

Welcome to the presentation

# PRODUCTIVITY IN DIE CASTING PROCESS

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**Company Frech**

**FRECH®**

**Frech Group**

**Oskar Frech**

Die Casting Machines  
Tools & Simulation  
Components & Engineering  
Melting & Dosing Technology  
Service & Overhauling

**FIB**

Subsidiaries  
(Sales & Service)  
Heating & Cooling Units  
Automation Products

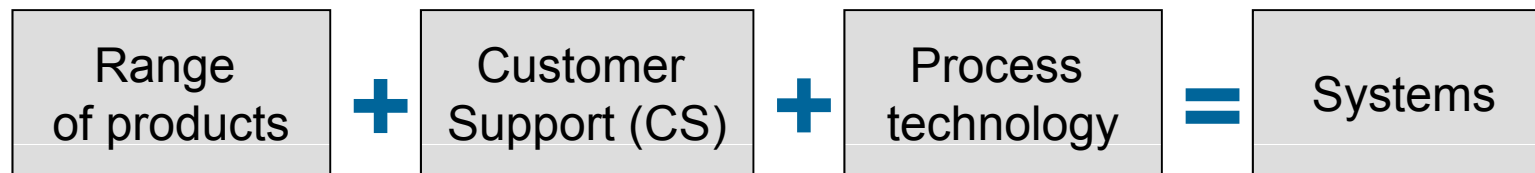
**Moneva**

Die Casting parts (Al)  
Product Development  
Support  
Simulation & Molds

**Frech Leasing**

Financial Tools  
for Germany  
Cooperation Partners  
for abroad

## Business Activities Frech



Statement from the presentation of  
Mr. Kanetake Nakatani, Japan Foundry Society  
at IFF 2010 in Barcelona

**„Productivity of the casting industry of Japan  
is low with about 30% of Germany“**

Reasons: Technology, Education,  
Innovation,.....?

FACT:

Germany's die casting business is highly  
competitive due to  
modern investments in high tech equipment

# WHY IS PRODUCTIVITY VERY IMPORTANT IN THE FUTURE?

From developed and special developing countries we will see a strong growth in the demand for consumer products, vehicles, communication, IT,...

