

Digitization + Electrification = Profitable Sustainability

Saving energy and improving the sustainability footprint of industrial machine or process installations using digitization and electrification.



Machinebouw

12 december 2023, Congrescentrum 1931

Presenter: Valentijn van Ee

General

Life Is On

Schneider
Electric

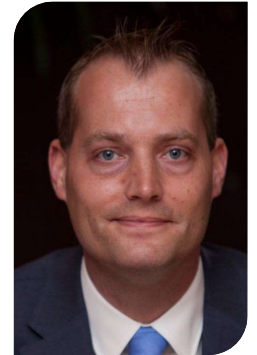
Introduction (1/2)

Valentijn van Ee

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Social : [LinkedIn](#)



- Business development manager @ **Schneider Electric** The Netherlands
- 25 years experience
- Industrial automation, electrical distribution, functional- and hazardous safety.
- “**EcoStruxure Ambassador**” connecting the dots.....

Driving value, creating an optimal balance between (hazardous- ,machine- or process-) safety, efficiency, sustainability and availability within (process) installations. Finding an optimal balance translates directly into better overall performance and operational profit enhancing the economic-, sustainable- and competitive profile of customers. Creating “**Profitable Sustainability**” with a focus on **Digitization & Electrification**.



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Schneider Electric is a **technology company** providing energy and automation digital solutions for efficiency and sustainability

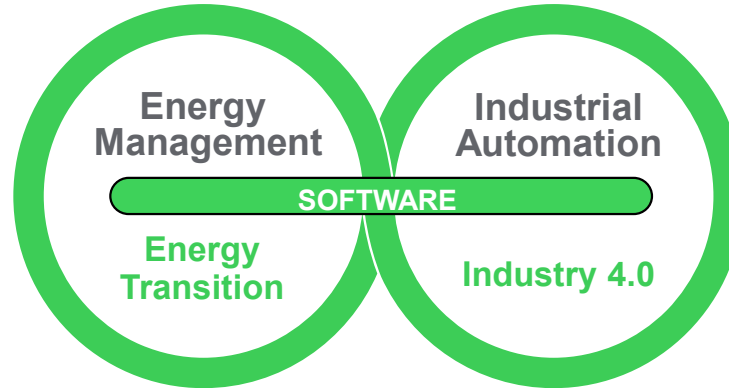
Introduction (2/2)

€34bn

Group FY 2022 revenues

135k+

Employees in over 100 countries



BALANCED

Revenues (by Group)



End Markets



Revenues (by Geography)



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Accelerators for digital transformation

Three years of **challenges** and **accelerations**

COVID-19

Digitization

We contend that COVID-19 is “*the great accelerator*” in fast-tracking the existing global trend towards embracing modern emerging technologies



Energy Transition

Electrification

Demand for electricity will grow seven times faster than for other energy sources



Climate Impacts

Sustainability

Technology is key to decarbonization and electrification is one of the biggest technology enablers for emissions reduction



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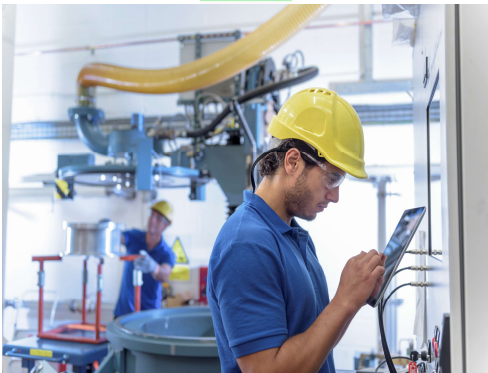
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Digital transformation (for industry)

New digital technologies open unprecedented opportunities for efficiency & productivity in the industry

Empowered Users



What: Empower workforce with relevant business insights

How: Extract insight from operating data, present via mobile/wearable devices.

