

White Certificate on electrical motor driven systems

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17th september 2020

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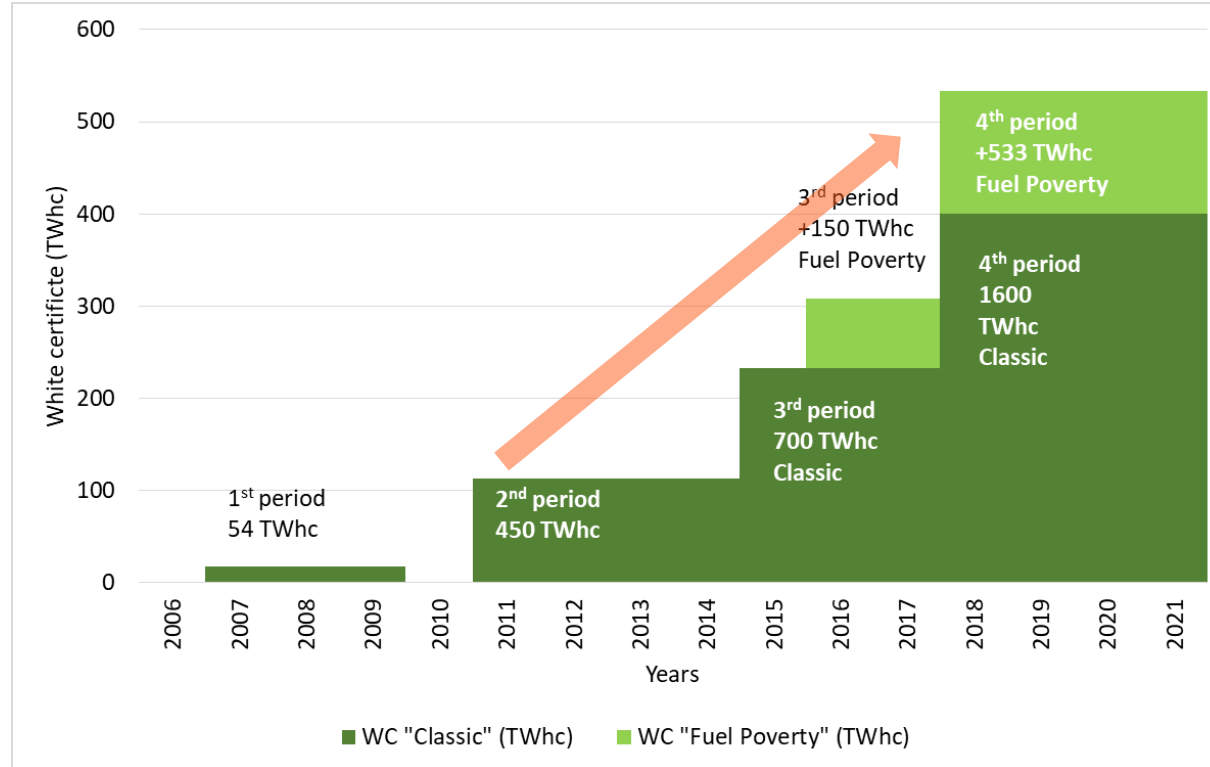
4.

2 Examples :

- exhaust fan gas of a car bumper paint booth,
- compressed air unit in a chocolat factory plant

WHAT ARE THE FRENCH WC ?

- In France, 90 % of the 1.5 % of the annual savings target set by the EU Directive (2012/27/UE) is achieved through the WC.
- A steadily increasing obligation since 2006
 - $\text{Obligation}_{2018-2021} = 2.5 \times \text{Obligation}_{2015-2017} = 30 \times \text{Obligation}_{2006-2009}$
 - Since 2016, a specific amount of WC has to be made in fuel poverty households

