CEMEP

European Committee of Manufacturers of Electrical Machines and Power Electronics

Variable Speed Drives at the core of sustainability

Jean-Louis GUILLOU - Schneider Electric

02nd CEMEP CONFERENCE

7th and 8th July 2022 in Milan, Italy

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How VSD's can leverage on digital everywhere for better sustainability

We continue to accelerate our commitment to Sustainability

Be the **digital partner for Sustainability and Efficiency** for our customers

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World runs on Electric Motors

Variable speed drives (VSD) are power electronic device that control motor speed and torque to decrease unnecessary energy consumption. The most sustainable energy is the energy that you do not use.

Buildings

40% of energy consumed by motors

Commercial
(hotels , offices, malls, hospitals)

Industrial
(semiconductors, life science)

infrastructure
(Airports, railways stations)

As well : Data centers , critical building

Industrial Process

70% of energy consumed by motors

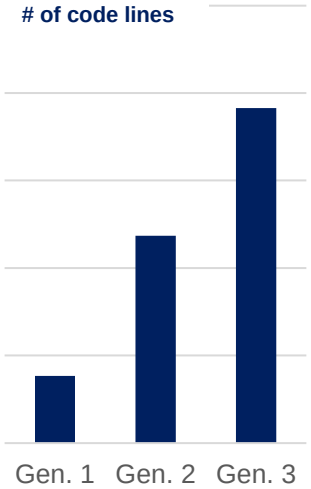
WWW
(Desalination, treatments, network distribution)

MMM
(Mining, Steel , alumina)

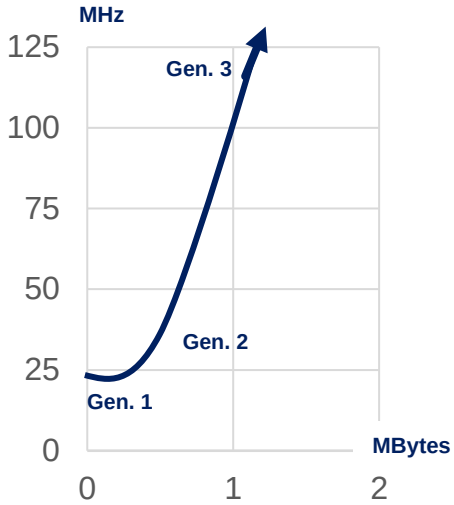
O&G
(Extractions, pipeline, rafineries & Chemical)

