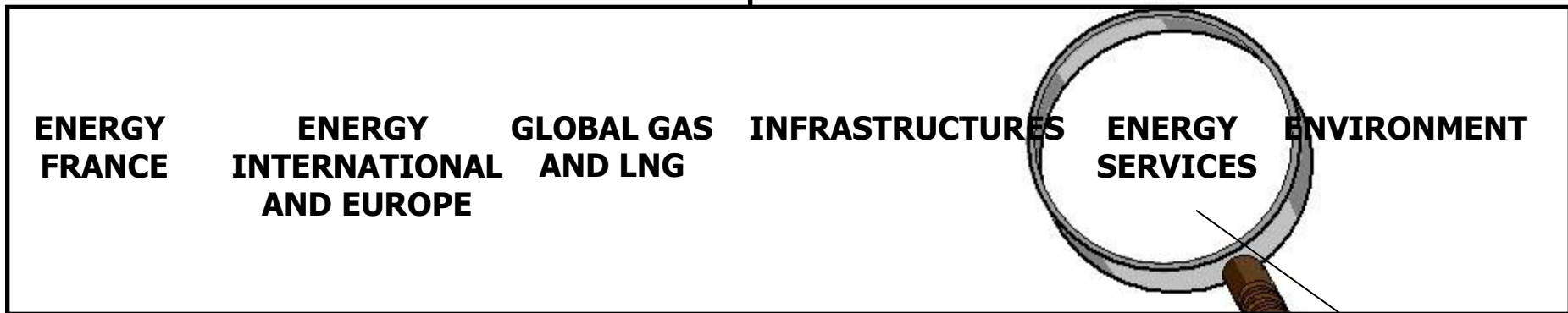


System approach

Feedback from industrial pump users

Pierre FABECK
Sales Director, Fabricom

GDF SUEZ



14 b€ turnover
76,000 employees in 30 countries

➤ **5 000 employees**

➤ **€ 770 millions
turnover**

➤ **www.fabricom-gdfsuez.com**

Our activities

- Design, procurement, construction , start-up , and maintenance of technical installations in the energy, industry, infrastructure and tertiary sectors