- Benefits:**
- Better decisions-improved efficiency/safety/profitability
 - User-centric experience
 - Ready for next gen. workforce

Optimized Assets

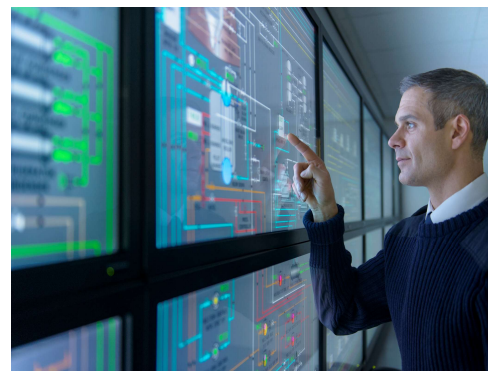


What: Improve return on capital invested in assets

How: Analytics, secondary sensing, cloud, predictive/preventative maintenance

- Benefits:**
- Reduce unplanned downtime
 - Maintenance cost reduction
 - Lower energy consumption

Agile Operations



What: Business agility via control at the enterprise level

How: Local OT autonomy, global IT connectivity

- Benefits:**
- Improved productivity
 - Reduced time-to-market
 - Increased top line

Digitized Products



What: Access new business opportunities in the digital economy

How: Multi domain expertise, digital exchange

- Benefits:**
- Social responsibility
 - End-to-end traceability
 - New business/ increased top line
 - Improved customer satisfaction



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Examples: Optimized Assets & Agile Operations

Stolt Tankers 

(Energy Saving and CO2 reduction)



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Energy Preservation Project: Stolt Tankers



General information

Customer background

Stolt Nielsen (Stolt Tankers) is world's largest operator of sophisticated chemical tankers, leading provider of door-to-door transportation services for bulk-liquid chemicals. Fleet size 169 chemical tankers.

Overall Project Goal

Reduction of operational costs & improvement of the sustainability footprint per chemical tanker.

Application & Scope Information

Implementation of a **frequency** drive + HMI control solution per application.

- Engine Room Fans Application (ATV9xx+ATV6xx)
- Seawater Pump Application (ATV6xx)
- Boiler Feed Pump Application (ATV6xx)



Stolt Community Project Team

Stolt Tankers

Albert Pergler
Ivan Stont
Cezary Klimek

Schneider Electric

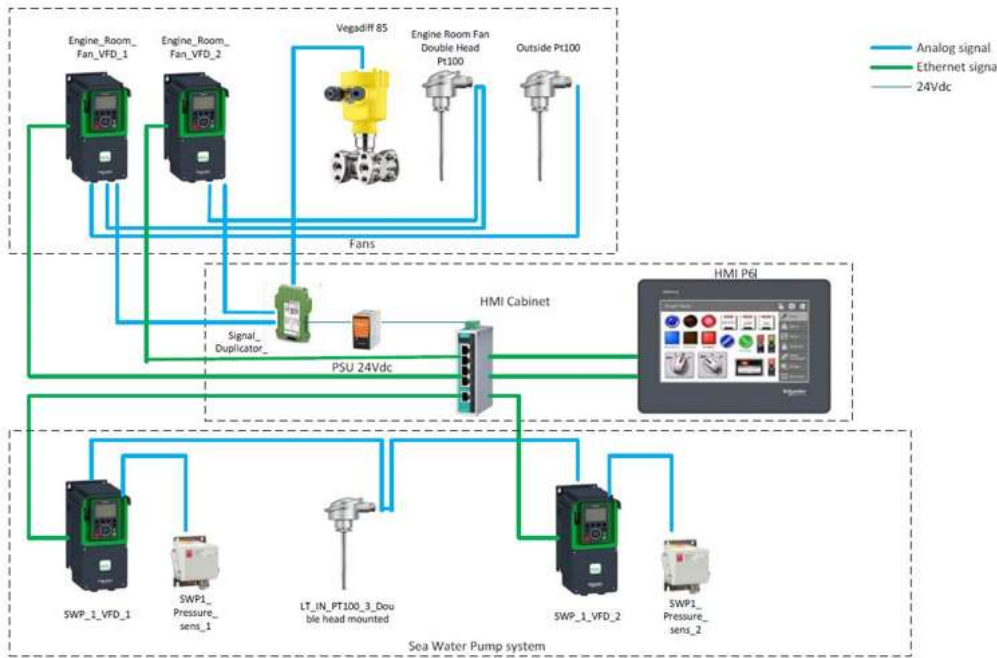
Valentijn van Ee (SAM)
Karin Luijkx (IAR)
Rob Schaap (PAE)
Victor van Heuven van Staereling (SAE)