As well : F&B (dairy, drinks, food transformation),

VSD become Smarter Power electronic devices



Firmware source code size

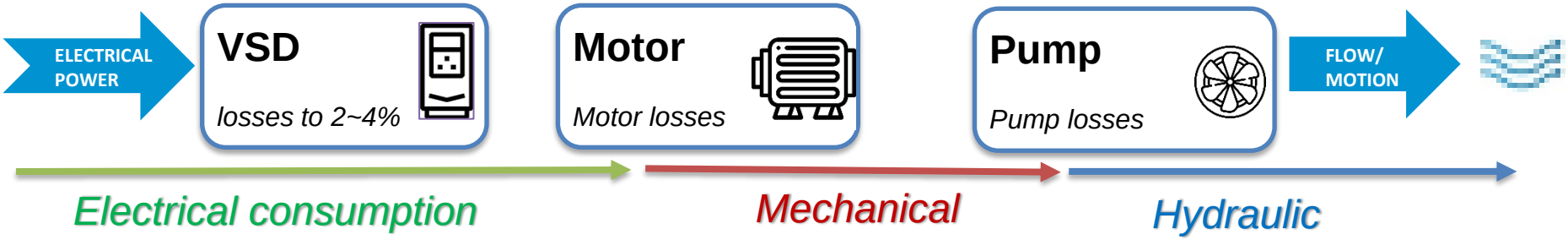


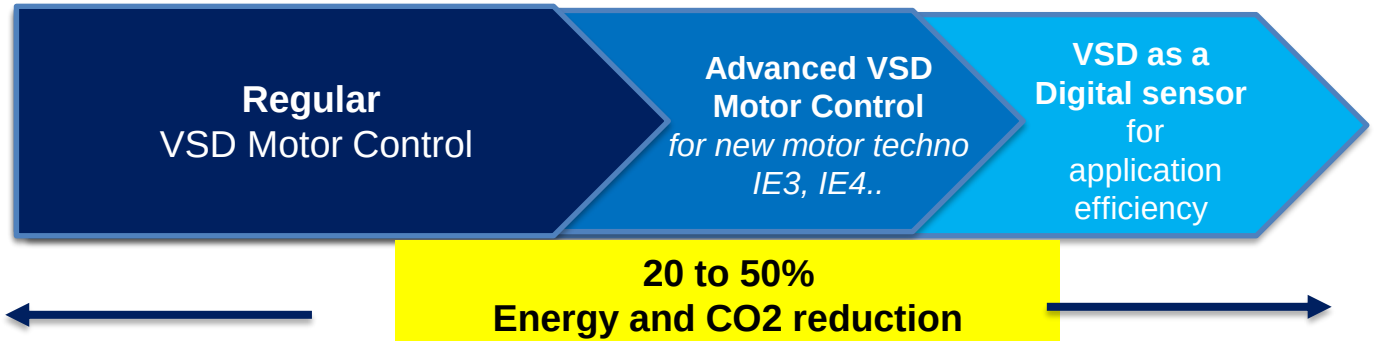
MCU processing power (clock & memory)

New Trends

- *Intuitive HMI's*
- ***More data processing***
  - *Prevent failure (adv. Diagnostic)*
  - *Application efficiency*
- ***Connectivity*** *&* ***Ecosystem view***
- ***Standards/Certifications*** *:*
  - *Cyber security*
  - *Safety*

Smarter VSD's = savings >> losses





3 integrations for better Efficiency & Sustainability

END POINT → CLOUD

VSD's are connected to the Edge Control & to Advisors

VSD communicate real time data and alerts to **protect and optimize the system** (Drive-Motor-Pump…) and **extend life time**

ENERGY + AUTOMATION

VSD's provide digital data for both Process Efficiency and for Energy Management

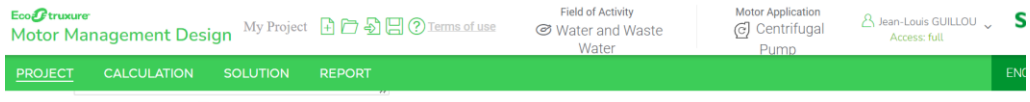
Optimized Process + Real Time Automation dashboard + Energy dashboard

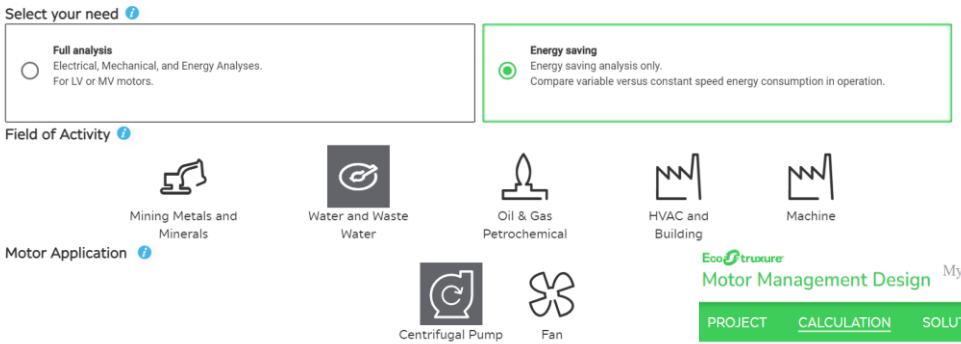
DESIGN & BUILD → OPERATE & MAINTAIN

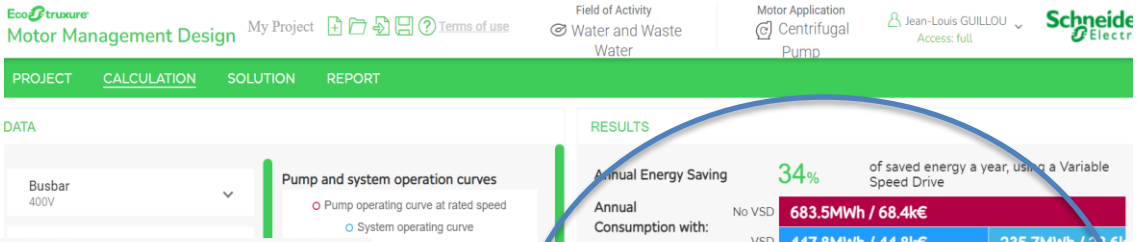
The Digital Customer journey from architecture design to Operate & Maintain

