

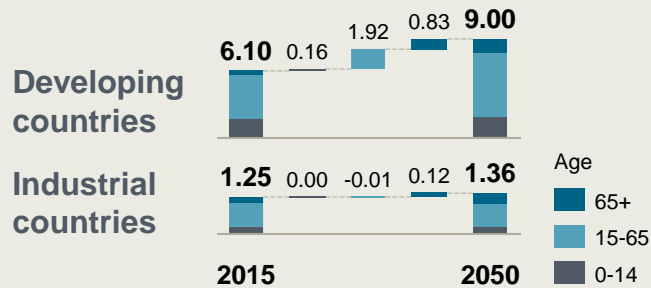
# Energy Efficiency Solution

Workshop "Da qualidade da energia à produtividade industrial"  
Luís Marçal

# Five Megatrends shaping our world of tomorrow – changes in the markets are accelerating

## Demographic change

World population<sup>1</sup>, in bn

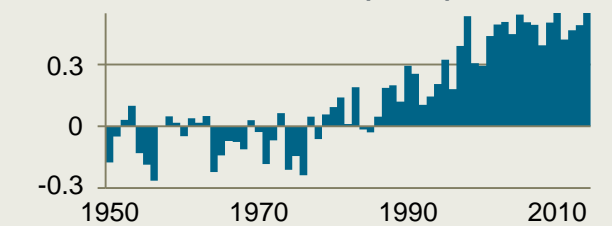


## Growing and ageing population

## Global warming and weather extremes

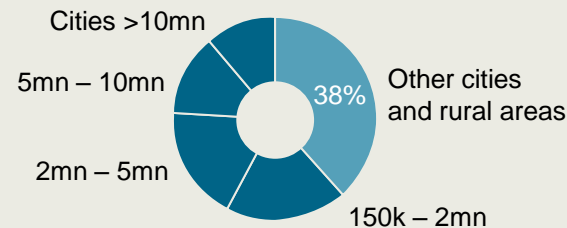
## Climate change

Annual mean temperature variations 1950-2014<sup>2</sup> (in °C)



## Urbanization

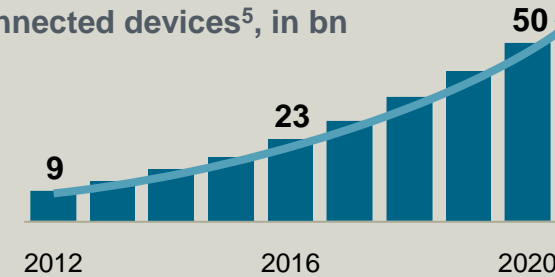
Contribution to global GDP growth, 2007-2025<sup>3</sup>, in %



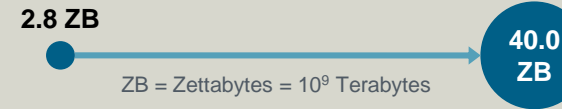
## Digital transformation

Connected devices<sup>5</sup>, in bn

Exponential growth of connected devices ...