Light vehicle production by region (in units), 2007 – 2014

Source: J.D. Power and Associates

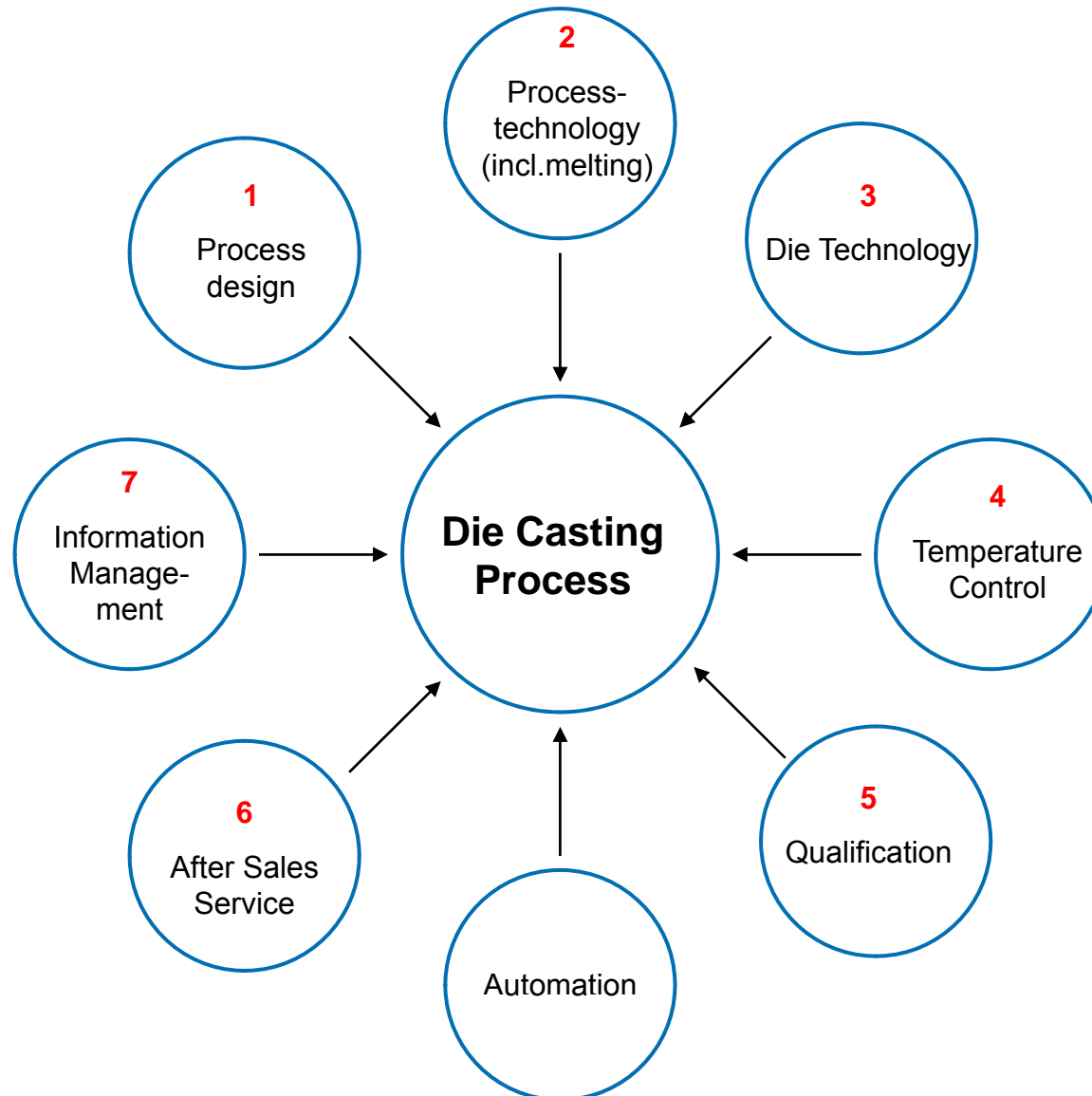
	2007	2008	2009	2010F	2011F	2012F	2013F	2014F	Δ 09-14
Asia	27,889,116	28,333,805	28,846,146	31,794,698	34,210,699	36,526,521	38,172,449	39,561,154	10,715,008
North America	15,023,617	12,583,613	8,525,754	10,595,746	12,280,019	13,927,633	14,759,061	15,468,553	6,942,799
Western Europe	16,109,678	14,582,725	11,946,822	11,892,659	12,179,938	12,501,940	14,072,976	14,897,378	2,950,556
Central and Eastern Europe	5,978,025	6,367,050	4,739,247	5,269,842	5,769,352	6,497,232	7,314,985	8,009,410	3,270,163
South America	3,581,641	3,759,796	3,673,142	4,092,846	4,437,041	4,755,147	5,163,485	5,500,447	1,827,305
Middle East	1,126,521	1,183,087	1,343,704	1,395,552	1,602,405	1,779,340	1,953,593	2,076,379	732,675
Africa	559,785	565,535	397,493	503,400	590,832	717,859	785,450	813,835	416,342
Other	155,796	196,000	198,000	552,000	940,000	967,000	996,000	786,000	588,000
Grand total	70,424,179	67,571,611	59,670,308	66,096,743	72,010,286	77,692,672	83,217,999	87,113,156	27,442,848

