

OCTOBER 26, 2023

How Elkem works with AVEVA™ Unified Operations Center as part of its HMI System

Harry Gulestøl

AVEVA



Fundamentals of digitalisation for an industry company like Elkem

Harry Gulestøl





Who am I

Working in Elkem since 1998, within IT, automation and digitalisation.

Lived in Rotterdam 2003 – 2005.

Close support with our plants in China from 2017 in addition to supporting existing plants in Paraguay, Iceland, Canada, India in addition to Norway, where i live.

Working out of Kalvåg, a small island on the west coast of Norway, where I live with my wife and 2 (soon to be 3) children.

Harry Gulestøl

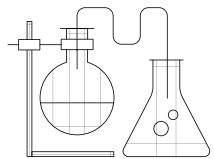
Director for IT, Automation and Digitalization in
Elkem ASA Silicon Products

<https://www.linkedin.com/in/hgulestol/>

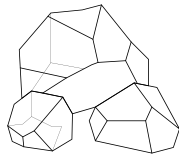


We are Elkem

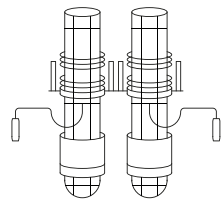
Advanced material solutions shaping a better and more sustainable future



Silicones



Silicon Products



Carbon Solutions



This is Elkem

One of the world's leading providers of advanced material solutions

Who we are

- A global team of 7,300 people, with >600 in R&D
- >30 production sites, R&D centres and offices worldwide
- Headquartered in Norway, hubs in France and China

Our commitments

- Our purpose: Advanced material solutions shaping a better and more sustainable future
- Our strategy: Dual-play growth & green leadership

What we do

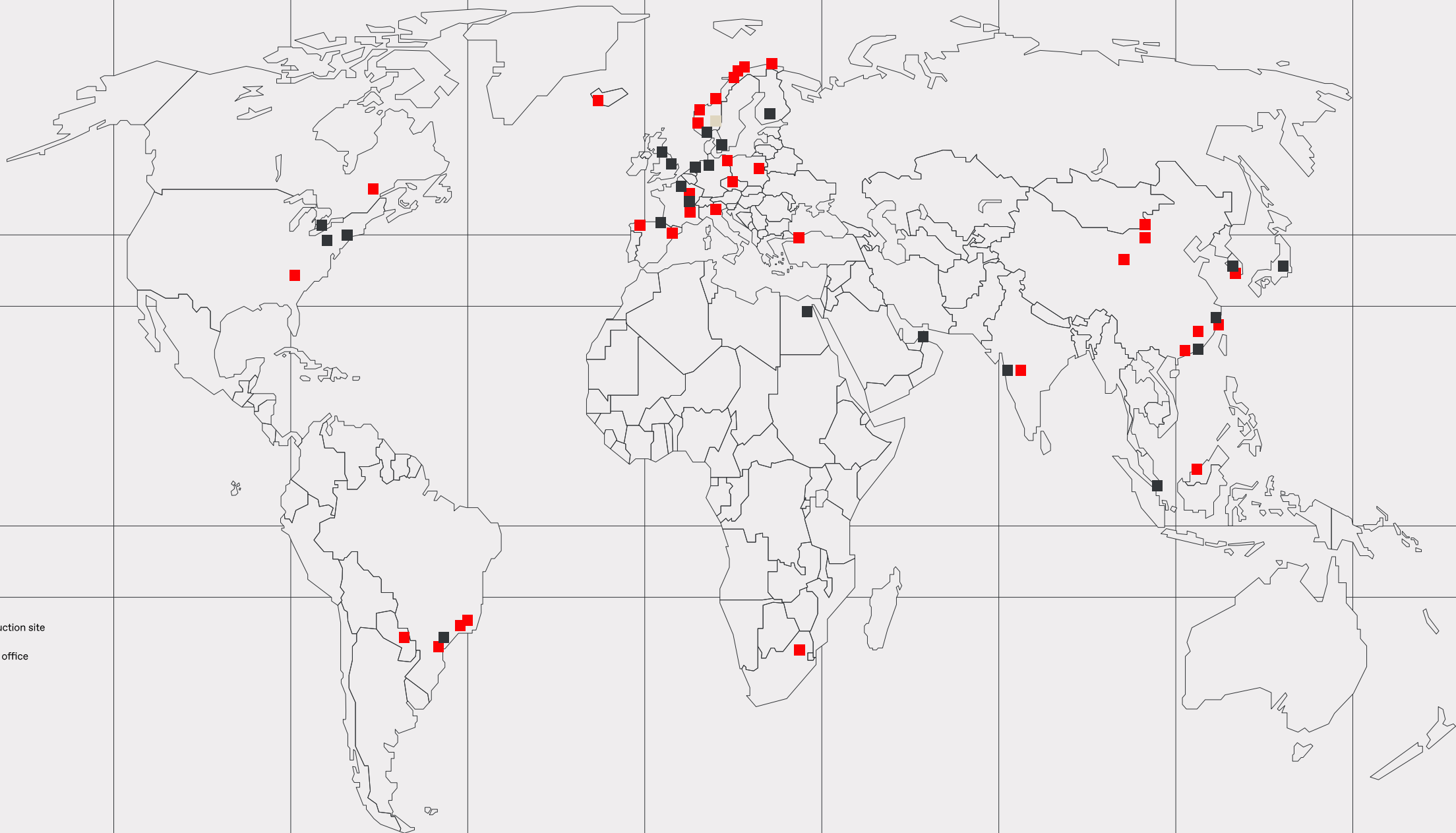
- We create and deliver advanced material solutions
- We offer specialties and standards from fully integrated value chains
- Our divisions: Silicones, Silicon Products and Carbon Solutions


