

# From a product-driven to a market-driven system

## BPS implementation at Bosch Termotecnologia Portugal: Experiences & Lessons

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Bosch **Production System**  
Bosch Termotecnologia SA

MCPL 2010 - 09.09.2010  
Universidade de Coimbra

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## 1. Bosch Group

# Business Areas

### → Automotive Technology

Gasoline Systems, Diesel Systems, Chassis Systems Brakes, Chassis Systems Control, Electrical Drives, Starter Motors and Generators, Car Multimedia, Automotive Electronics, Automotive Aftermarkets.



### → Industrial Technology

Drive and Control Technology, Packaging Technology, Solar Energy.



### → Consumer Goods and Building Technology

Power Tools, Thermotechnology, Household Appliances, Security Systems.



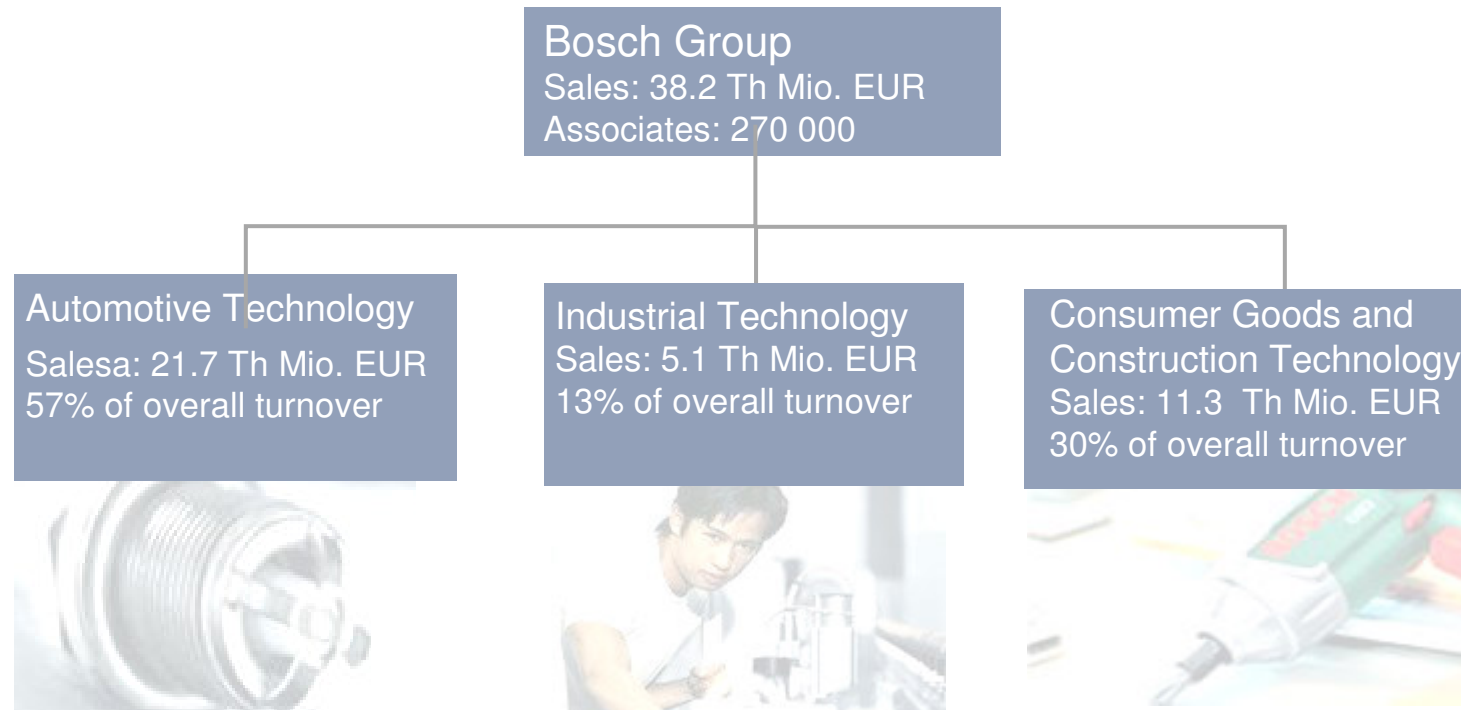
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## 1. Bosch Group

# Business Activities 2009



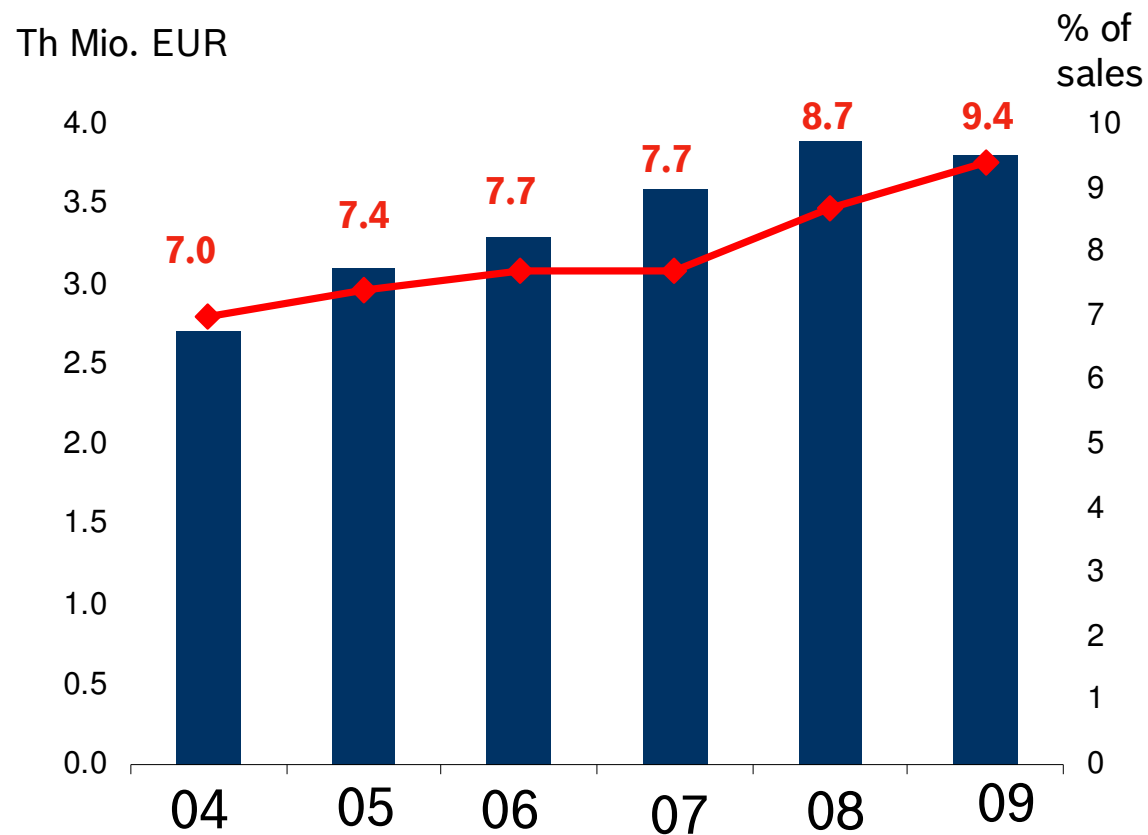
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## 1. Bosch Group