To participate as supplier in the future

**Quality + Productivity + Energy efficiency**  
are key figures !

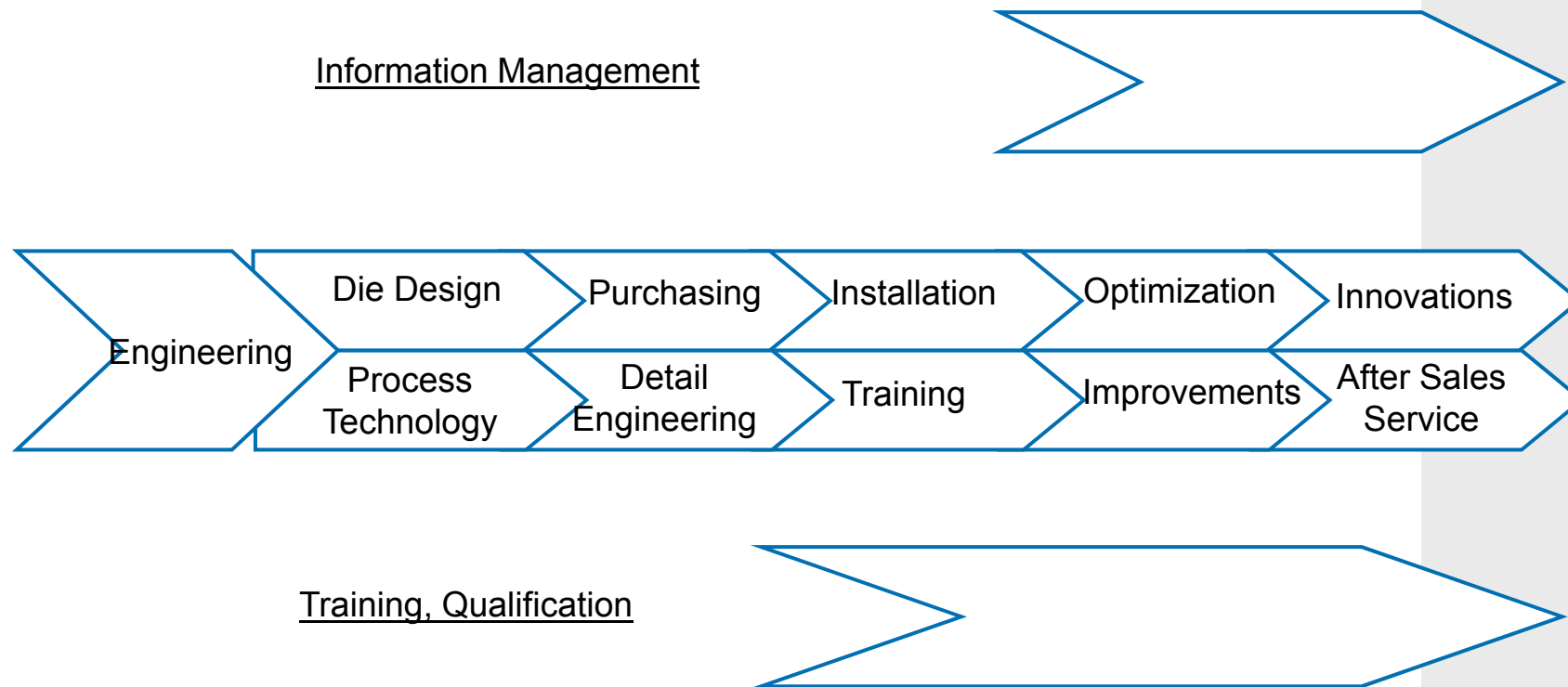
# POSSIBLE POTENTIAL....

## Potential Sectors



# POSSIBLE POTENTIAL.....

## 1. Process Design



## POSSIBLE POTENTIAL.....

### 2. Process Technology

a) Hot chamber or cold chamber machines up to 9.300 kN???

Possible benefit up to 20% cycle time

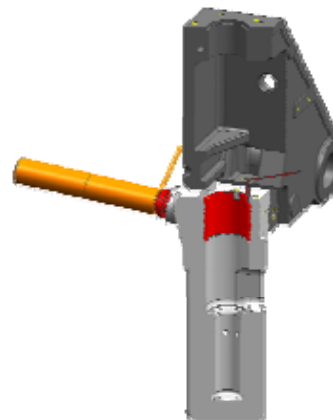
b) Experience + Innovation = Resistance heated nozzle and gooseneck heating (Magnesium)

- Precise, repeatable and accurate temperature conducting through control
- Heat exactly at the required locations
- Heating of adjacent components minimized
- Process technological security / process security

Applicable for all existing Frech machines.

An environment-friendly and energy-saving system.

**IMA-AWARD 2010**



## POSSIBLE POTENTIAL....

### 3. Die Technology

Experience + Innovation = up to 20 % reduced cycle time

up to 0 % micro porosity

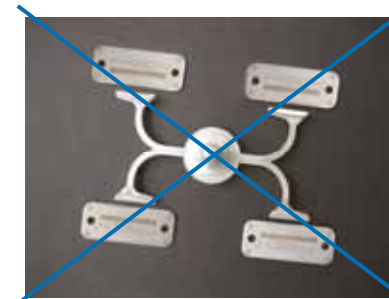
up to 70 % reduced melting volume

# FGS

Frech Gating System

Applicable for Zinc and soon for Magnesium, too.

Only for Frech machines.