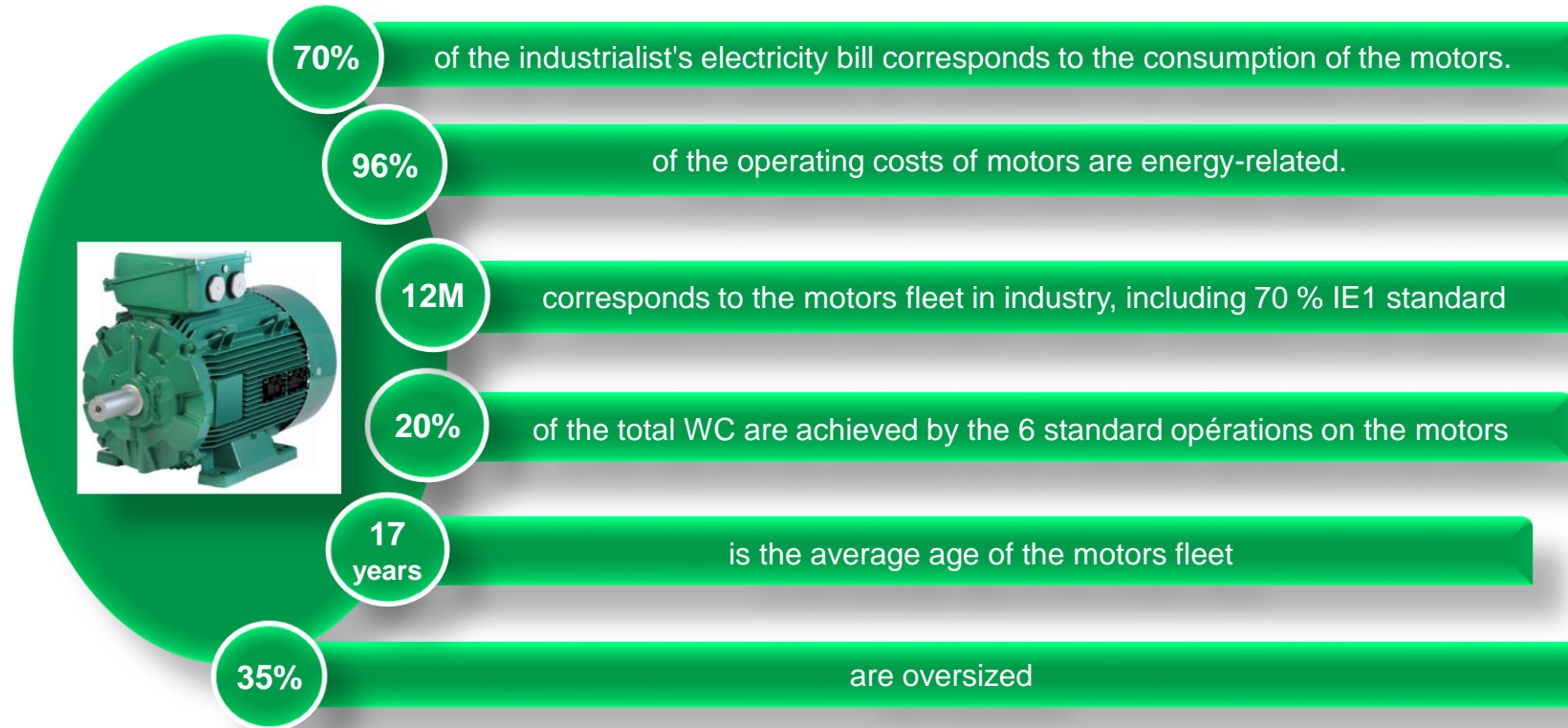


Motor driven systems is a WC standardized operation since august 2019.

N.B. : WC are accounted in kWh « cumac » which represent final energy savings cumulated over solution lifespan and actualized at 4 %