Energy Preservation Project: Stolt Tankers



Applied Ecostruxure Architecture



Ecostruxure Architecture Explanation

For the engine **seawater pumps** we used 2 Altivar ATV650 with MultidriveLink to create a booster pump application with PID regulation. Application is controlled and monitored via our Harmony ST6 IPC.

For the 4 **engine room fans** we used 2 Altivar ATV650 and 2 Altivar ATV950. Also Controlled and monitored via our Harmony ST6 IPC.

The Altivar ATV650 are both master (**redundant master/follower**) and the Altivar ATV950 are **slave** speed follower on analog 4-20mA signals. When 1 master fails the other master must control both slaves. This is done with **multi configuration** on the Altivar ATV950 and relay outputs on the Altivar ATV650.

Savings

General savings per application:

Engine rooms fans	67%
Seawater pumps	46%
CO ₂ emissions	57%

Total savings per year:

CO ₂	5282 mT
Fuel	2115 mT



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Examples: Optimized Assets & Agile Operations



Air Liquide



AirLiquide

(Reduction of operational cost ,
energy and CO2 reduction)



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Energy efficiency business case: Air Liquide

Customer background

The 'PerGen' plant is a co-generation combined heat and power plant that can supply up to 300 megawatts of electricity, as well as 700 tons of steam per hour. Almost 60 factories on the Shell Pernis site must be able to access steam continuously (24/7) PerGen meets this requirement with the highest possible delivery reliability.



Overall Project Goal

Reduction of operational cost while improving carbon dioxide emission by implementing frequency control for burner application

Application & Scope Information

Implementation of a frequency drive control solution per application.