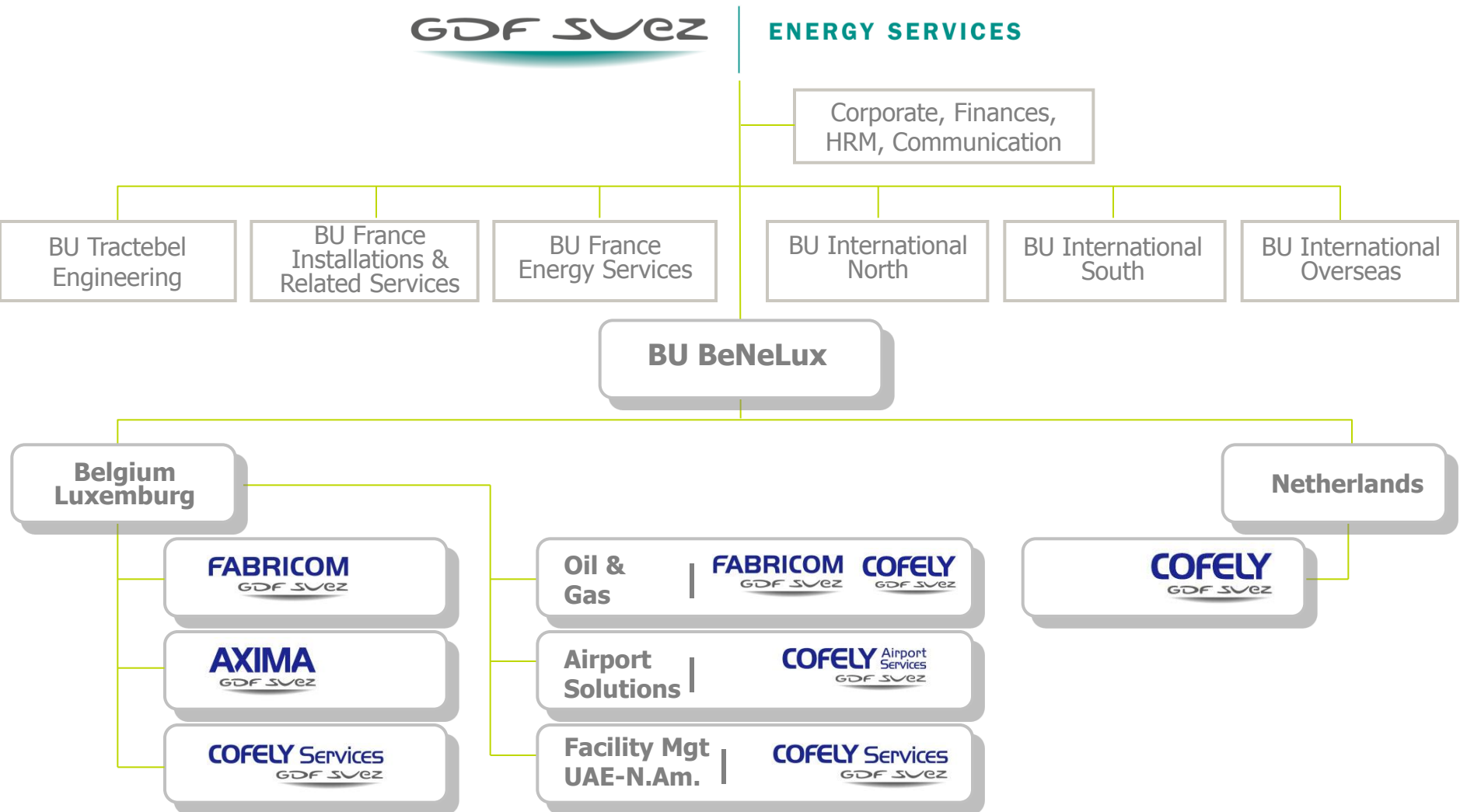
Our culture

- Entrepreneurs
- Project management
- HSE and Energy efficiency

BU BeNeLux, Belgian part,

GDF SUEZ

ENERGY SERVICES



Energy Efficiency and Renewable Energies

- EE and RE at the core of our business
- More than 15% of the total turnover



Electrically-driven rotating machines: main source of energy savings in the (Belgian) industry



49% of the national electricity consumption is consumed by the industry



70% of the primary energy consumed in the industry is electricity



70% of the electricity consumed in the industry is for electrical motors

Sources:

- *The Motor Challenge Programme, Intelligent Energy Europe*
- *Federal Ministry of Energy*

A system approach for pumps ?

- Considering TCO (Total Cost of Ownership) throughout the whole lifetime
- Energy and O&M costs >>>initial investment
- Matching pump set characteristics with all possible system demands
- Focusing on system output instead of pump output