### Investment in R&D



**Patents**  
**2009 = 3 810**

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## 2. Bosch Termotecnologia

**2007** - Production of Solar Collectors

**2005** - Business Unit for Water Heating

**2004** - Centre of Competence for Domestic Hot Water including Electrical appliances

**2001** - Worldwide responsibility for Product Management and Development of Gas Water Heaters

**1999** - Production of 1 Mio. Gas water heaters

**1998** - Robert Bosch acquires the remaining shares

**1996** - Start-up of licencing third parties; Start of Production of Boilers in TTPO

**1993** - Creation of Development Department

**1992** - European Leader in Gas Water Heaters

**1988** - Robert Bosch became major shareholder

**1977** - Foundation of Vulcano Luso Ibérica

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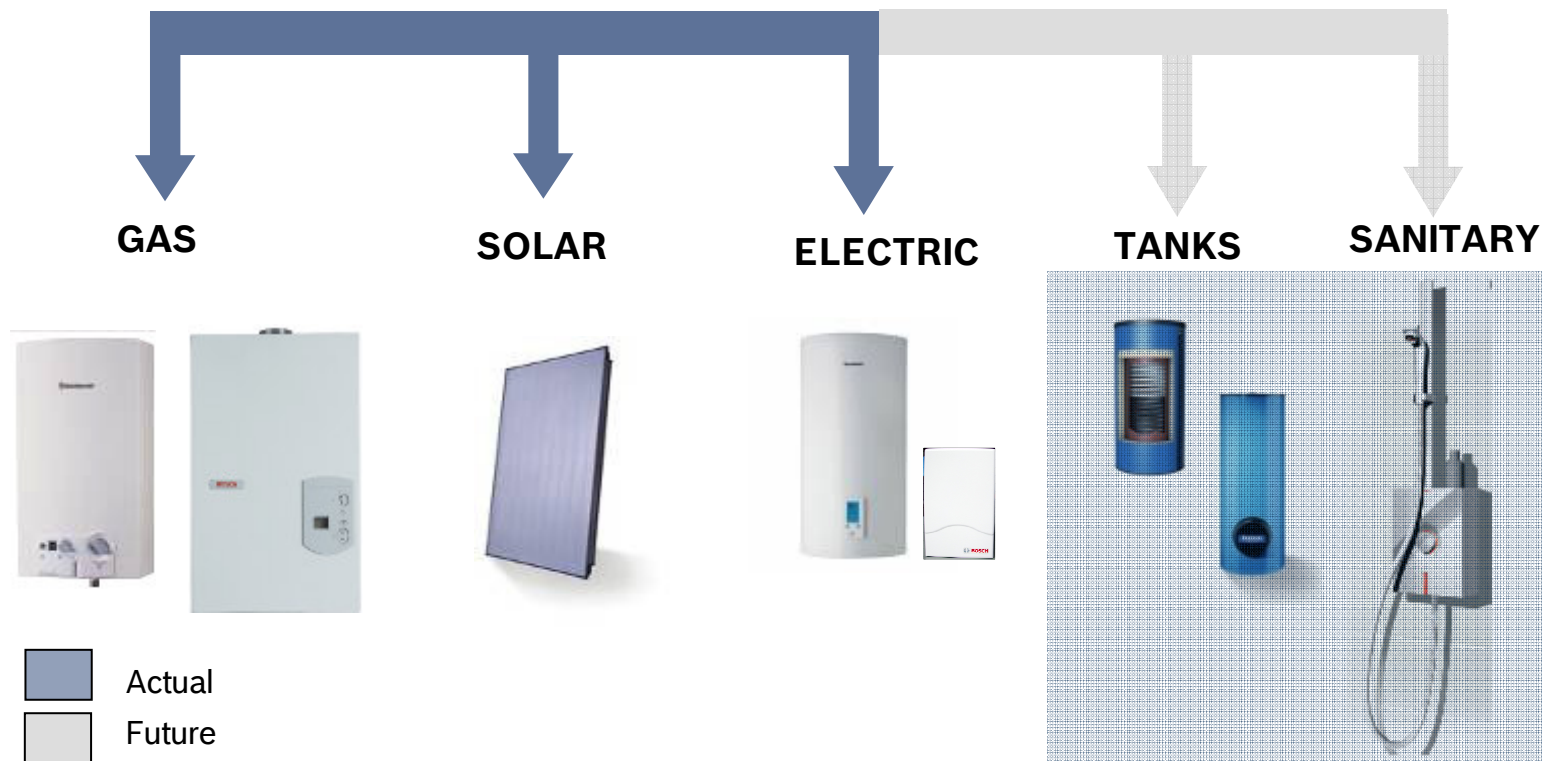


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## 2. Bosch Termotecnologia

### Product Groups



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## 2. Bosch Termotecnologia

### Economic keydata

	2009
Sales (Mio. EUR)	233
Exports (% sales)	
Gas water heaters	77
Boilers	90
Production (Th. Units)	
Gas water heaters	681
Boilers	69
Solar collectors	78
Results before taxes (% sales)	11
Investment in R&D (Mio. EUR)	7.6
Associates	1,165