... and digital data<sup>6</sup>

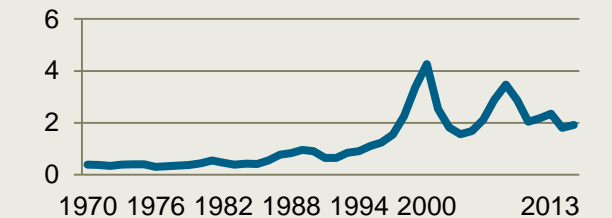


## Cities as main driver of GDP growth

## Trend to increase investment abroad

## Globalization

Foreign direct investment vs. global GDP, in %<sup>4</sup>



1 UN World Population Prospects (2015)  
2 Met Office Hadley Centre observations (2014)

3 McKinsey Global Institute Cityscope (2011)  
4 UNCTAD (2013)

5 Cisco: The Internet of Everything (2013)  
6 IDC: The Digital Universe (2012)

# Siemens strategy – ‘Ingenuity for Life’

## Global trends

### Digital transformation

Networked world of complex and heterogeneous systems

### Globalization

Global competition driving productivity and localization

### Urbanization

Infrastructure investment needs of urban agglomerations

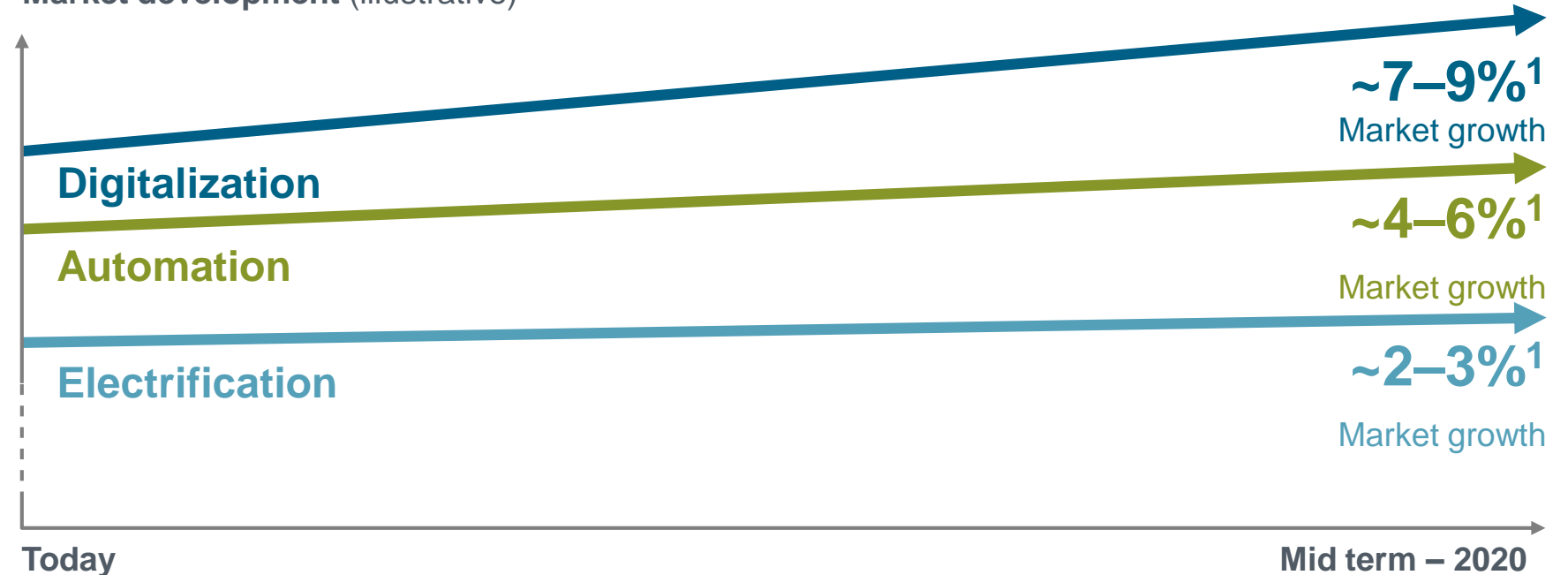
### Demographic change

Decentralized demand of a growing and aging population

### Climate change

Higher resource efficiency in an all-electric world

## Market development (illustrative)



## Innovating along the electrical value chain



<sup>1</sup> Est. market growth (CAGR) over cycle

# Siemens – Combining the physical and virtual world

**Virtual world**



**Analytics**  
Fleet management  
Embedded software  
Neural networks

Autonomous fault recovery  
**Smart grids**  
Meter Data Management  
Efficient buildings

Traffic management  
e-Tolling  
PLM  
Collaboration in the cloud

CAx  
**Digital Factory**  
MES  
Decision support

Imaging software  
Image-guided therapy

**280k connected devices**

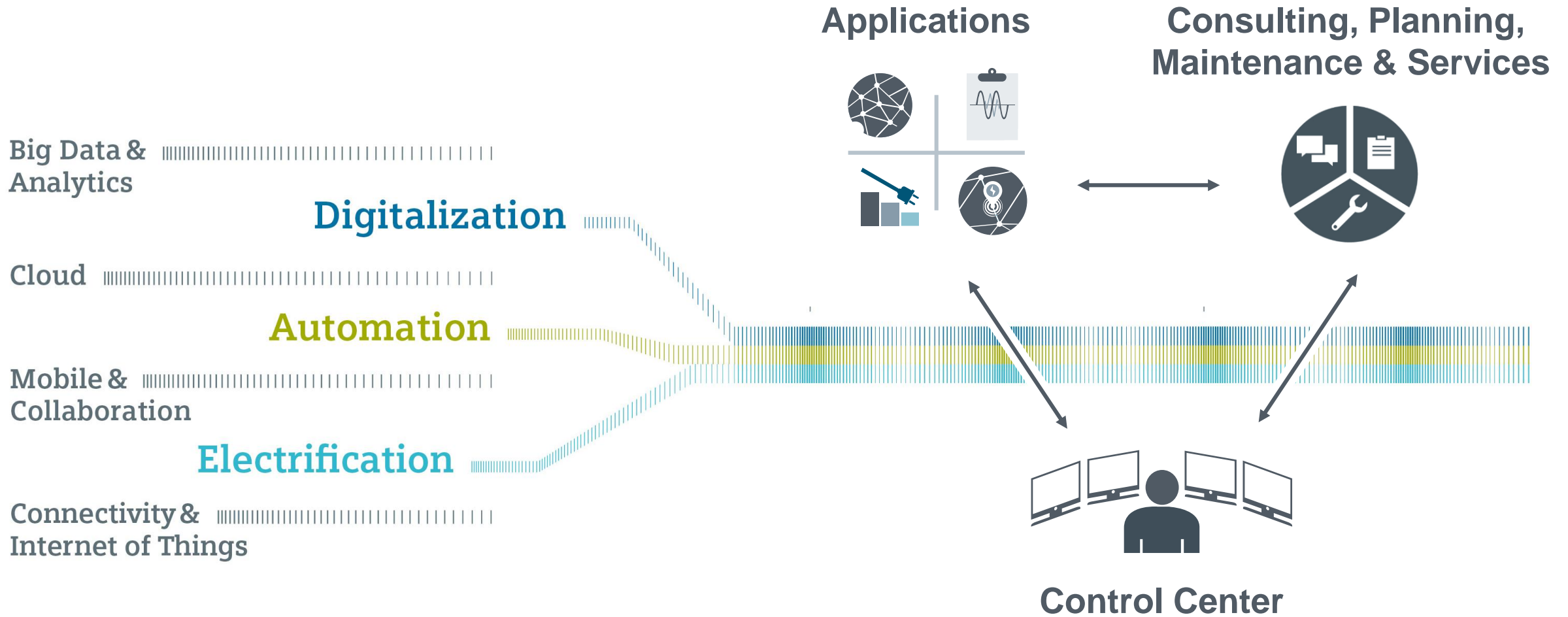
**SIEMENS**

**Insights from 16TB+ operations data per month**



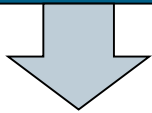
**Physical world – Siemens installed base**

# Smart solutions for OT/IT convergence are a key enabler for enhanced business operations



# How Digital Technologies enable to improve performance ... a few examples

## Sustainable Energy

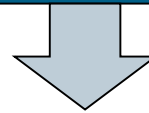


The energy system of tomorrow will have to master a series of challenges:

- A growing share of renewable energy sources and **fluctuating feed-in volumes**
- Increasingly **decentralized production** at ever smaller power plants.