OVERVIEW OF ELECTRICAL MOTOR CONSUMPTION

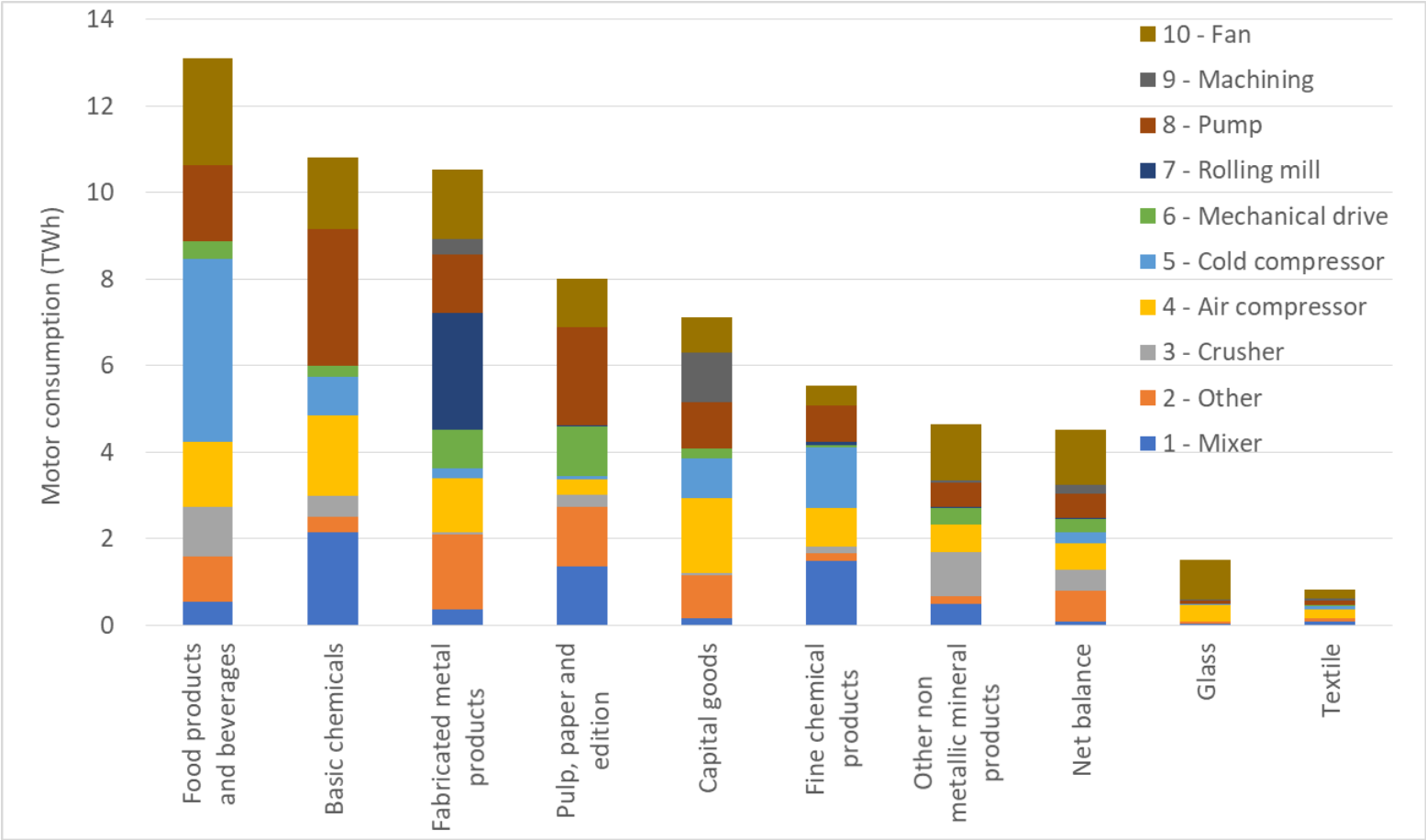
Key figures for motors in industry



Electrical Motors represent a huge energy saving potential.