Our performance

- Track record of continuous improvement since 1904
- 2022: Total operating income NOK 45.9 billion
- 2023: Ecovadis "Gold" rating on sustainability
- 2022: Double A- scores from CDP for efforts on climate and forests. B score on water security



- Production site
- Sales office
- HQ





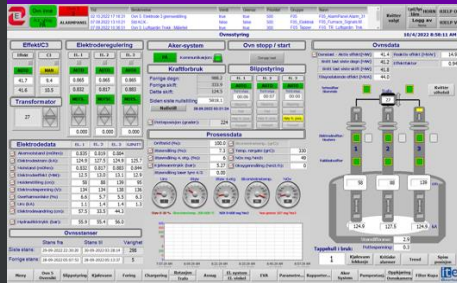
Our solutions enable
customers to offer higher-
performance, longer-
lasting digital devices



Our specialty silicon
Silgrain® has even
landed on Mars

Strategic AVEVA cooperation

Supervisory Control System (SCADA)



Control System

Aveva Intouch In use at 5 plants in Silicon Products, Carbon and Vianode AS

Based on System platform for data collaboration between PLC and control system

Manufacturing Execution System (MES)



Production support system

Aveva MES is the chosen production support system for all plants in Carbon (4), Silicon Products (8) and Vianode (1)

Aveva MES is also based on system platform for collecting data from control system

Including solution for recording and sharing high frequency data

Asset Information Management (AIM)



Technical as built Information hub

The hub breaking down information silos, providing access to information from various disciplines and systems.

Enabling A visual approach mixing the features from 3D drawings, diagrams & drawings, tables and text.

Giving a single surface providing information without the need for custom tools for access to special information

Unified Operational Center (UOC)



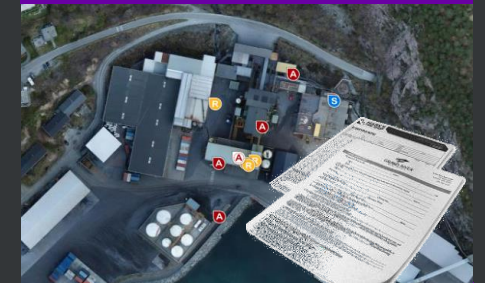
Control Center

Tool for aggregating and display the process on shop floor level in control room.

At the common control room in Bremanger they benefit from visualising the process by highlighting statuses, events and alarms on the large screen.

Large screen concept is mature in chemistry and oil industry, i.e. Borregaard.

Operational Safety Management (OSM)