This will require many different market operators and technologies to join forces, forming a complex power supply system.

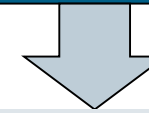
## Digital O&M Services



To compete in an increasingly challenging environment, customers need to find new ways to optimize asset value, **energy efficiency** and overall system performance.

Using data analytics and the digital technologies.

## Cyber Security



To help customers to take advantage of technology advances while **minimizing exposure to risks** in Cyber security area.

An optimal security solution can be implemented if it is continuously adapted to threats.

# Energy Efficiency

## Scope of Offering : Energy Monitoring

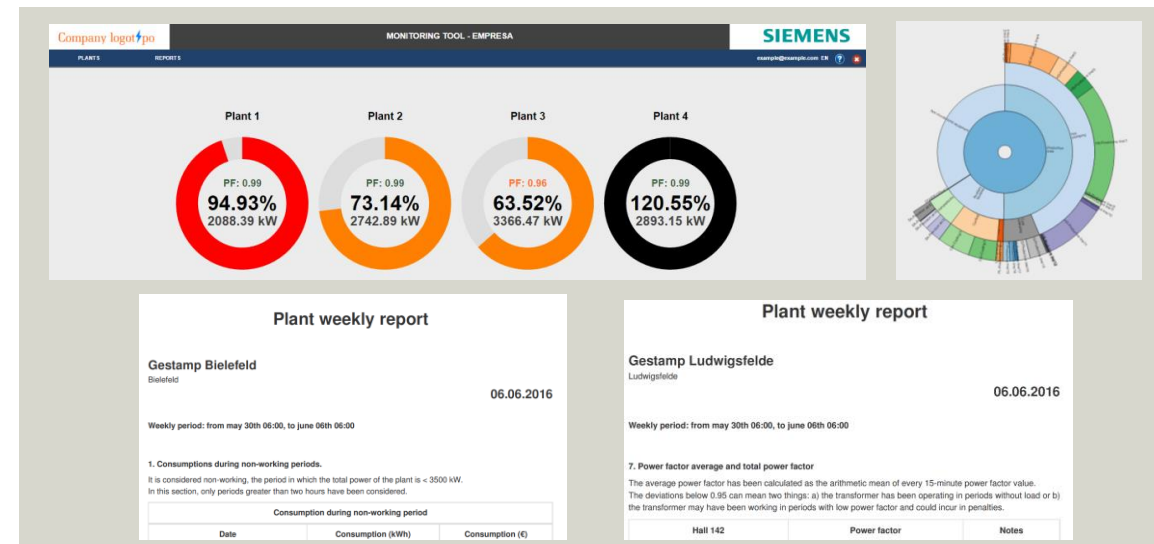
SIEMENS

### Energy Monitoring Services Scope

- Consultancy services
- Data analysis: Weekly and monthly reports from Energy Efficiency Stations Connected at Customer facilities.
- Automatic reporting & optional customized reporting
- Data availability: in a local manner and recorded at Siemens Control Center and through web application *SWEET*

### Features

- Data analysis reporting & New Efficiency Services Proposals
- *SWEET*: Siemens Web-based Energy Efficiency Tool
- Real time and historic data: Anytime & Anywhere



# Energy Efficiency

## Scope of Offering : Services

SIEMENS

### Energy Efficiency Services Scope

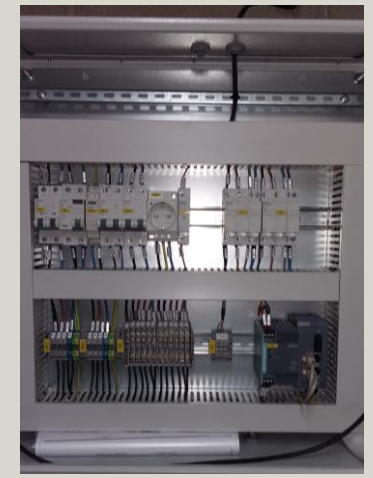
- Energy Efficiency Plant study
- Energy Efficiency Stations Connected at Customer facilities
- Consultancy plan, proposal, installation and project execution (to be done locally or subcontracted at Siemens Spain-DG)
- Data available in a local manner and recorded at Siemens Control Center
- Additional services-
  - Plant Optimizations: Illumination, HVAC, air compression, and etc...
  - Electrical studies
  - Power Quality
  - Plant Electric Audit

### Energy Efficiency Station

- Metal enclosure
- Grid analyzers marshaled
- Communication equipments
- Accessories
- 'SENTRON PAC' Analyzers
- 'SCALANCE' Ethernet Switch