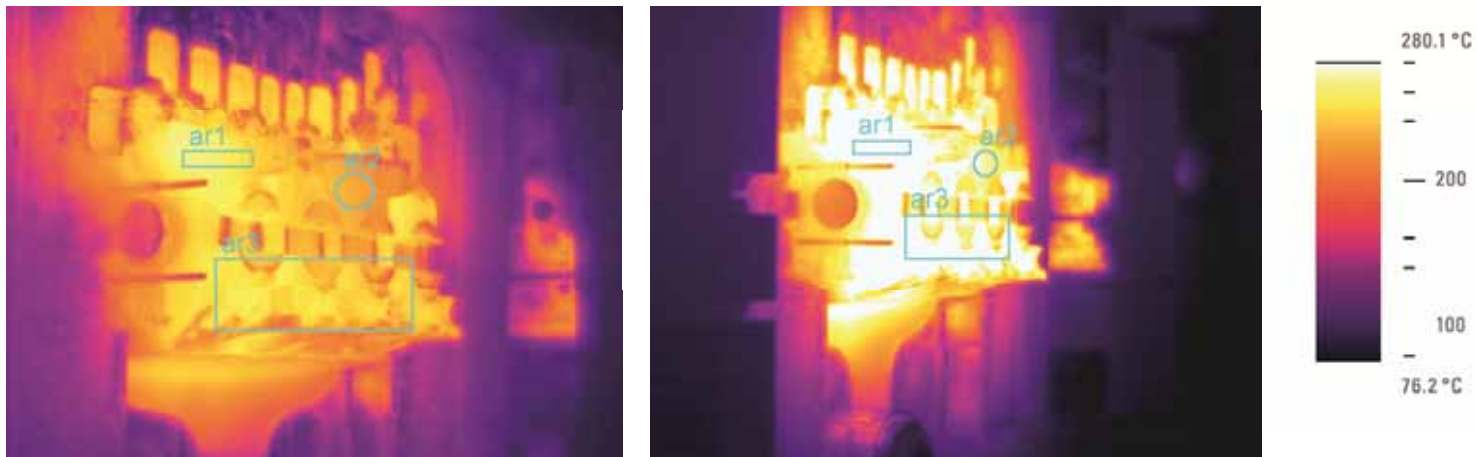
## POSSIBLE POTENTIAL....

### 4. Temperature Control

Improvements in existing process through engineering partnerships and analysis of the temperature field in running process with infrared camera.



Improvements in existing process and recommendation for new engineering.



Water tempered heating and cooling unit vs. oil tempered unit

## POSSIBLE POTENTIAL....

### 5. Qualification and Training on the Job

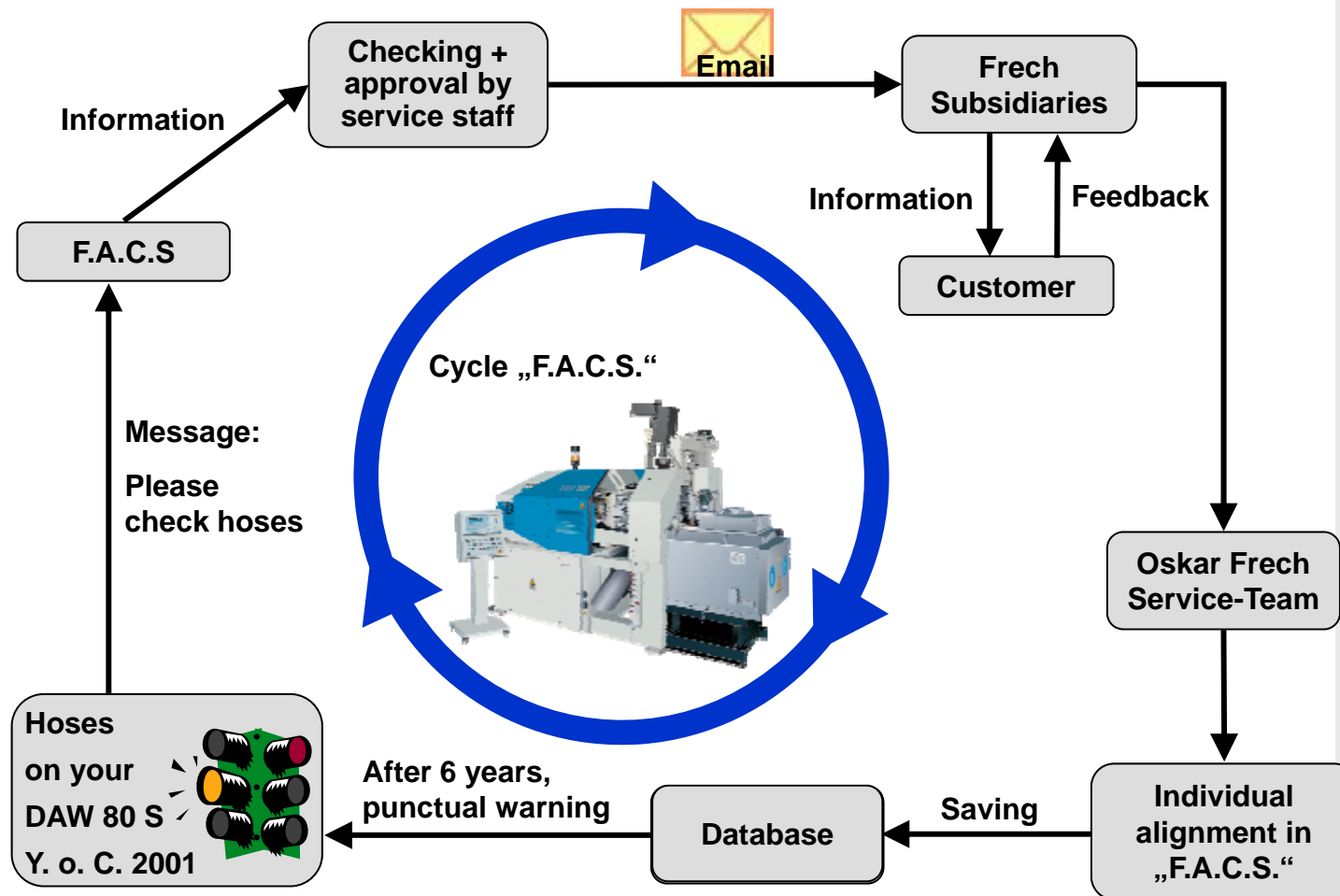
- Technology centres with high- and medium-tech equipment for tests with original customers die (e.g. before designing the process)



