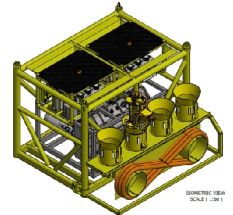
Low Voltage Distribution Unit



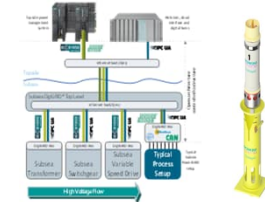
Variable Speed Drive



Switchgear



Power Control (DigiGRID)



Production areas and Infrastructure



Main assembly



Module assembly



Quality control



HV test



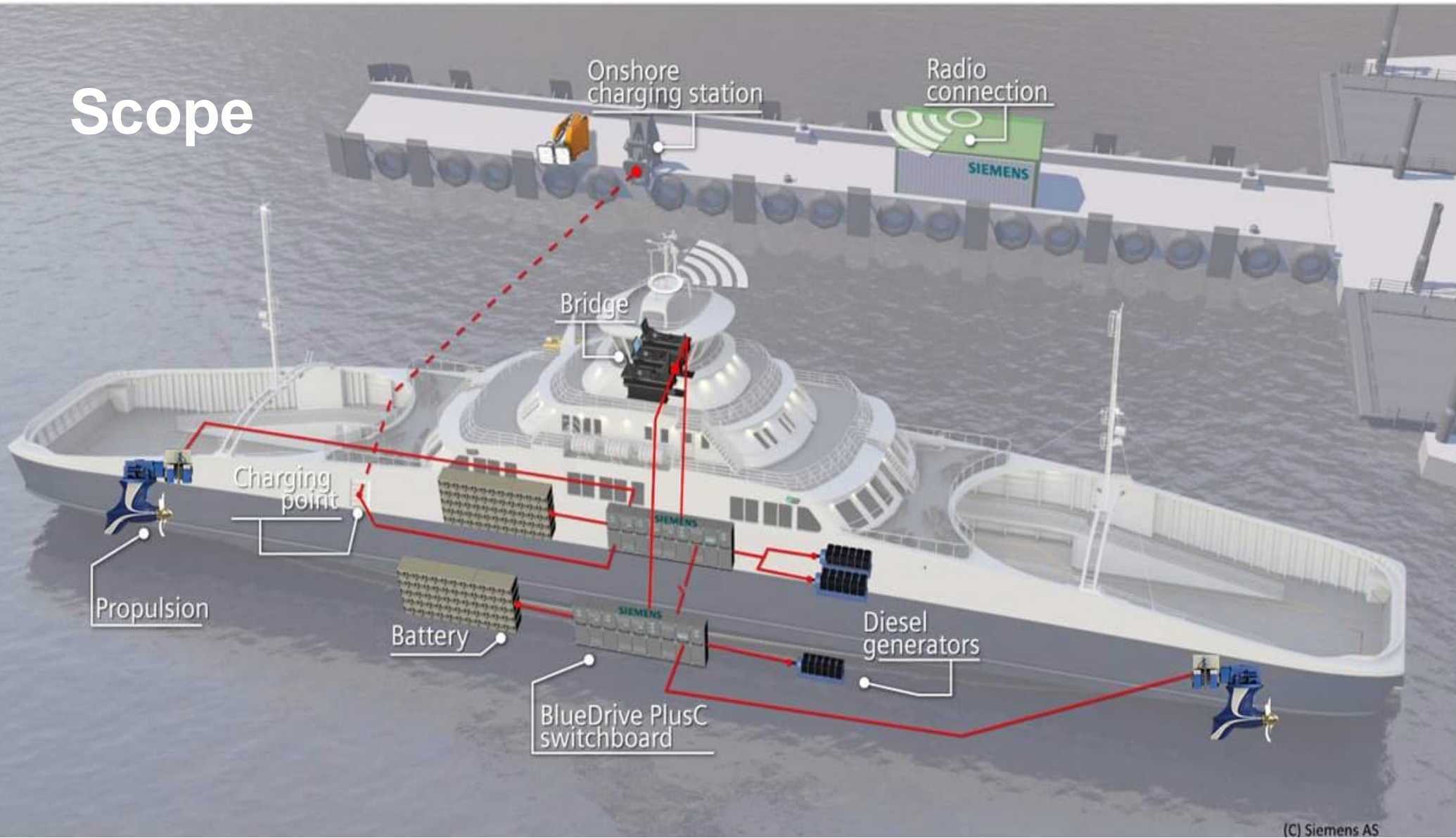
Pressure testing



Electric power solutions for the global maritime industry



Scope