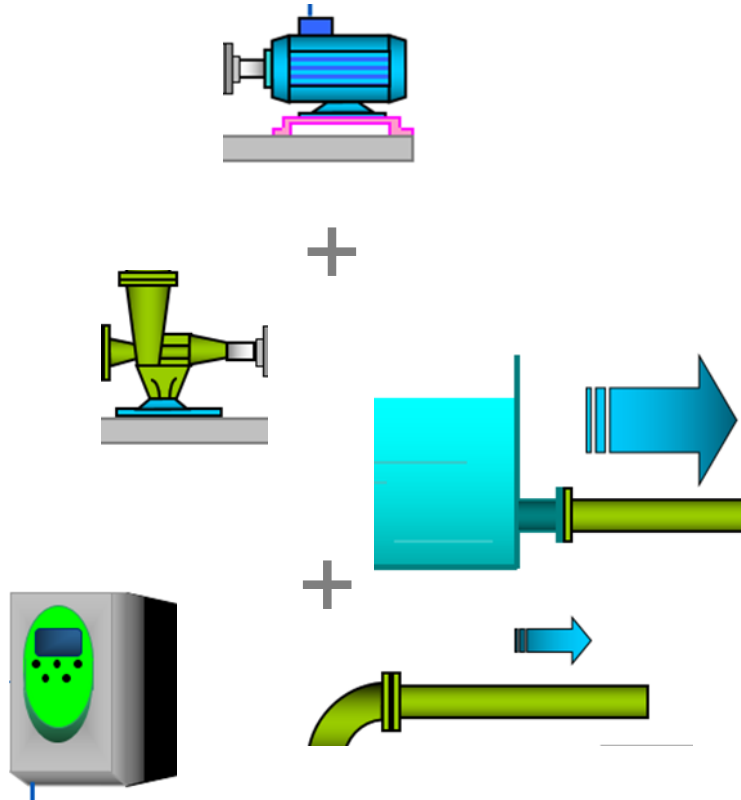
OVERVIEW OF ELECTRICAL MOTOR CONSUMPTION

67 TWh = consumption of the electrical motors over 11 kW (80 % of electricity consumption and 5 % in number)



Motor driven systems are used in all sectors and in many applications.

« COMPONENT APPROACH » VS « SYSTEM APPROACH »



The limit of a “Component approach”:

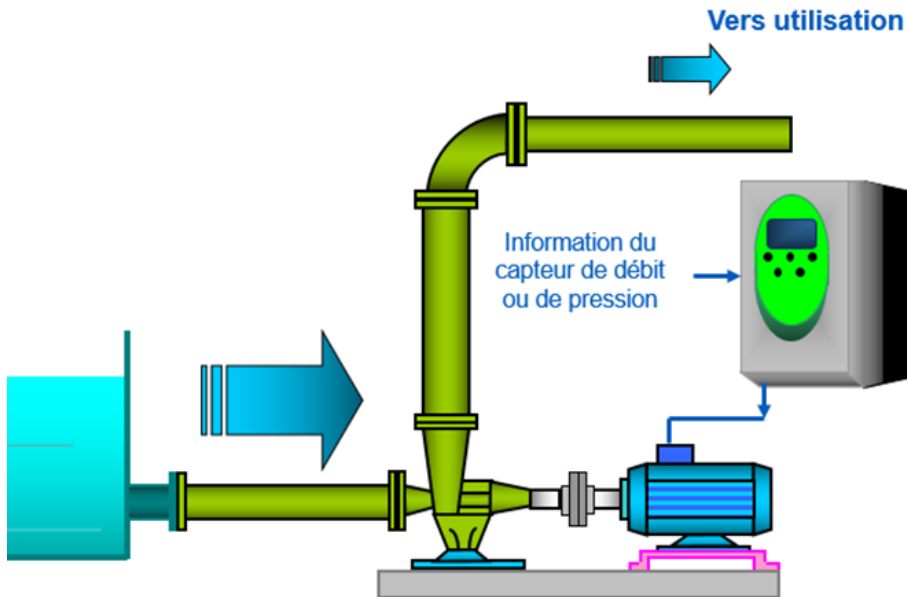
- Sum of components
- Does not guarantee the overall efficiency
- Overlook the system parameters
- Does not take into consideration all the interactions between the different components
- Can lead inefficiency of the driven machine
- Does not encourage interactions between the engineers involved in the project

The components are optimized one by one = risky approach.

« COMPONENT APPROACH » VS « SYSTEM APPROACH »