- Boiler Feed Pump Application
- Compressor Application

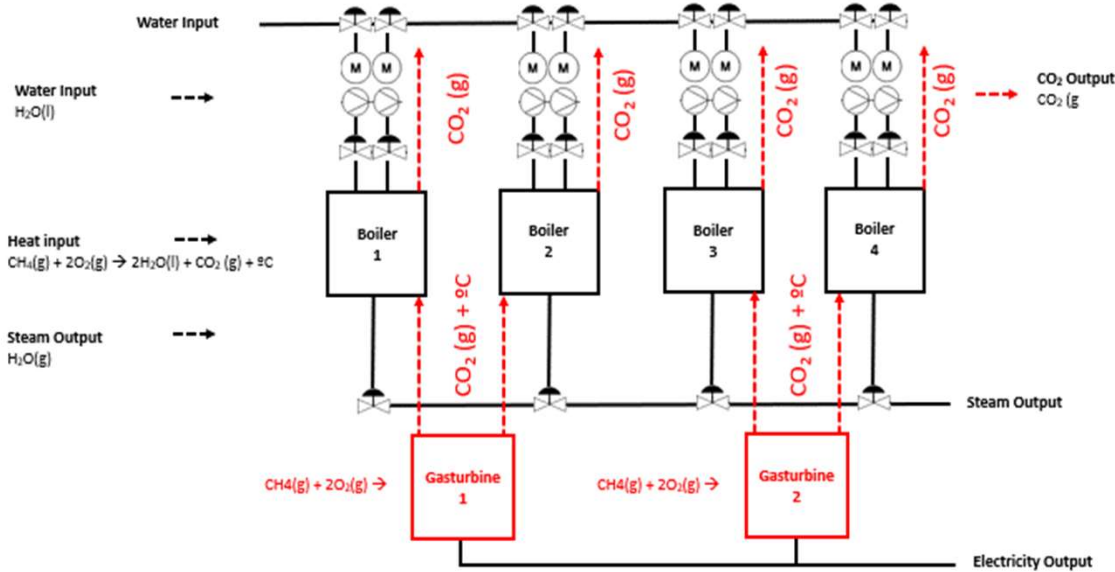
Team

Valentijn van Ee (SAM)
Karin Luijkx (IAR)
Alex Wait (PAE)

Roland Voigt (Technology manager)
Peter Vissers (EI&A)
Pedro Granadas (Maintenance)



Energy efficiency business case: Air Liquide



Ecostruxure Architecture Explanation

For the boiler feed and compressor application we have created a business case in which we calculated the win in energy and emission savings.

In both applications we found a possible improvement based on utilisation of frequency control. The return on investment for implementing frequency control in both applications is less than 1 year. Besides energy (cost) savings we also calculated a significant reduction in carbon dioxide emissions (sustainability and ETS cost reduction).

The frequency control functionality will be implemented based on our medium voltage frequency drive system Altivar 6000.

Power consumption	: 1.5 MW
Operation hours (24H)	: 80%
Savings	: 15-30%
Energy price	: 70 €/MWh
Expected Energy Savings	: 110-220k Euro per year
Return on Investment	: 8 Months



Examples: Make a brownfield factory smart



Le Vaudreuil Schneider Electric smart factory in France



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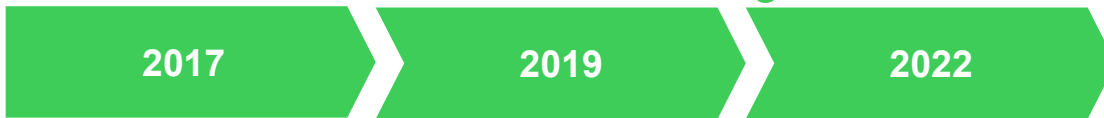
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Examples: Make a brownfield factory smart

Schneider Electric has transformed +100 Smart Factories and Distribution Centers in 4 years

Fast Scaling



0 smart factories

- Validating solutions and started to build 11 show cases.

77 smart factories
10 smart distribution centers

- Proven result on ROI

+100 smart factories & distribution centers

- Focus on adoption of core digital tools
- Proliferation of Intelligent Vision
- Analytics platforming with AI optimization
- Smart automation

Internal Smart label

“Standard” Smart Factory

Validate Lean audit evaluation
+
80 % Standard Digital Deployment

Concrete Benefits

A typical overall payback is 1.5-2 year* , specifically

- Energy Efficiency
- Productivity
- Reliability
- Safety
- Sustainability



7 smart factories recognized

5 Advanced Lighthouse (France, USA, Indonesia, China, India), 2 Sustainability Lighthouse (USA, France) 2 Developing



Gartner Recognition



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At Schneider Electric, we do what we preach even in our own factories.

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Examples: Control Cabinet of the Future (visible at our booth)

Visit our booth to explore how you can **digitize machines**, ensure **data transparency**, and **drive sustainability**.

We'll showcase how you can save energy and become more sustainable through:

- Connected products: Provide essential data for analysis and optimization.
- Edge control: Enables local machine performance monitoring and cloud data transmission.
- Apps, analytics, and services: Offer insights through intuitive dashboards.

Benefits for you and your customers:

- Energy savings
- Predictive & Remote Maintenance (Lower OPEX)
- Insight into performance & Longer component life
- Preventing downtime & Lower carbon footprint

Join us at our booth to discover how these solutions can drive efficiency and sustainability!



Want to tap into “**Profitable Sustainability**”?
Let's connect at our booth



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Questions and answers

Thanks for your attention for “Profitable Sustainability”?
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