Production of Battery Modules in Trondheim

SIEMENS
ENERGY





SIEMENS
ENERGY



Video

Outline

1

Siemens Energy

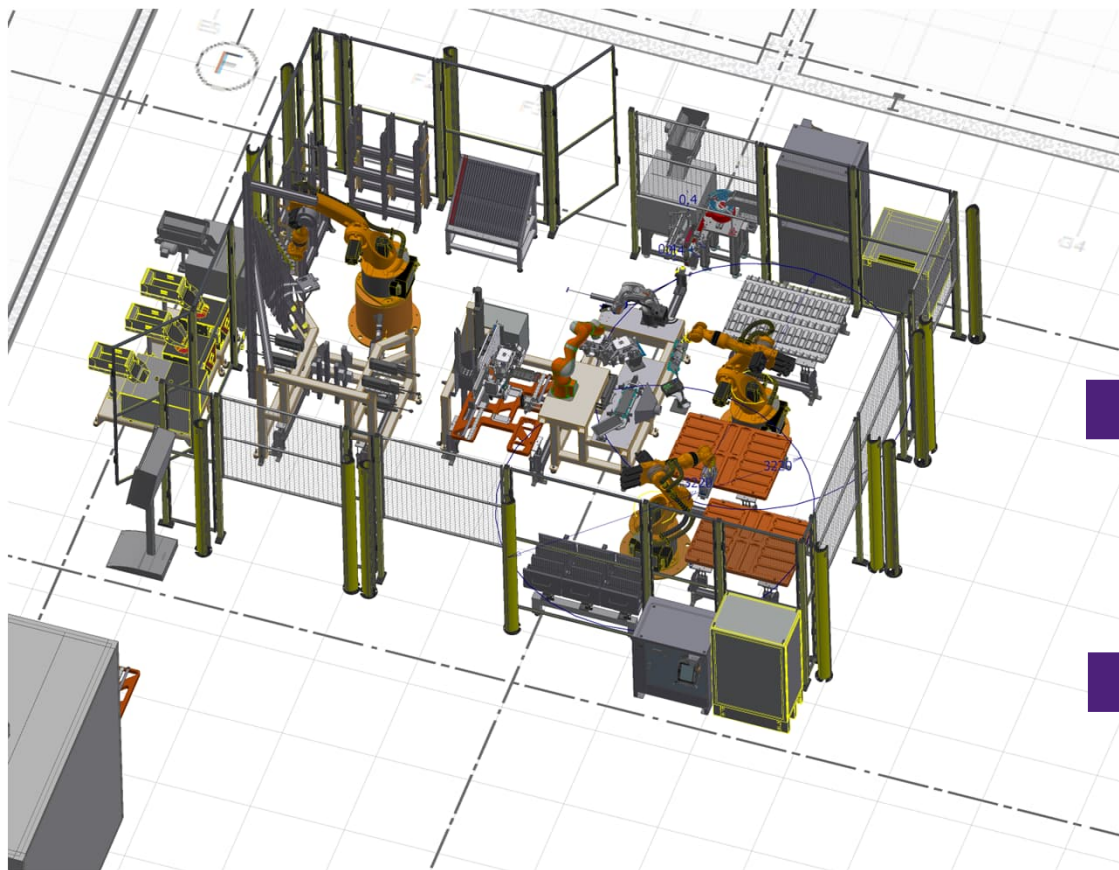
2

Green solutions
from Trondheim

3

Lean and
digitalization

Focus areas since we started in 2019



Improve fixture exchange time

Reduce cell complexity / dependencies

“Simplify” supervisory control and data acquisition

Improve KPI's (OEE, FPY, #Cont. improvement)