Full specs





## Operational Benefits

Early detection of machinery/facilities failures

Preventive vs. corrective maintenance

Real time monitoring via web portal

Customized reports

Detect inefficient processes



## Economical Benefits

Transparent costs of processes

Savings enable deflecting of investments

No CAPEX, only monthly service fee

Financed by Siemens Financial Services

Can be implemented worldwide

# Gestamp Business Timing

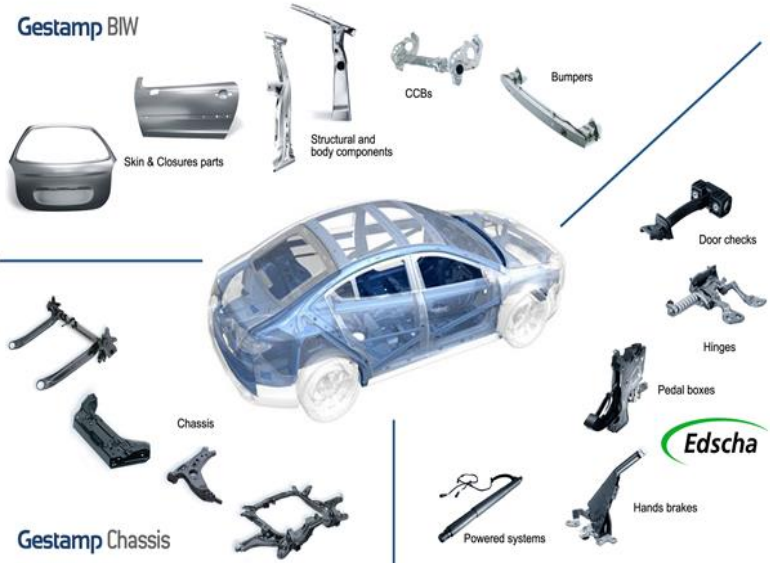
**SIEMENS**

| Bidding Phase (1-4 months)             | Execution Phase (3-6 months) | Service Phase (36-60 months)   |
|--|------------------------------|--------------------------------|
| Technical survey->Specs, drawings, etc | PO to providers              | Collecting and storage of data |
| Providers quotation request            | Kick off site meeting        | Data analysis. Reports.        |
| Providers quotation receipt            | Fabrication                  |                                |
| Selling calculation                    | Installation                 |                                |
| Negotiation with client of investment  | T&C                          |                                |
| Investment to Installments (SFS)       | Peer to peer verification    |                                |
| Bid to client and approval             | Starting of the service      |                                |
| Prime contract & leasing agreement     |                              |                                |
| Signatures                             |                              |                                |

# Gestamp Business

## Customer Focus: Gestamp

Gestamp is an international business group dedicated to the design, development and manufacture of metal components and assemblies for the automotive industry, especially for light vehicle production.



SUSTAINABILITY REPORT 2012  
LETTER FROM THE PRESIDENT  
GESTAMP GROUP  
SUSTAINABILITY AT GESTAMP  
01 FINANCIAL DEVELOPMENT AND INNOVATION  
02 COMMITMENT TO PEOPLE  
03 COMMITMENT TO OCCUPATIONAL HEALTH AND SAFETY  
04 CARING FOR THE ENVIRONMENT  
05 INVOLVEMENT WITH SOCIETY

94 PRODUCTION SITES

4 NEW production sites under construction

\* UNDER CONSTRUCTION



Today Gestamp is located in 19 countries around the world with 93 manufacturing facilities, 15 R&D centers and with 5 new plants in launching, which together total over 28.500 employees. In 2012, Gestamp reached 5.600 million euros of turnover.

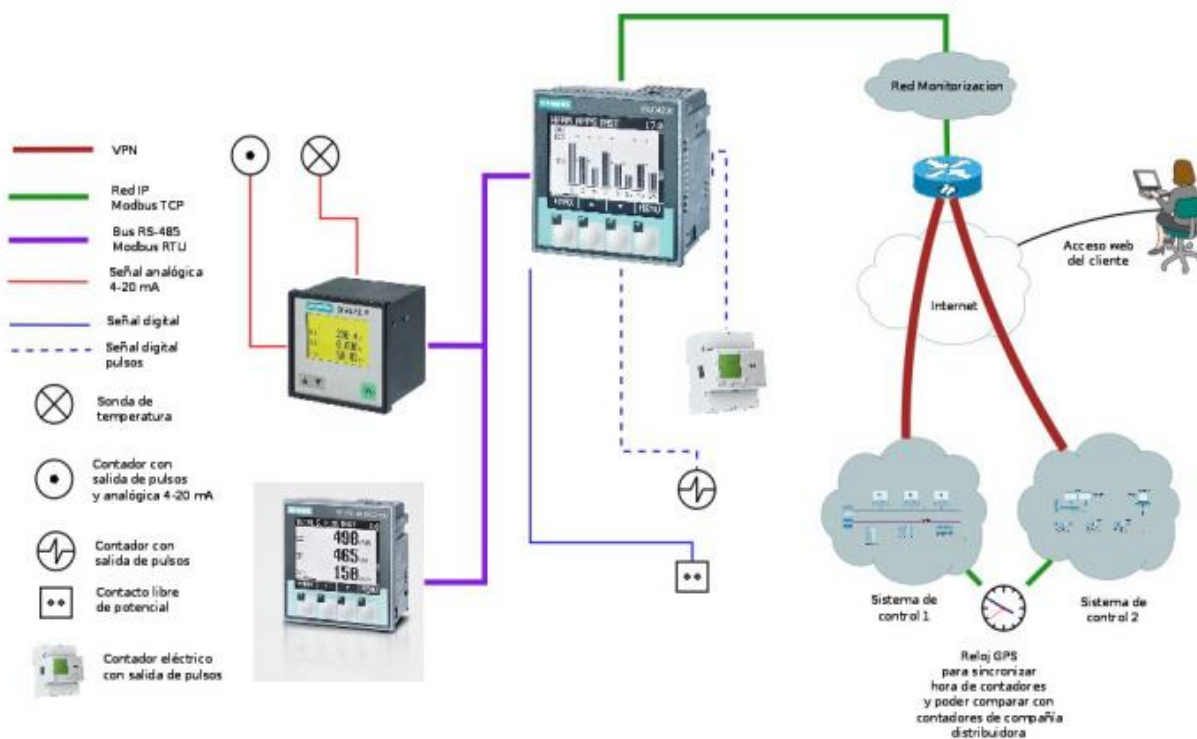
- EUROPE: 63 sites
- NORTH AMERICA: 9 sites
- SOUTH AMERICA: 10 sites
- ASIA: 15 sites