Leading company in Europa in gas water heaters manufacturing

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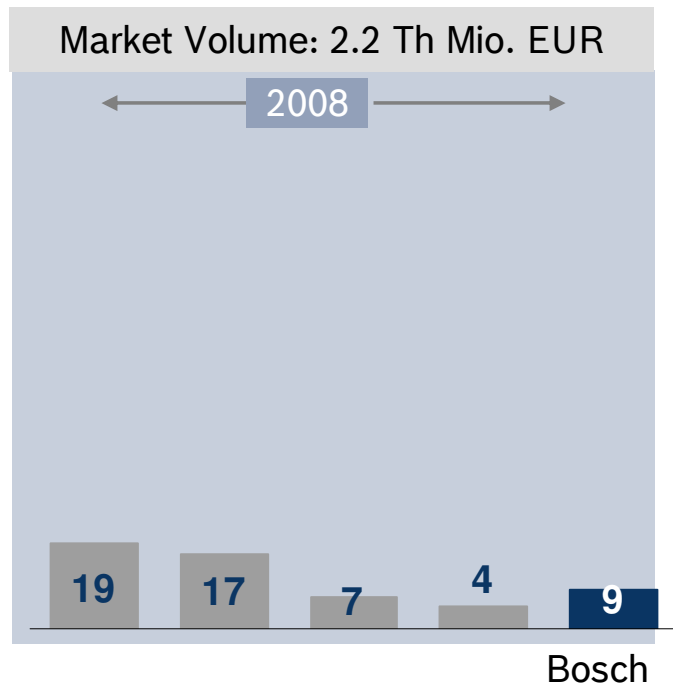
## 2. Bosch Termotecnologia

... and competitors

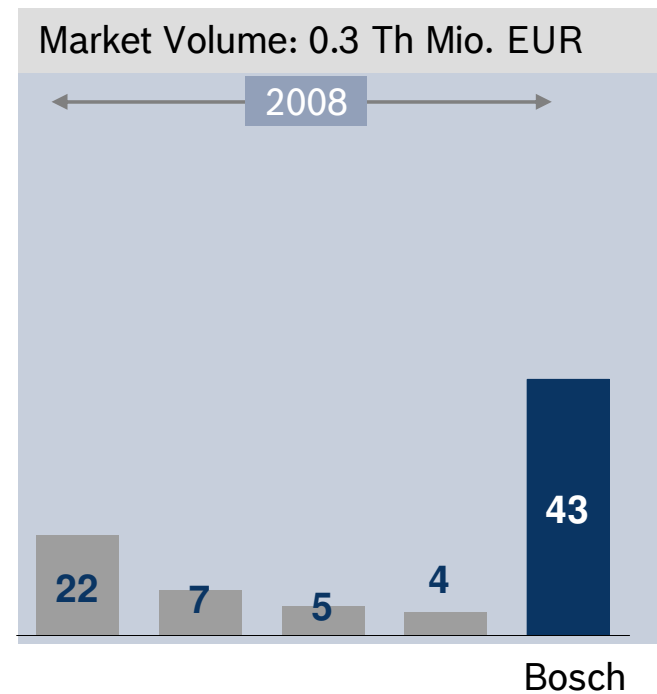
### Gas water heater

Market Share in value

#### World



#### Europe



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## 2. Bosch Termotecnologia

### Strong Brands

#### *TT - Marcas*



#### *OEM - Clientes*



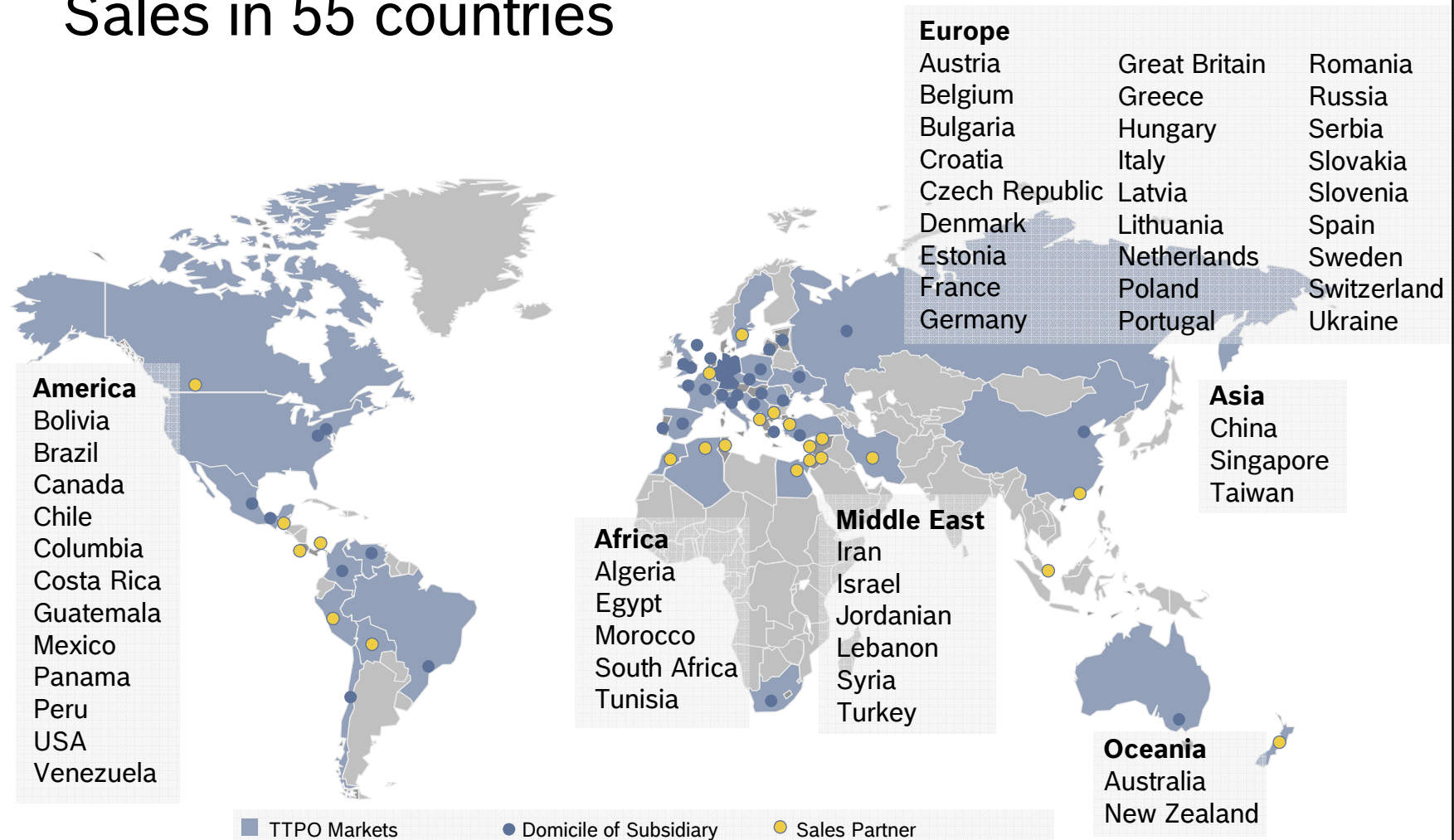
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## 2. Bosch Termotecnologia