Electronic SJA and Work Permits

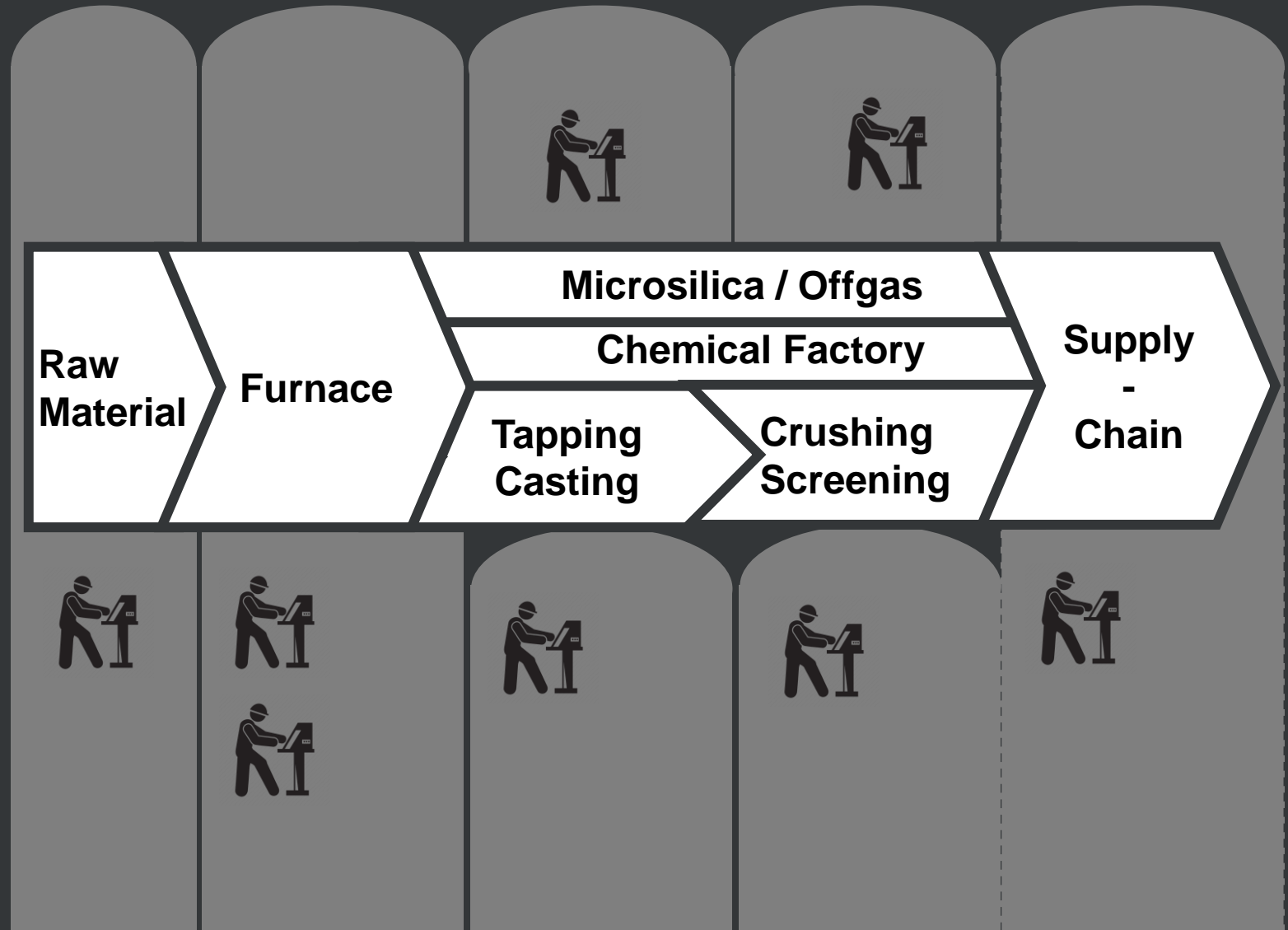
Digitalising of the work permit process at plant shop floor is a requirement from plants in Elkem.

Aveva OSM has been implemented successfully at Bremanger giving a fully digital work permit and safe job analysis process.

Thamshavn and Salten will start the implementation of the system

Business challenges addressed

One plant
11 control rooms
Several silos



The future HMI concept for Elkem



Level 3

The HMI Screen which is used to control the process, drill down to details, and analyse



Level 2

Overview pictures, scenario based screens. E.g. for shutdown / start-up. Alarm analysis