Cont. improve P-FMEA, control plans etc

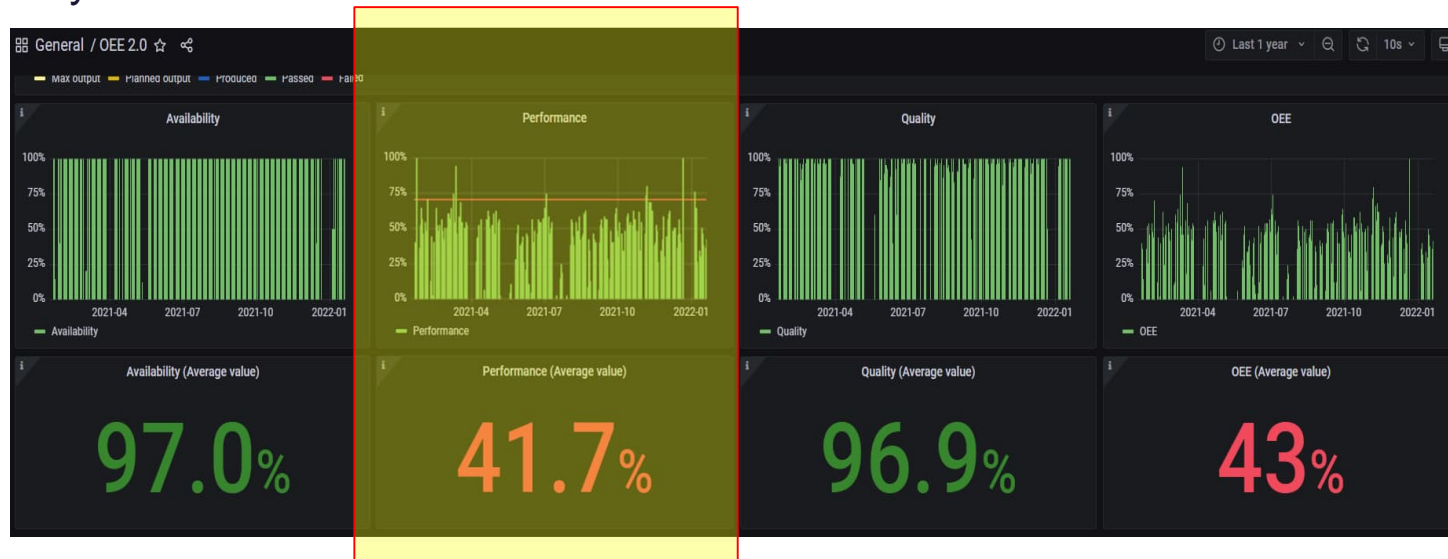
Improve quality management system

Improve traceability (incl. suppliers)

You need to “mäten för att veta”

Target within Qx 20xx:

Overall equipment effectiveness (OEE) >75 % **through reduction of losses related to small stops and slow cycles** (Performance > 80 %), and sustained Quality and Availability.