### Sales in 55 countries



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## 2. Bosch Termotecnologia

### Qualified Associates

#### Distribution

Males – 55.2%



Females – 44.8%



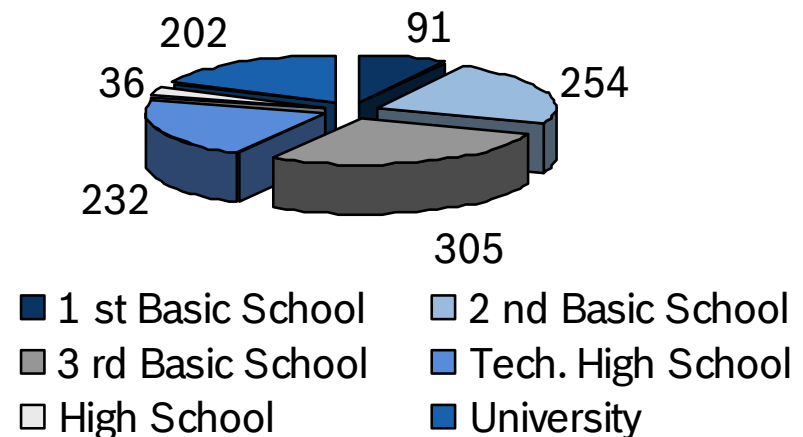
Age average – 35



#### Training

50 hours per employee

#### Academic background



- Target deployment
- Performance assessment
- Flexibility

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## 2. Bosch Termotecnologia