Double Advantage of a system approach

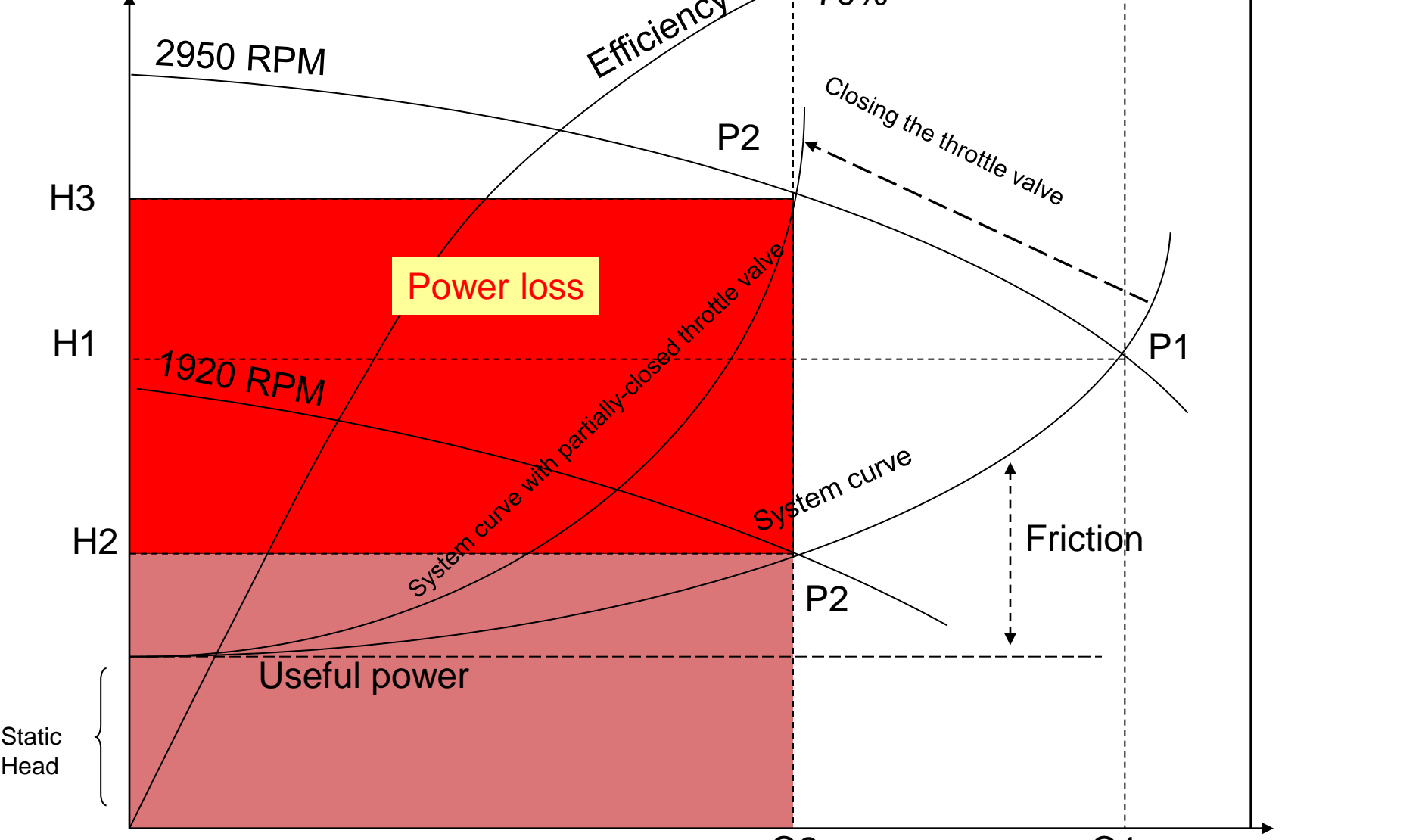
1. Elimination of throttling/choking losses in the system
2. Allows to select a pump running at its Best Efficiency Point (BEP)