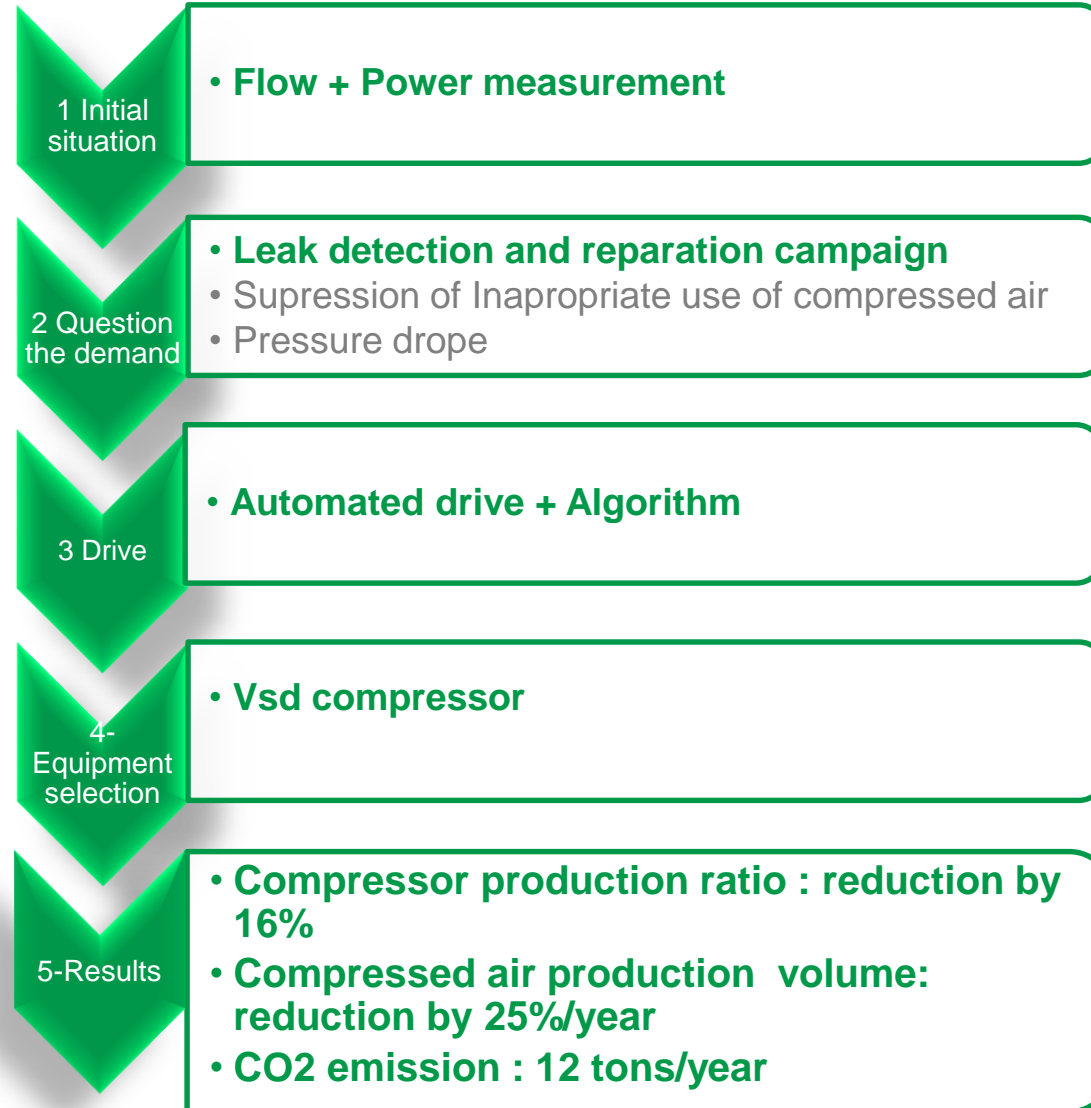
The interest of a “System approach”:

- **STEP 1. Question the demand**
What are the final goal of the application ?
- **STEP 2. Current functioning analysis**
What are the parameters that give information about the demand evolution?
- **STEP 3. Optimize the control:**
Is it possible to control the drive with these parameters ?
- **STEP 4. Application equipment selection:**
Optimize the performance by calculating the energy consumption at the different set points of the process.
- **STEP5. Drive+motor+Transmission selection**
Appropriately sized motors operate the driven equipment as efficiently as possible.



Acting on the demand generates more savings than only optimizing a component.