### Innovative Products



**Inteligente**

1995



**HydroPower**

Hidrogerador

2000



**Compact 1**

Minimum Size  
Maximum  
Output

2001



**Celsius**

Temperature  
setting through  
radio remote  
control

2003



**World 1**

High  
Output low  
emissions

2004



**World 2**

2007



**CAE**

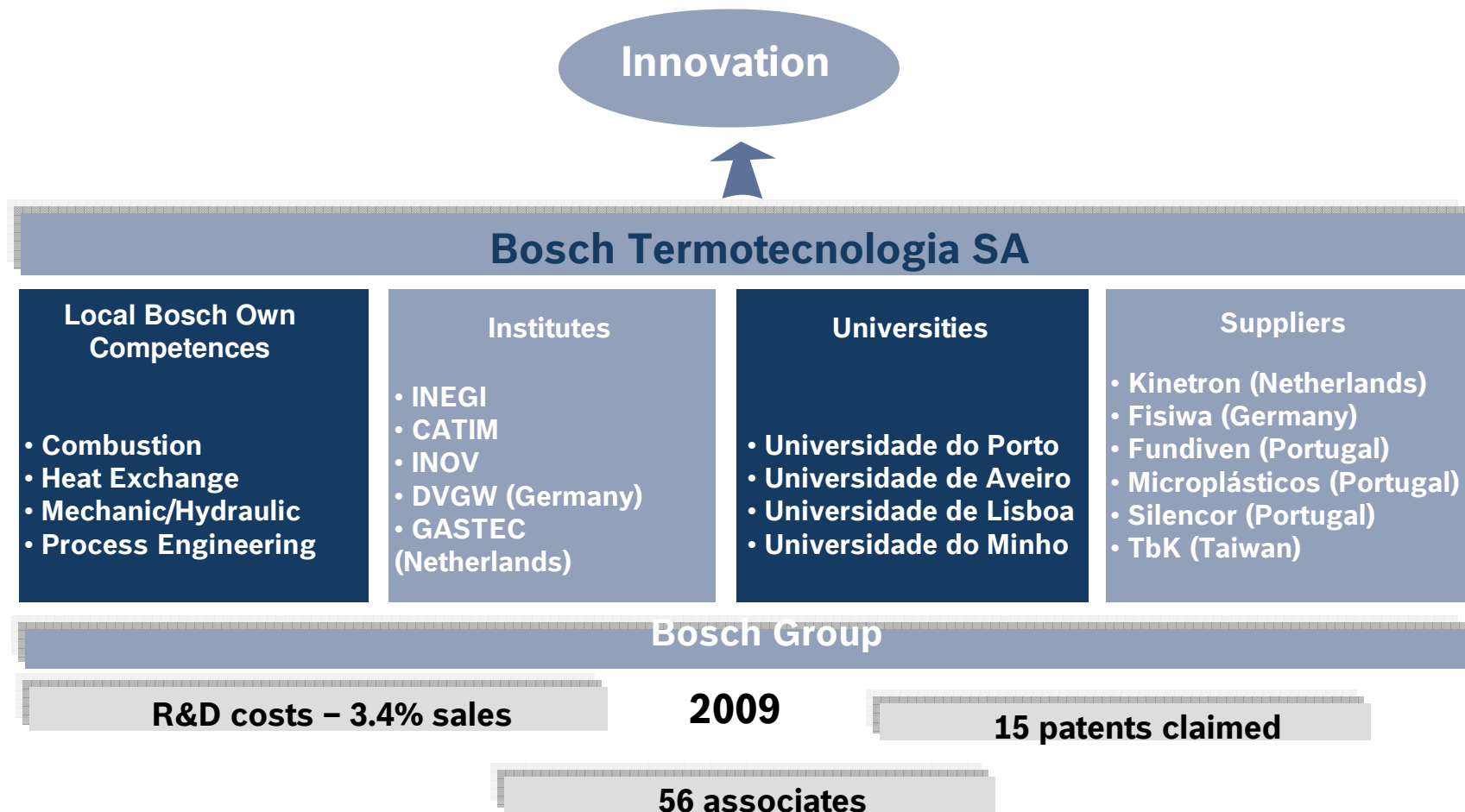
2009

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## 2. Bosch Termotecnologia