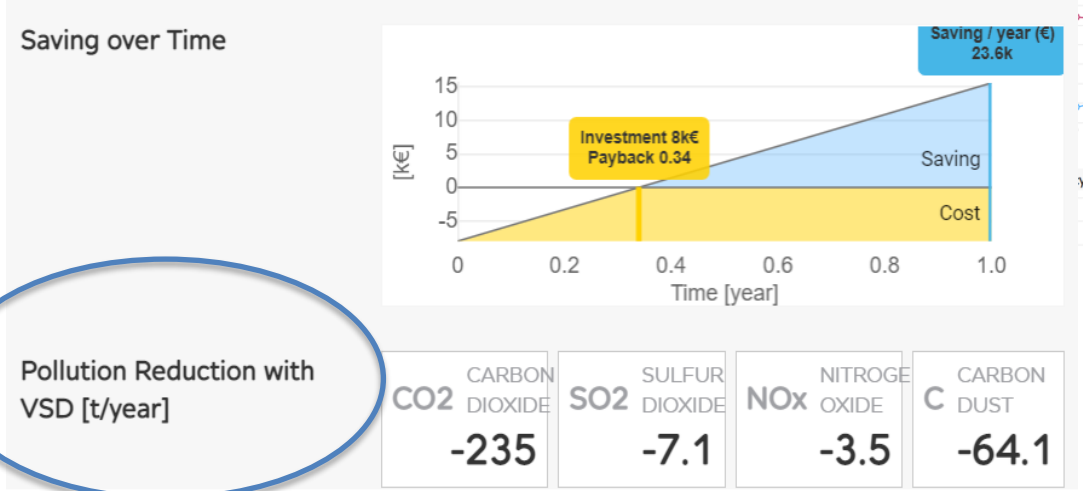
CO2 & energy saving calculators during architecture Design
Asset advisors, embedded Preventive-Predictive, …

Digital tools allow to assess energy and C02 during customer design & selection phase









How VSD's can leverage on Digital everywhere

- **More Digital for more sustainability**,
  intelligent power electronic device + conectivity

- **Customer Savings >> VSD Losses**,
  still an area for smarter VSD's

- **System view is better than Product view**

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Circular Economy on VSD

What is the Voice of our customer on Circular Economy.
How do we foresee product development evolution to foster Circular Economy.

Circular Economy Drivers – Explore the 4 C's

CLIMATE
Lever for climate & sustainability targets

Circular path could halve EU's carbon emissions by 2030 across mobility, food systems and the build environment.

EllenMcArthurFoundation, 2021

CUSTOMER
Growing consumer pressure

81% expected to buy more environmentally friendly products in the next five years.

Accenture, 2020

COMPLIANCE
Arising pressure from legislation

Around the globe, authorities release tighter environmental standards concerning circularity, e.g. in the EU, France, standards and more.

COST
Resource access and supply chain resilience

Raw material commodity prices nearly 18% higher than a year ago, continue rising with amid stronger demand.