HQ located in Madrid Spain

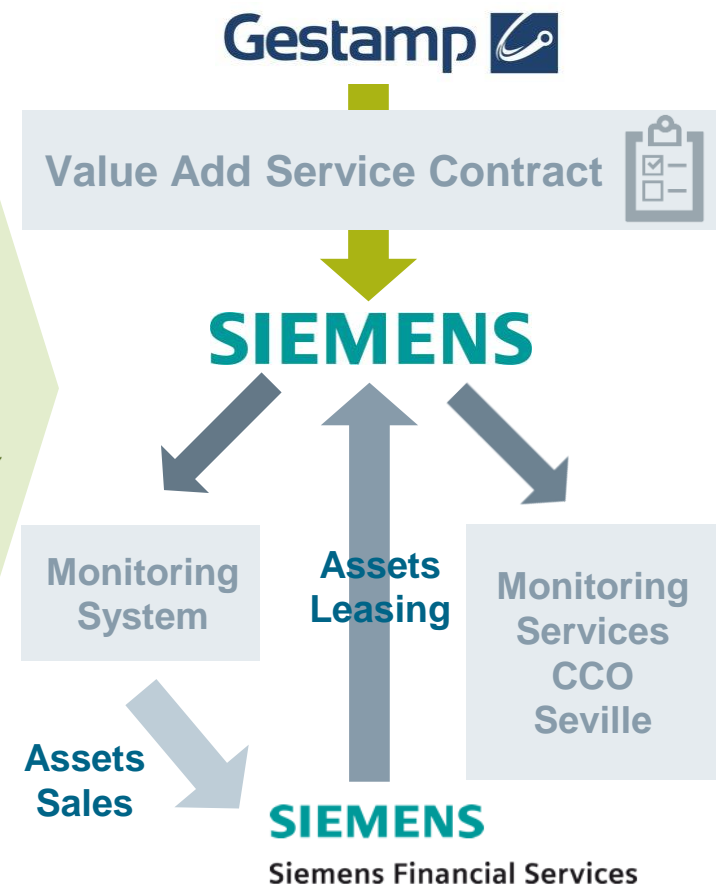
# Added value behind a new business model