# Lean Processes - Development

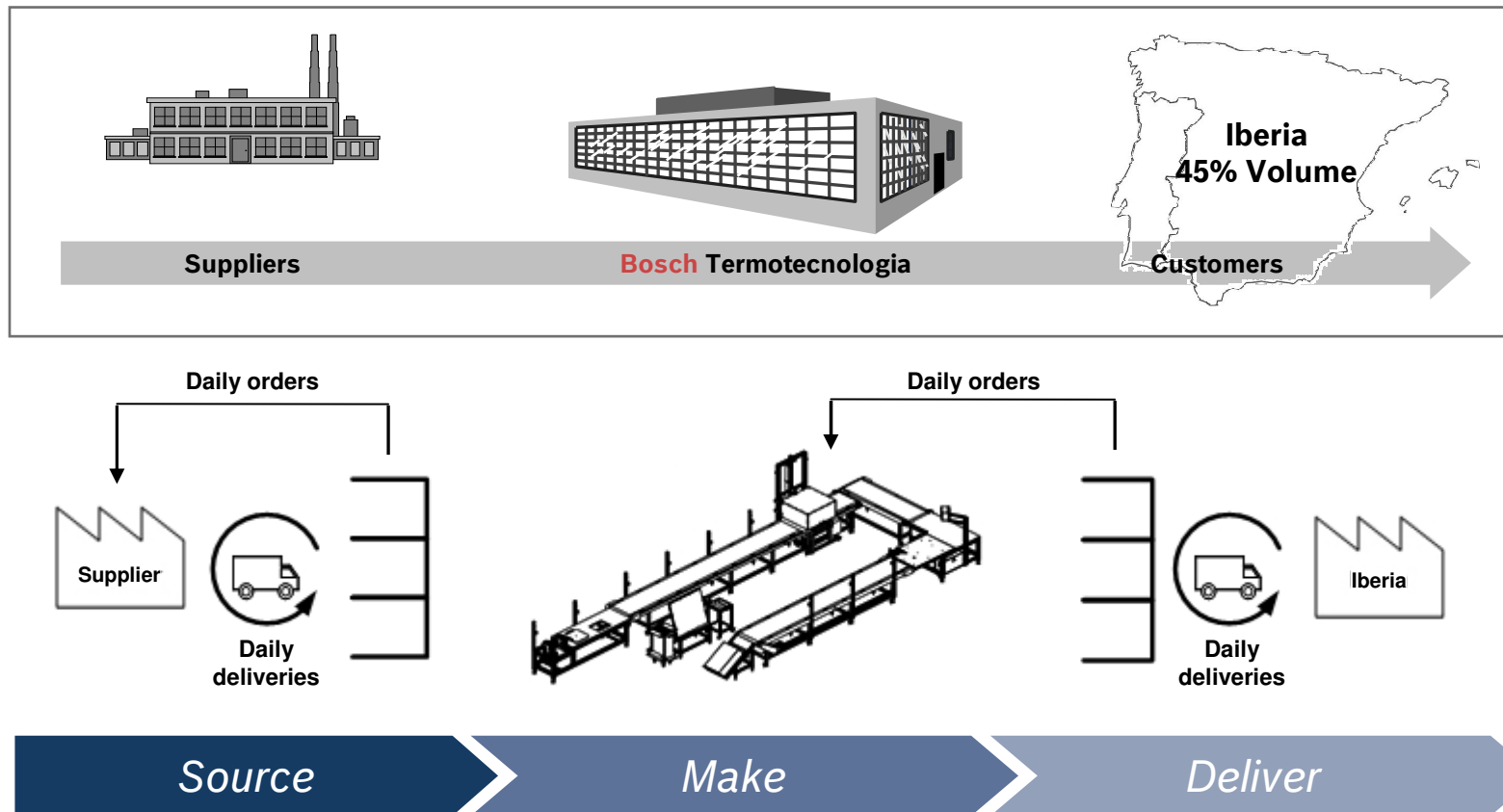


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## Pull Flow Iberia

# Pull Flow through the complete Value Chain



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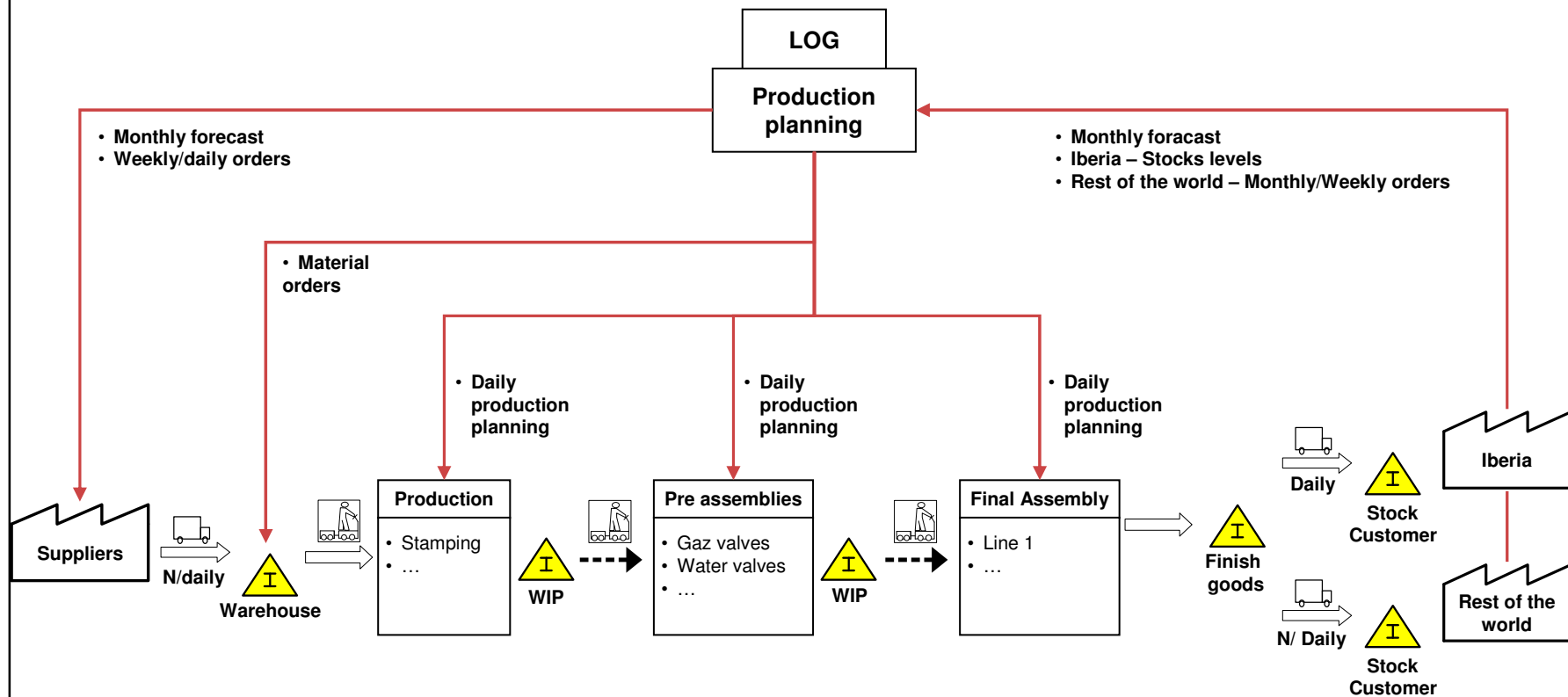


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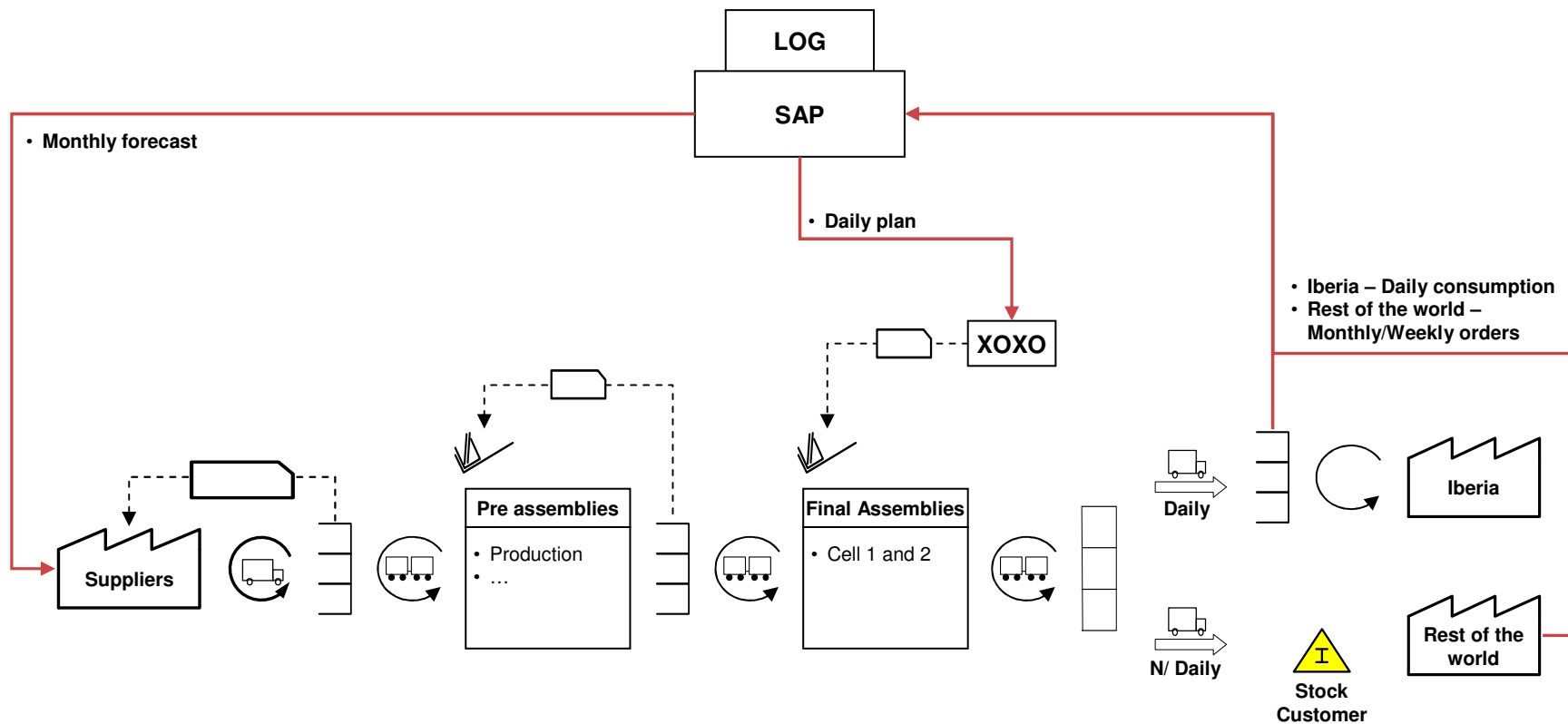
# Pull Flow Iberia – Situação Inicial