- Frech offers training centres in Europe, USA and China and in-house training at customers premises.

# POSSIBLE POTENTIAL....

## 6. After Sales Service – FRECH F.A.C.S



## POSSIBLE POTENTIAL....

### 7. Information Management

- a) Experience of more than 50 years and more than 4000 high-tech applications  $\Rightarrow$  Quality data bank

#### Benefits:

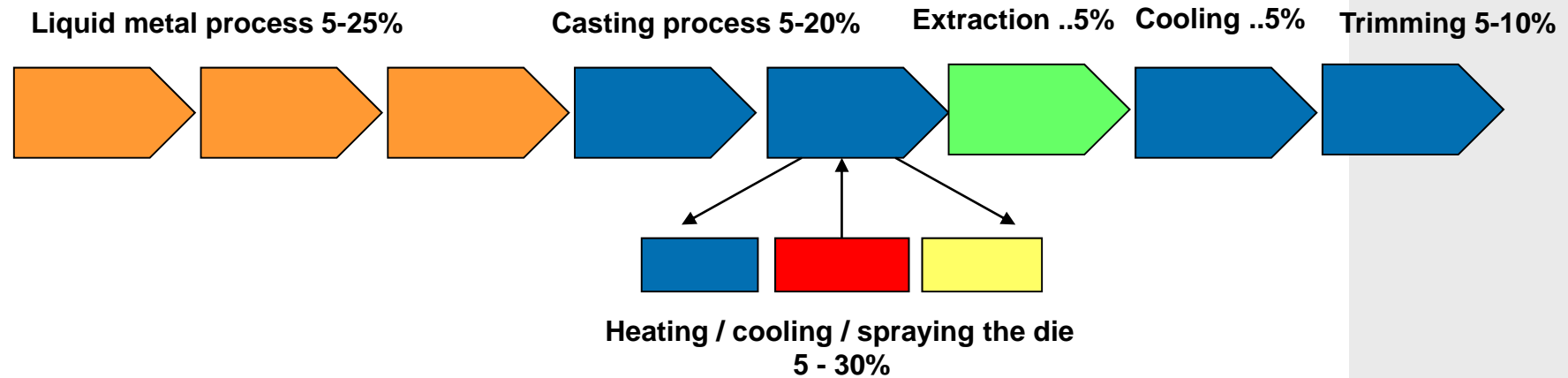
- Data bank with knowledge about more than 30 years in the die casting field
- Automatic comparison of data bank quality issues with the existing one
- Recommendation how to adjust the process to improve the quality
- Tool for personal qualification
- Reduce time in the process of defect elimination