Worldbank, 2021

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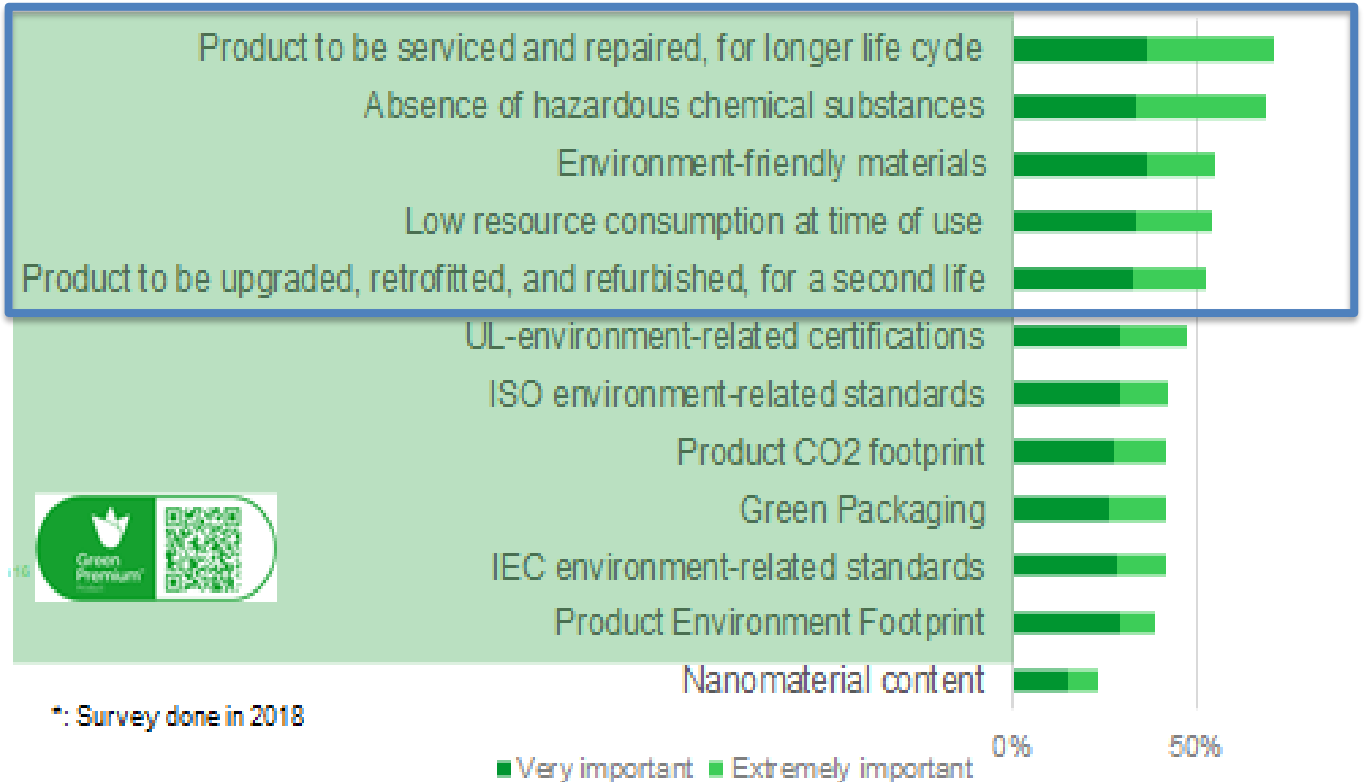
Voice of Customers on sustainability



*: Survey done in 2018

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Circular economy : 3 principles, all driven by design

- Green Premium (V3 under construction)
- Reduce commercial references
- Reduce field failures
- Modular design(*)

- **Design for reparability (*)**
- **Design for refurbishing (*)**
- Product Traceability

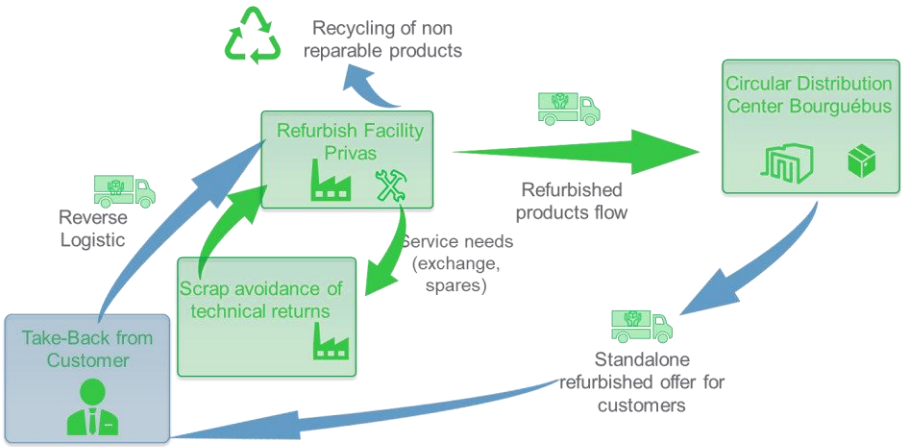
- Plastic
- Recycle Aluminium
- Recycle carton/paper

(*) Challenges
Small products and PCBA
Remaining Life time of power components

** Source: Ellen MacArthur Fondation*

On going experiment on take-back & refurbish

- How to get the products back?
- Right business model and profitability ?
- Scalability of the model ?
- Digitization to support Traceability ?



Thanks for the attention!

(Speaker's email)