## Push System



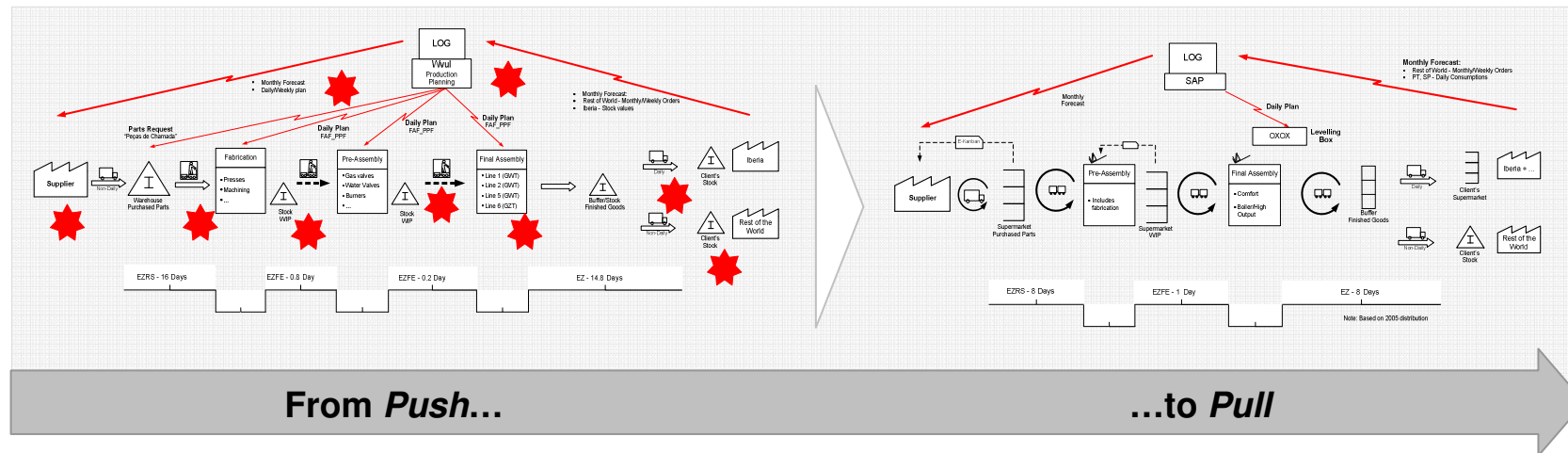
# Pull Flow Iberia – Situação Futura

## *Pull System*



# Pull Flow Iberia

## Vision 2010



### Premissas

- ➔ Standardized and Flexible processes
- ➔ Defined material flow
- ➔ Defined information flow

### Objetivos

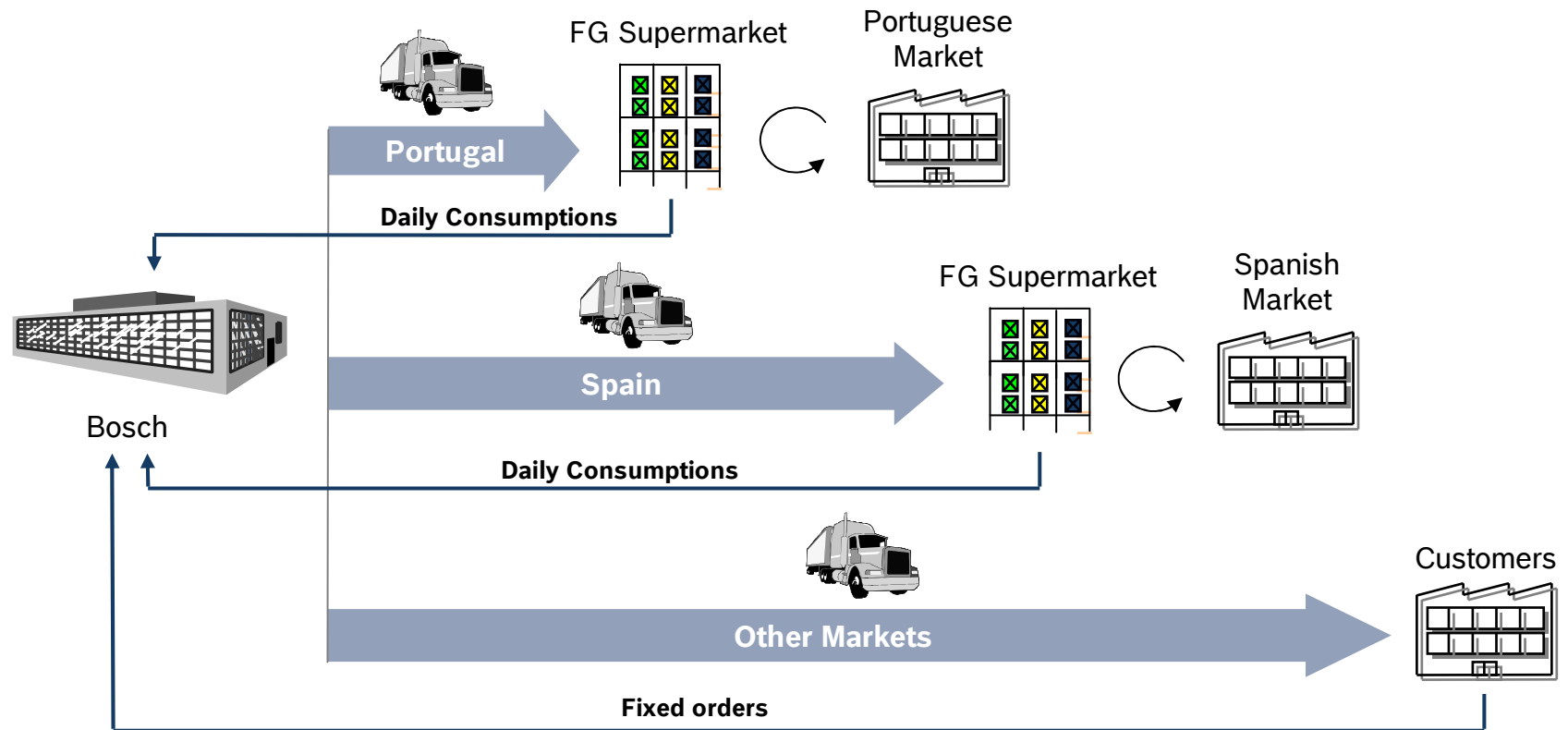
- ➔ 100% Service level
- ➔ 50% stock reduction in GEZ
- ➔ BPS maturity - level 4