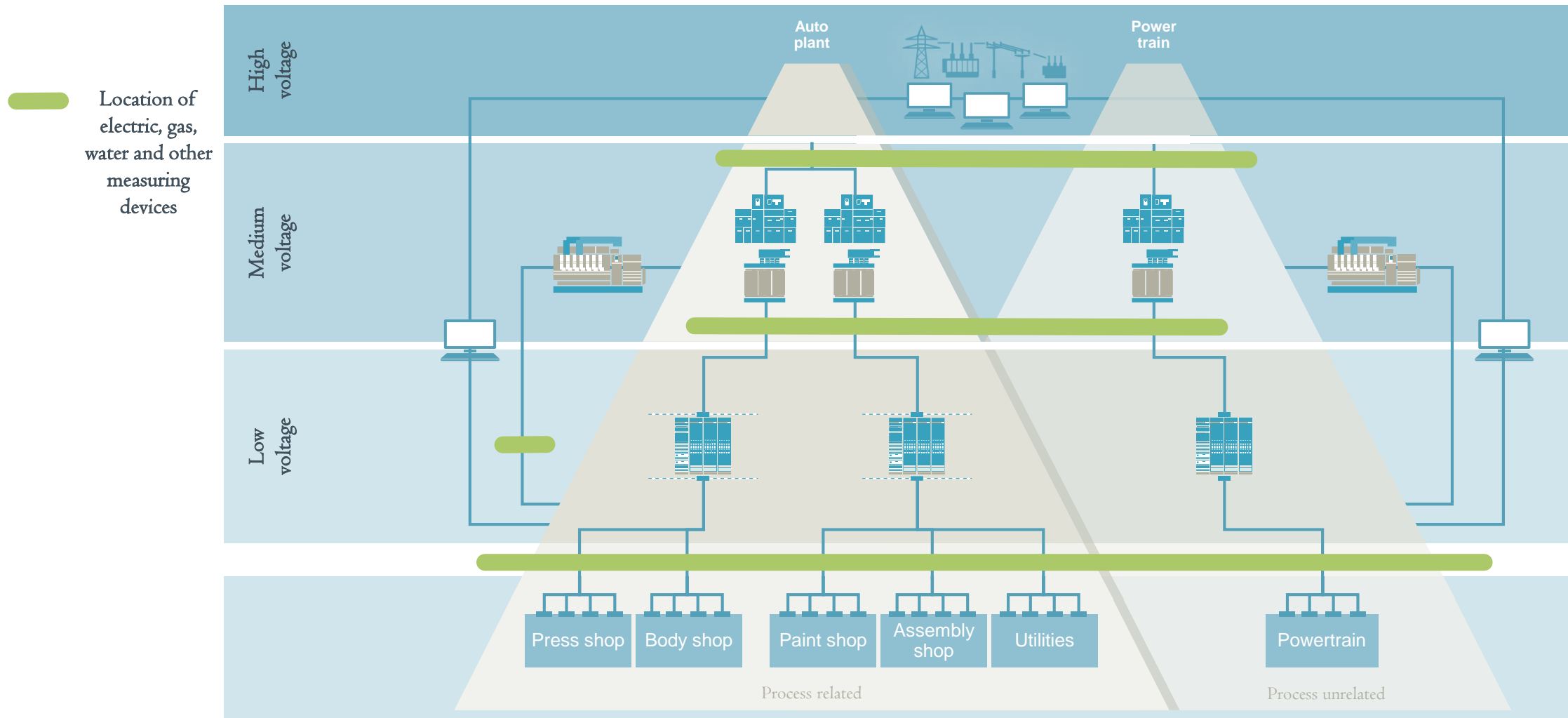
## The Technical Solution



## New Business Solution



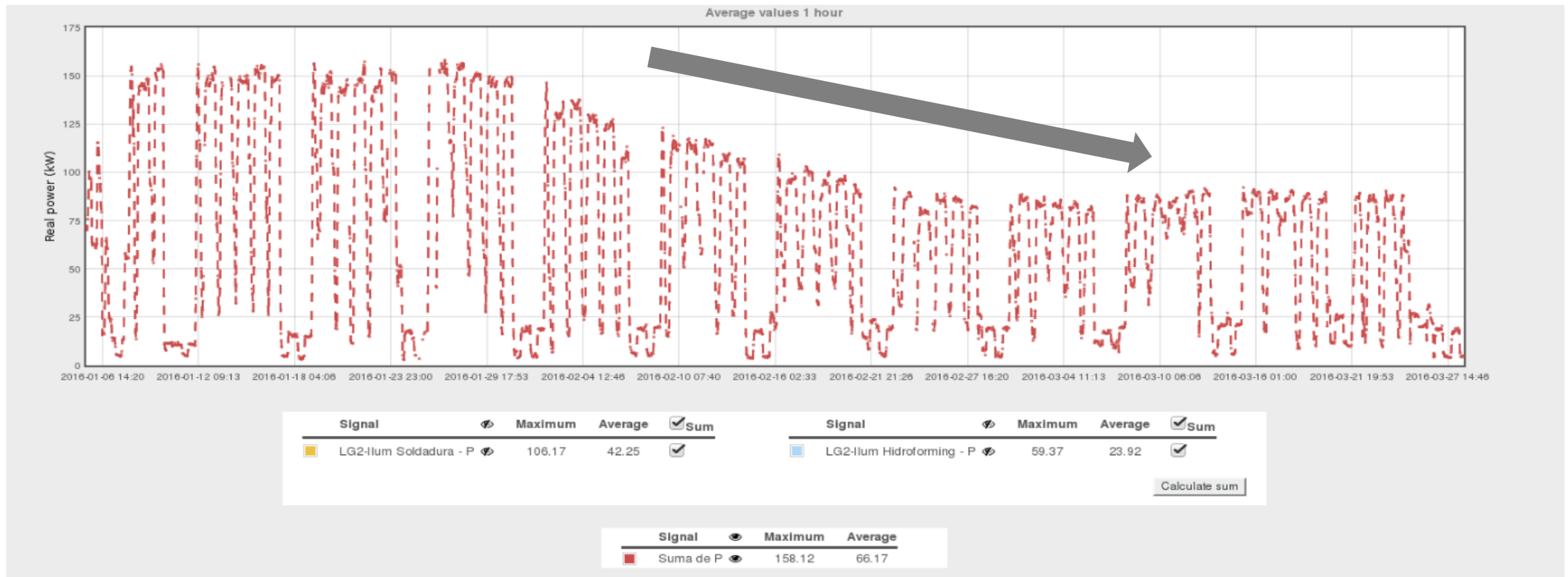
# Smart Energy Management @ Gestamp Plants



# Real example of electrical savings in lighting installations after taking remote control and more