# POSSIBLE POTENTIAL....

- 7. Information Management
- b) Energy efficiency

Creating a strong energy efficiency culture brings a lot of productivity benefits:



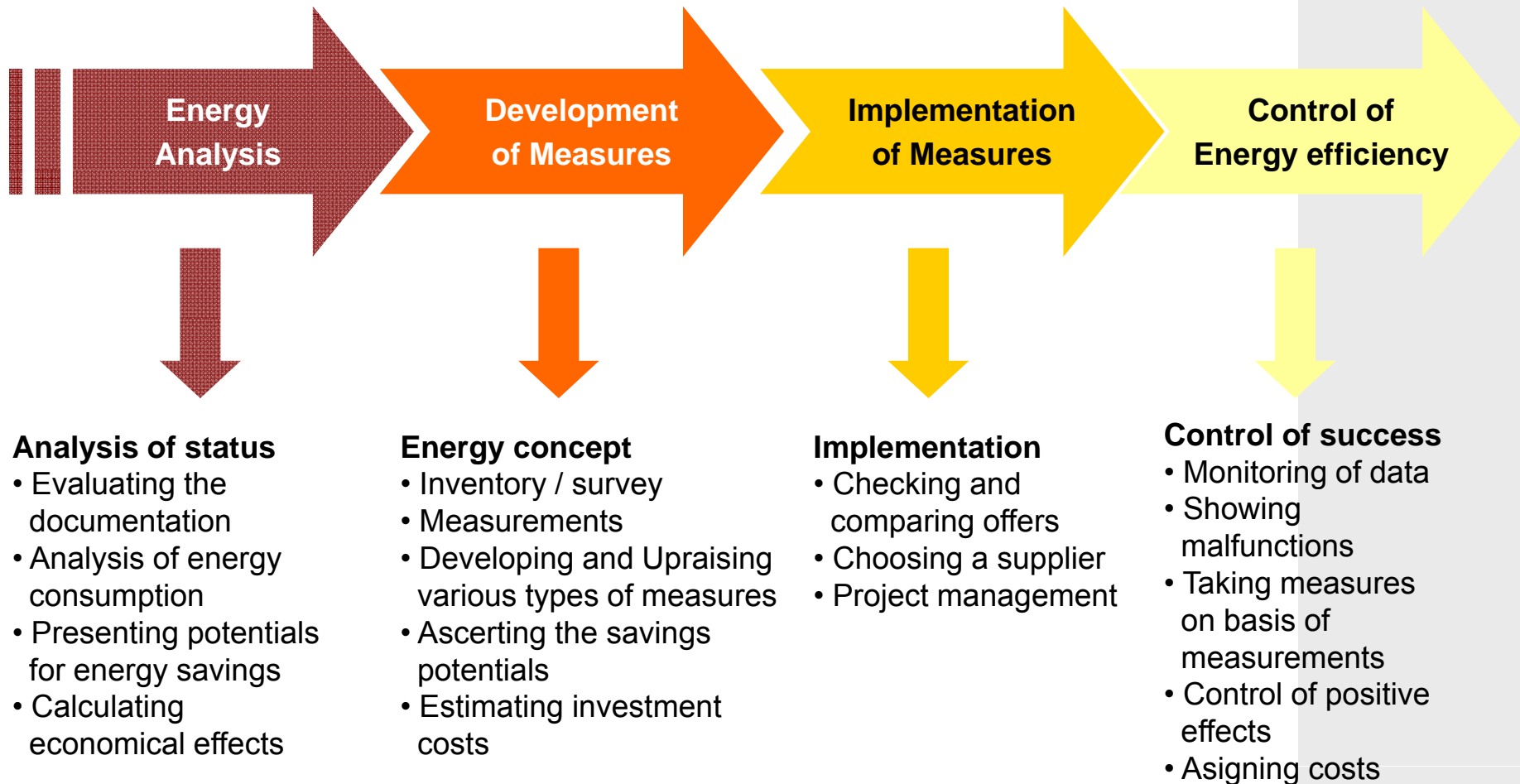
Compressed air	5-20%
Cooling water	10-20%
Exhaust Air	5-15%
Waste water	2-10%
Heating,cooling the building	2-30%

**In total 15% to 35%  
of energy savings  
per year are possible**

## POSSIBLE POTENTIAL....

7. Information Management  
 b) Energy efficiency by FRECH

### Performance Package



**THANK YOU FOR YOUR  
ATTENTION!**