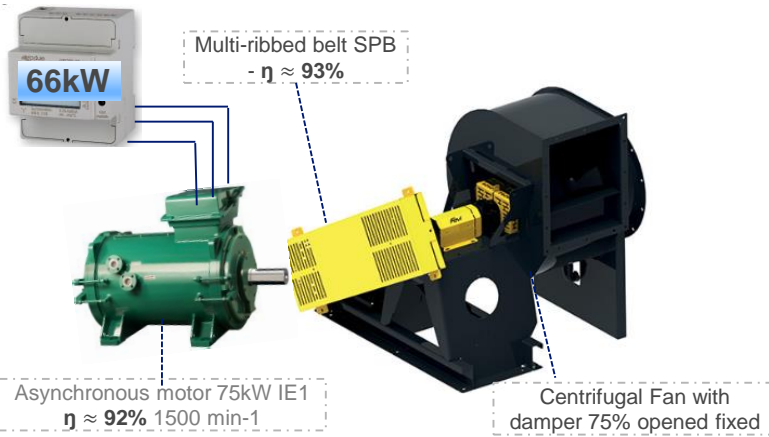
EXAMPLE 2: COMPRESSED AIR SYSTEM IN A CHOCOLAT FACTORY PLANT



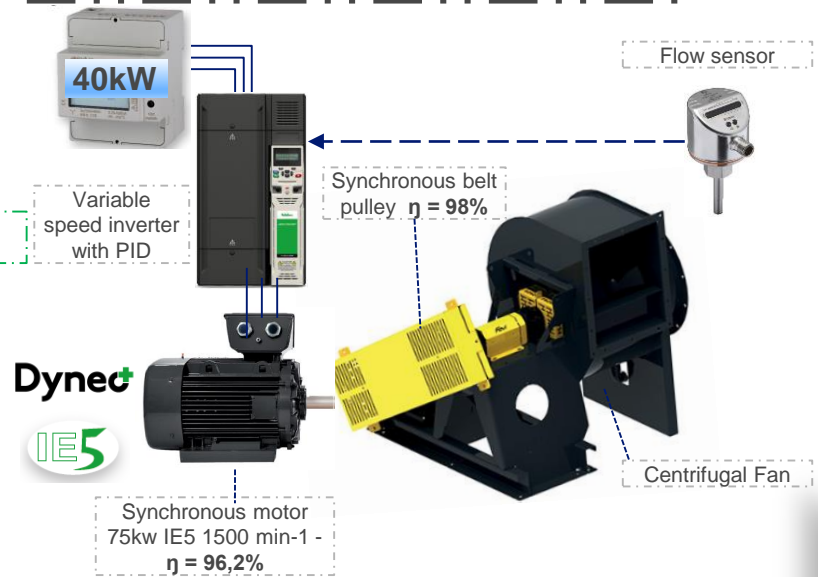
CASE 2: EXHAUST FAN GAS OF A CAR BUMPER PAINT BOOTH

End user demand: operating cycle : 15m³/s for 10% of the time and 12m³/s for 90% of the time with constant pressure 2800 Pa – 7000 hours per year and energy saving.

Before



After



- 1-Goal for the End User
 - Optimising the process
 - Reduce its consumption and total cost ownership
- 2-Analysis of the need
 - End user demand - Operating cycle
 - Measurement of energy consumption during the cycle
- 3-Selection and recommendations
 - Choice of the most efficient equipments
 - Integration of a control loop
 - Simulation of cost saving with Digital tool ESA
- 4-Installation
 - Installation and commissioning
 - Measurement of energy consumption according to the cycle
- 5-Results
 - Average power consumption: 40kW
 - Energy saving / year: 171 MWh
 - Cost saving / year: 14 K€ and CO₂ : 6800 kg

CONCLUSION

The aim: finding ways to improve energy efficiency and achieving the carbon neutrality by 2050

...WC help this challenge.



- ✓ Motors account for **70% of electricity** consumption in industry on average
- ✓ The **systems approach** is the best solution for **optimizing the energy consumption** of a drive system in the **vast majority of processes** (fan, pump, air compressor, cold compressor, etc.).
- ✓ The main objective is **to meet the needs of the application and the process!** no more, no less!
- ✓ Today we have at our disposal to meet this need
 - ✓ Many **high-performance solutions** (ex: IE5, synchronous, Inverter)
 - ✓ Calculation Software to help us
 - ✓ **Innovative and communicating sensors, control loop**, and measurements...



End

We have the power for eco-efficient solutions
let's act!