~1,5 years to achieve decent results

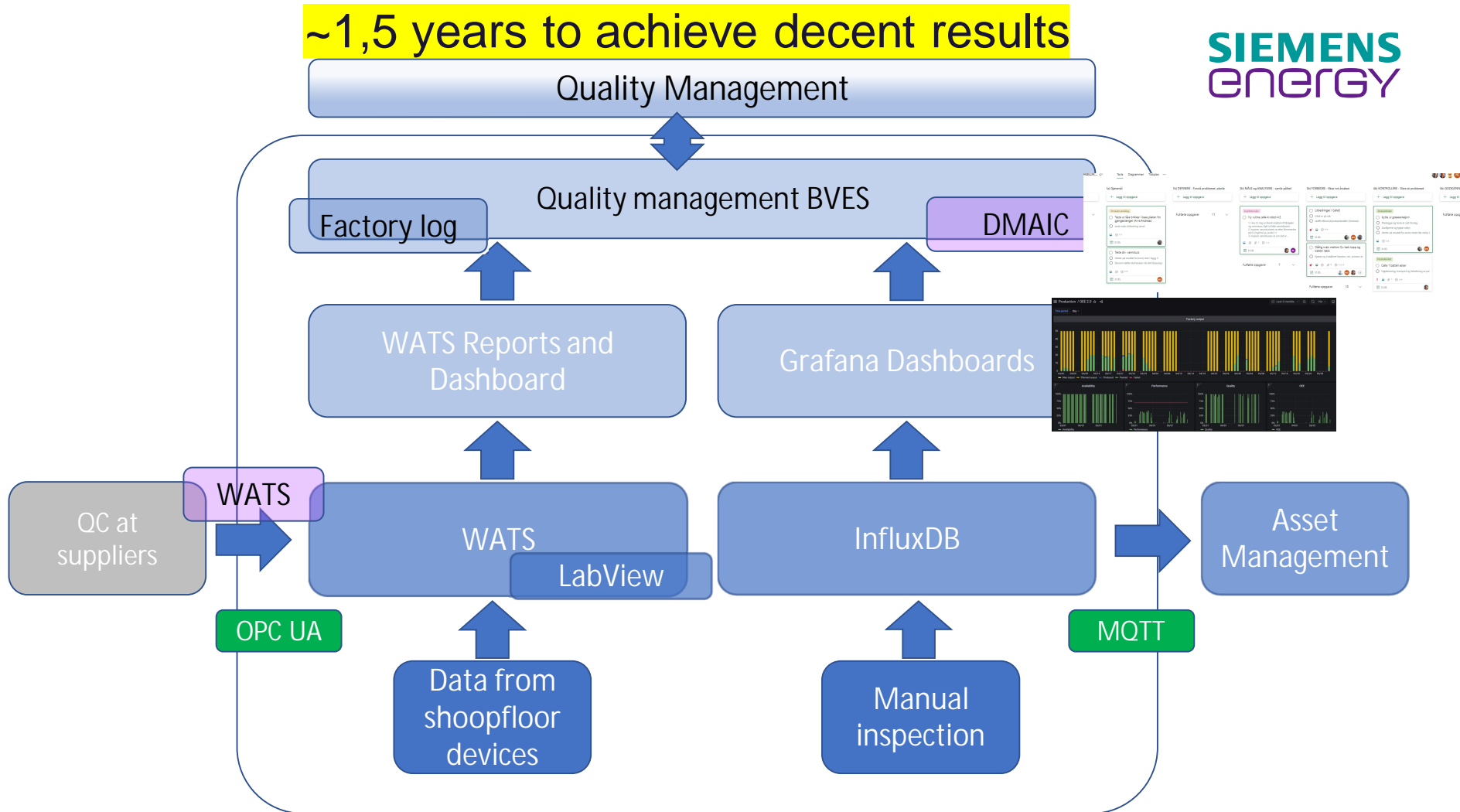


Actions

Visualization

Data storage

Data gathering



Visual Management

Problem description:

- Time-consuming to understand the shopfloor status, incl. logistics
- Not predictable
- Non-consistent information in different applications / boards
- Information «lost» between different roles in a delivery project
- Etc.....



Project Tracker (Mendix) – a self-developed application

Solution

- Establish a «digital thread» for delivery projects
- Connect issues that challenges an effective execution to the «digital thread»

The screenshots illustrate the Siemens Energy Project Tracker application. The first screenshot shows the home page with the Siemens Energy logo and navigation options. The second screenshot displays a table of project tasks with columns for assembly progress, material status, production status, and man-hours. The third screenshot provides a detailed view of a specific task, comparing 'Montasje' (Assembly) and 'Testing' metrics such as responsible person, last reported time, and hours used.

| Asse... prog... | Status mat... | Status prod doc | Status man... | Asse... hours calc... |
|-----------------|---------------|-----------------|---------------|-----------------------|
| 50% | Mange ma... | OK | OK | 32,00 hrs |
| | OK | OK | OK | 132,00 hrs |
| | OK | OK | OK | 132,00 hrs |
| | Ikke begynt | Ikke begynt | Ikke begynt | 189,00 hrs |
| | Ikke begynt | Ikke begynt | Ikke begynt | 252,00 hrs |
| | Noen man... | OK | OK | 80,00 hrs |
| | Noen man... | OK | OK | 702,00 hrs |

| Montasje | Testing |
|----------------------------------|----------------------------------|
| Responsible | Responsible |
| Last reported: 18.09.2023, 06:46 | Last reported: 12.05.2023, 09:15 |
| Planned start | Planned start |
| Actual start | Actual start |
| Planned finished | Planned finished |
| Actual finished | Actual finished |
| Progress: 80 % | Progress: 0 % |
| Hours planned | Hours planned |
| Hours used | Hours used: 0,0 hrs |

| Quality gate | Description | Closed | Closed by | Closed date |
|--------------|--------------------------|--------|-----------|---------------|
| PM300 | HANDOVER TO EXECUTION | Yes | T... | ons. 21.06.23 |
| PM100.1 | INTERNAL KICK-OFF | Yes | T... | ons. 21.06.23 |
| PM300.1 | HANDOVER TO PRODUCTION | Yes | S... | fre. 16.06.23 |
| PM300.1 | ASSEMBLY STARTUP MEETING | Yes | M... | tor. 22.06.23 |
| PM300.2 | PRE-TEST MEETING | Yes | V... | man. 11.09.23 |
| PM300.3 | AFTER PAT MEETING | Yes | | |
| PM300.4 | LESSONS LEARNED | Yes | | |

Thanks!