Secondary advantages: shockless start/stops, i.e. longer lifetime

Potential energy saving: at least 20%

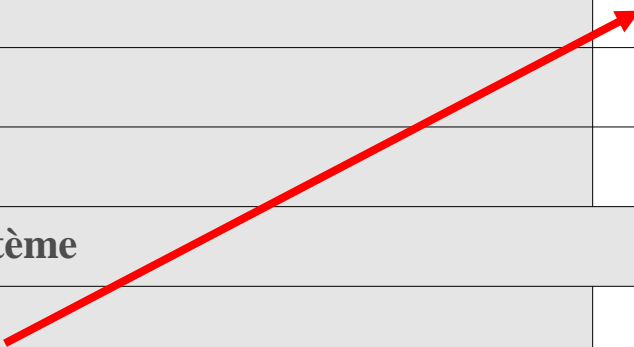
Pump performance

P= Pressure or Head



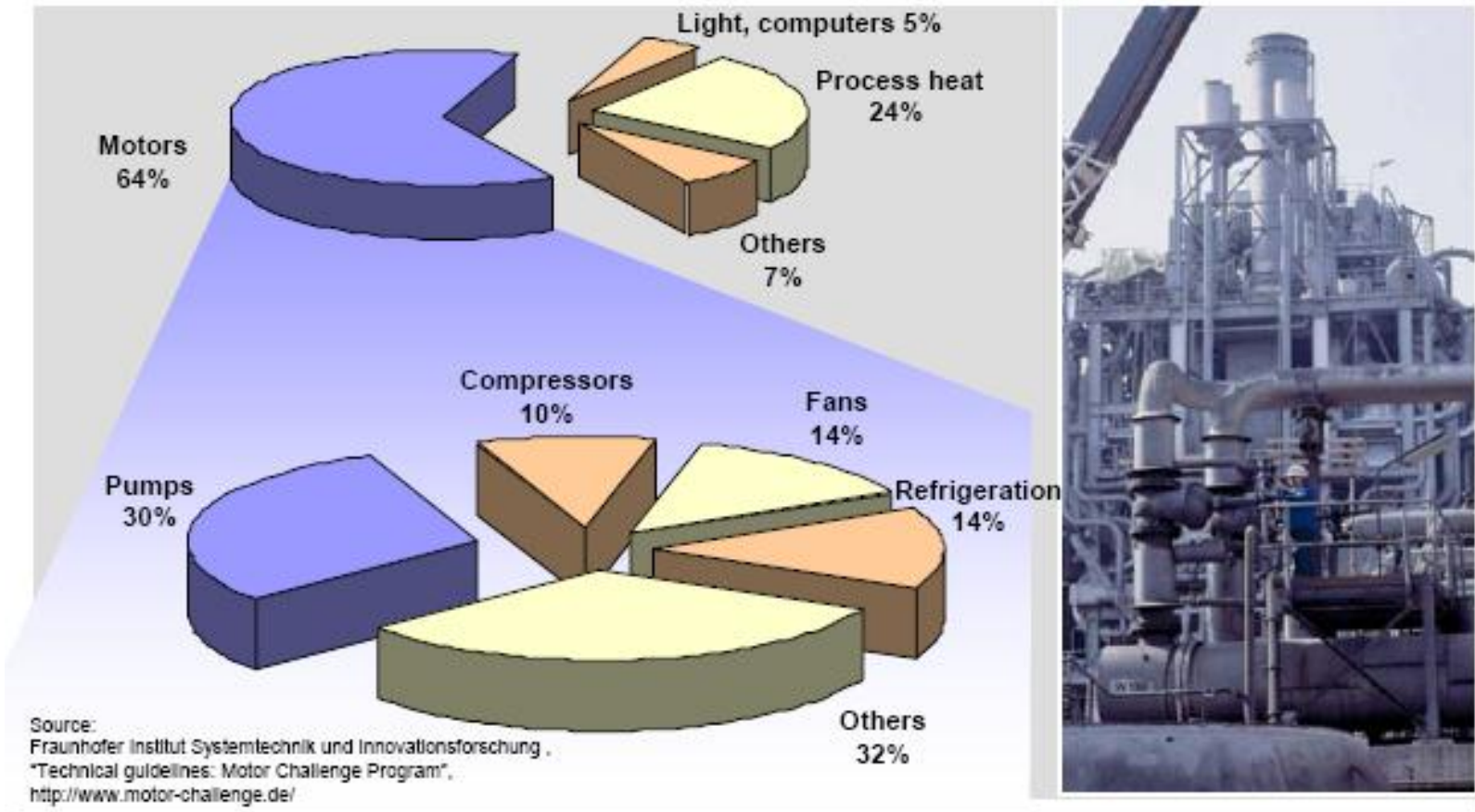
Potential energy savings in electrically- driven machines: at least 20%

	Economies moyennes
Mesure d'économie d'énergie	
Installation ou rénovation du système	
Moteurs à haut rendement (EEM)	2-8%
Dimensionnement correct	1-3%
Rembobinage de qualité des moteurs (EEMR)	0,5-2%
Moteur à vitesse variable (VSD)	10-50%
Transmission à haute efficacité	2-10%
Contrôle de la qualité de puissance	0,5-3%
Fonctionnement et maintenance du système	
Lubrification, ajustement, calage	1-5%



Sources: The Motor Challenge Programme, Intelligent Energy Europe

Pumps, compressors & fans represent ~ 60 % of the total motor consumption in the industry



H. Held, D. Kolmar: Energy-Efficient Solutions for Hydraulic Applications

System approach

What can it bring in Belgium?

- Annual consumption of electricity in 2007= 82.7 TWh (1)
- Part of electrical consumption of the industry : 40.1 TWh (Source: Ministry of Energy)
- Part of electric motors in the industry: 70% i.e. 28.0 TWh
- Part of pumps, fans, compressors in the industry: 60%, i.e. 16.8 TWh
- Potential savings* : 20% x 16.8 TWh= 3.3 TWh, i.e. 4.0% of the total national electricity consumption



Comparison: A German study indicates potential savings of 4000 MW in Germany
 Source: www.efficiency-from-germany.info

Conclusions

- Energy efficiency = essential part of the solution of the world's energy & environment challenges
- Pumps and rotating machinery represent the largest portion of the industrial electricity consumption
- Reasonable target = -20% in industry consumption vs "Business as Usual"
- System approach for optimising pump operation is a must
- ... but most public incentives (federal, regional) focus on Cogeneration and Renewable Energies (solar, wind, biomass) and do not encourage energy efficiency

Thank you for your attention

pierre.fabeck@fabricom-gdfsuez.com