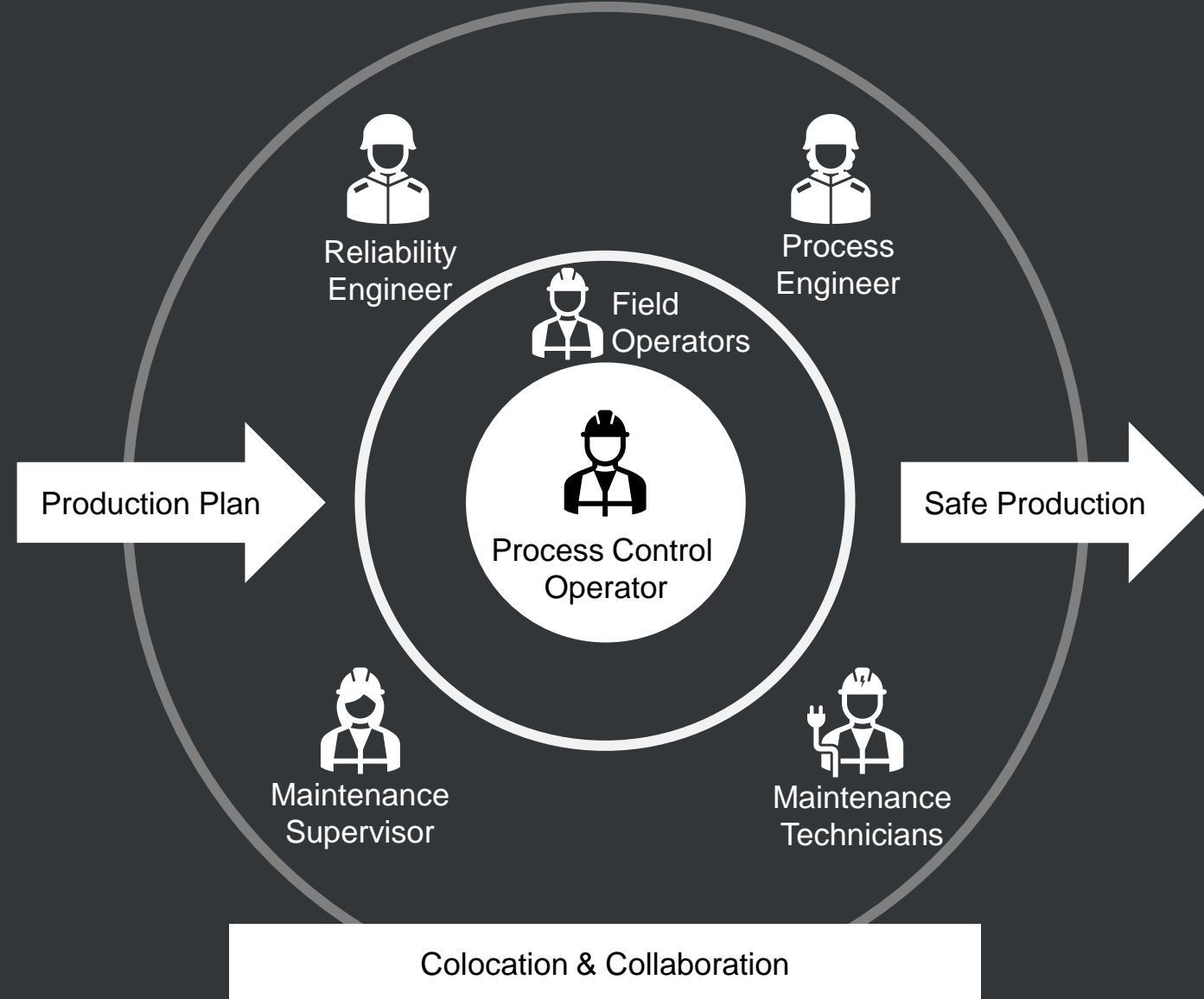


Level 1

Large screen giving a complete overview of the factory or the different factories.

Common Control Room Business Case

One management
Common Goals
One Culture



Business case



- a) One place where a common overview of the factory is displayed
- b) Overview of high-level status, to understand where the problems are, and where to dive into problem solving
- c) Better collaboration between different departments
- d) Building competence across units / departments
- e) Others entering control room can get overview of the situation without disturbing the operator
- f) Possibility to do other tasks while watching the operation
- g) Wow effect
- h) Easier to recruit personnel to working in the control room
- i) Large screen used to train new operators, or giving visitors understanding of our process
- j) Easy to share the large screen outside the control room
- k) Give possibility to setup centralized, global control rooms for specific areas.

Business value

Delivering technical facilities to safe and optimal operation

- One team with knowledge and operational control across the plant.
- Increased safety and awareness.
- Boosted operator confidence in handling the processes.
- Improved start-up, shutdown, or product change-over.
- Improved operator readiness.
- Reduced plant downtime.



From

To







Delivering your potential

Questions?

Please wait for the microphone.
State your name and company.



Please remember to...

Navigate to this session in the mobile app to complete the survey.



Thank you!