intelligent solutions

Lighting monitoring → High electricity consumption

Introducing efficient light and control circuits



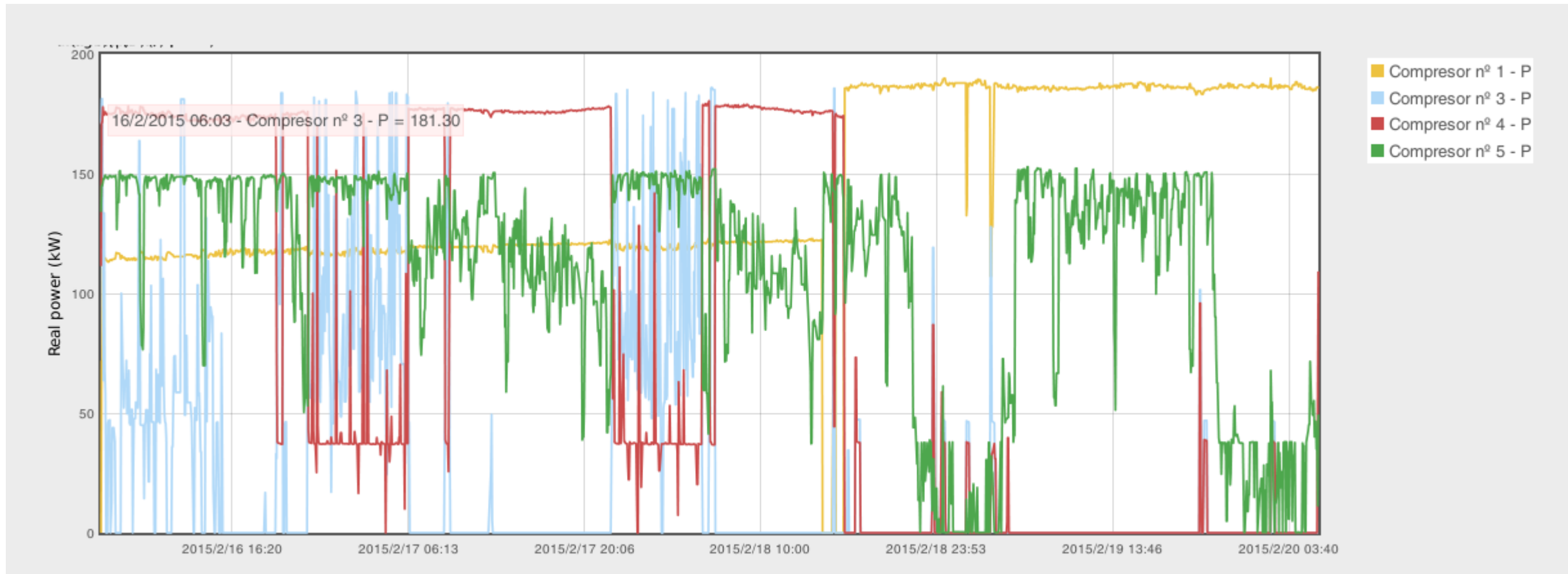
# Real example of electrical savings in installations proactively detecting unexpected or underperformance devices

Remote Consumption monitoring

Distributing processes wisely over time of day



# Collateral example of improvement: Detection of a malfunction compressor and remote control

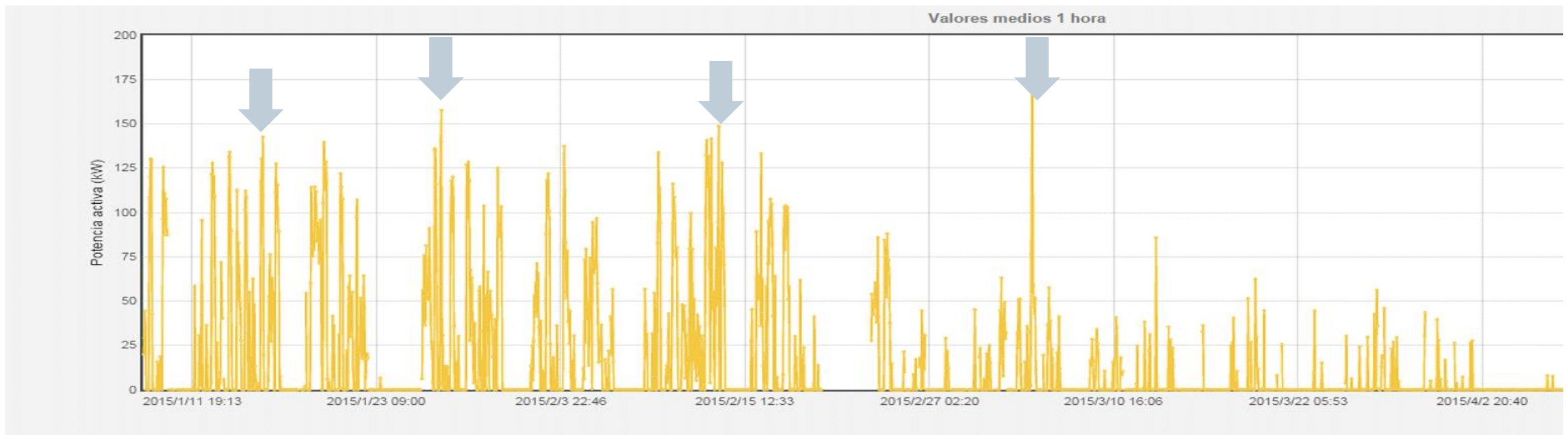




# Collateral improvement of business process preventive maintenances avoidance but introducing standby

Monitoring consumption peak

Configuration of process line speed  
reduction vs total stop and restart

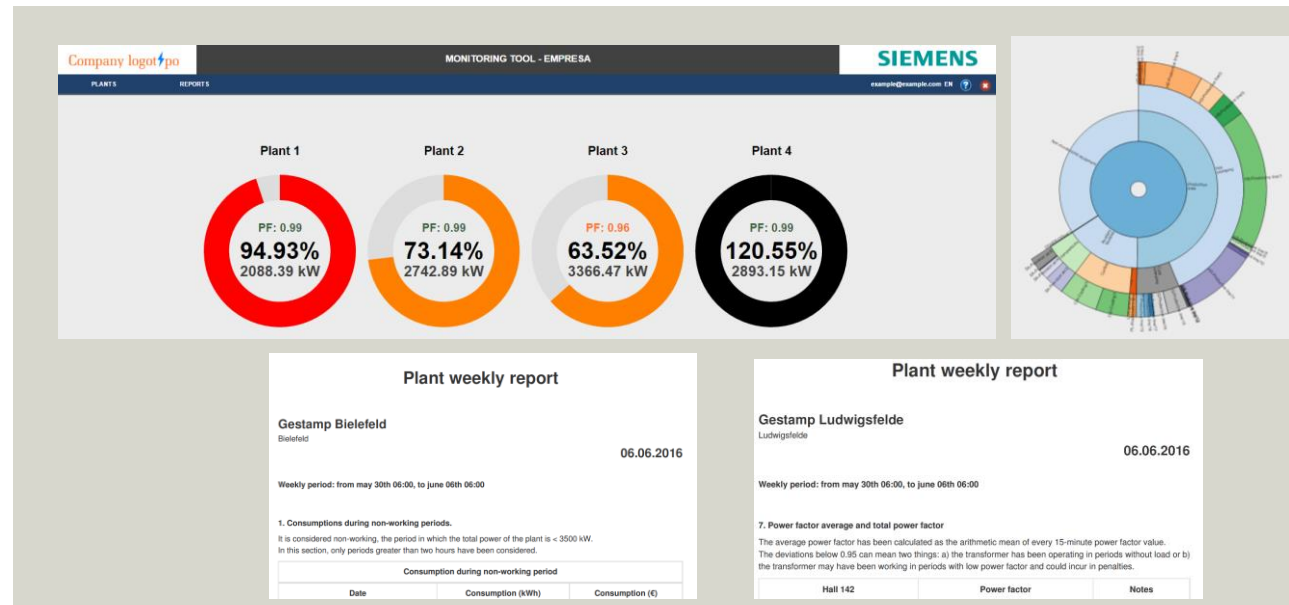
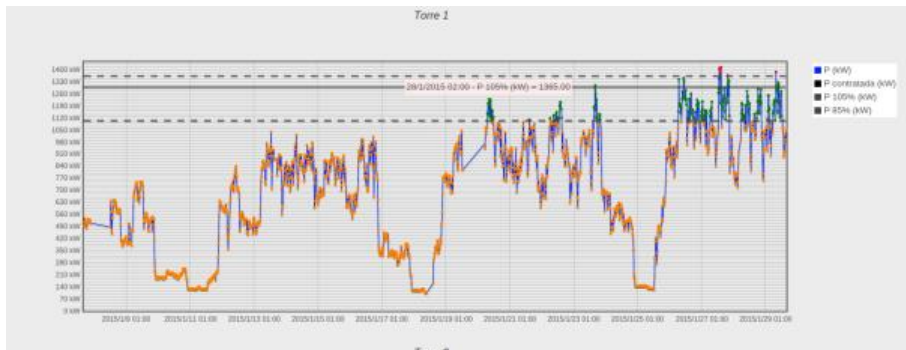


# WEB Application Demonstration

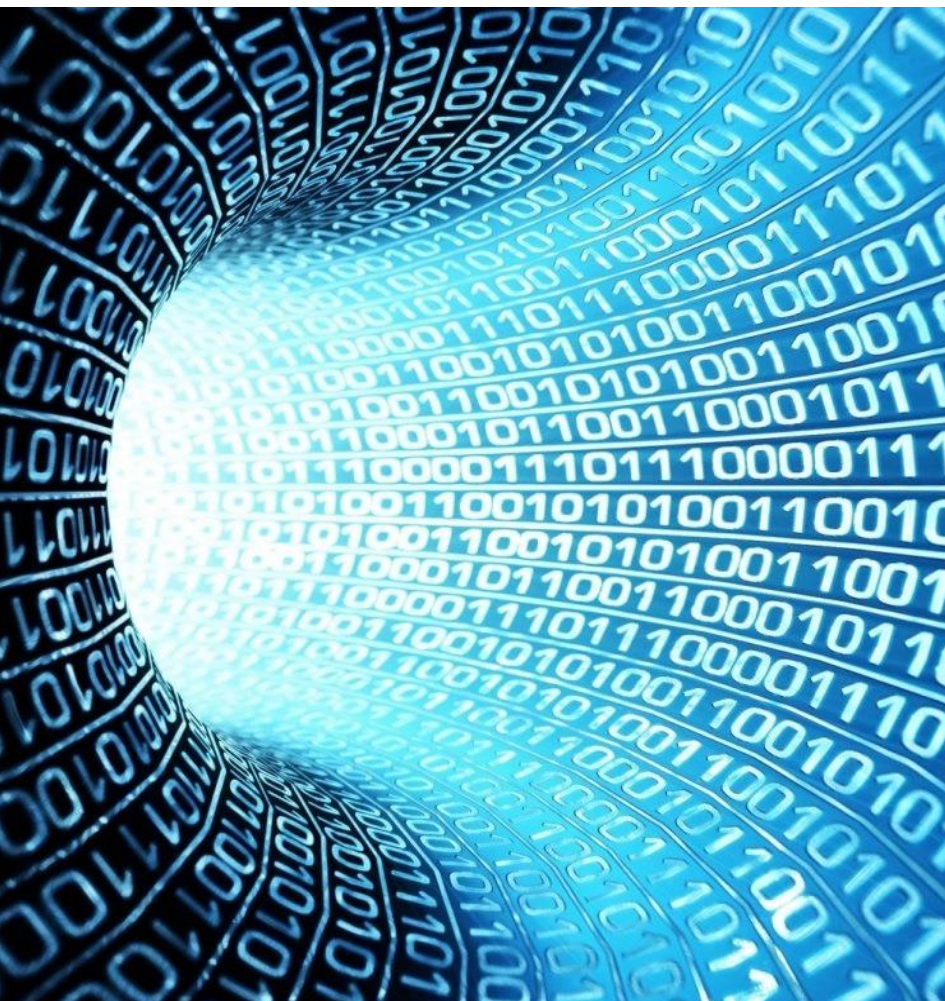
<https://212.231.11.136> (Chrome Optimized)

User: example@example.com

Pass: example2016-



# Energy Efficiency Solution



**Luís Marçal**

**Siemens Portugal**

**Energy Management - Digital Grid**

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**Muito Obrigado!**

[www.siemens.com/digitalization](http://www.siemens.com/digitalization)