**Customer satisfaction through optimum processes, fewer costs and no waste.**



## Pull Flow Iberia

### Activities “Deliver”

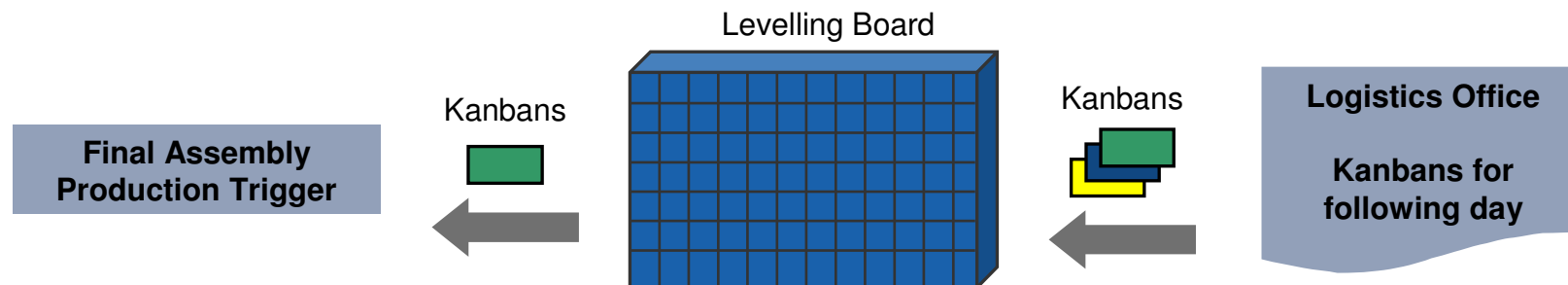
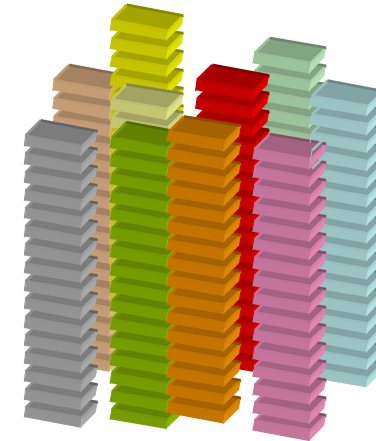


Implementation of FG supermarkets to assure the quality of our deliveries.

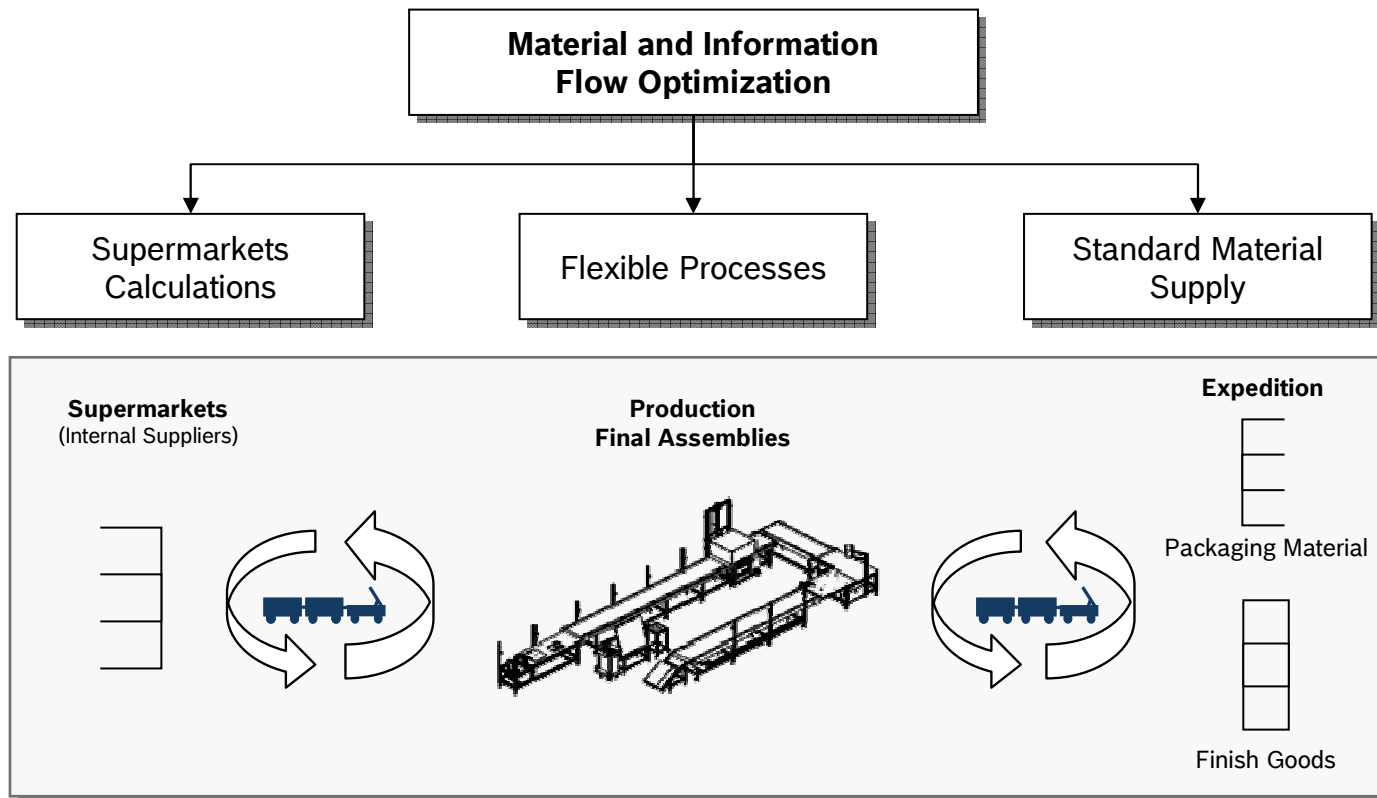
We assume before our customers that we deliver any order in a maximum period of 24 hours

## Pull Flow Iberia

### Activities “Deliver”



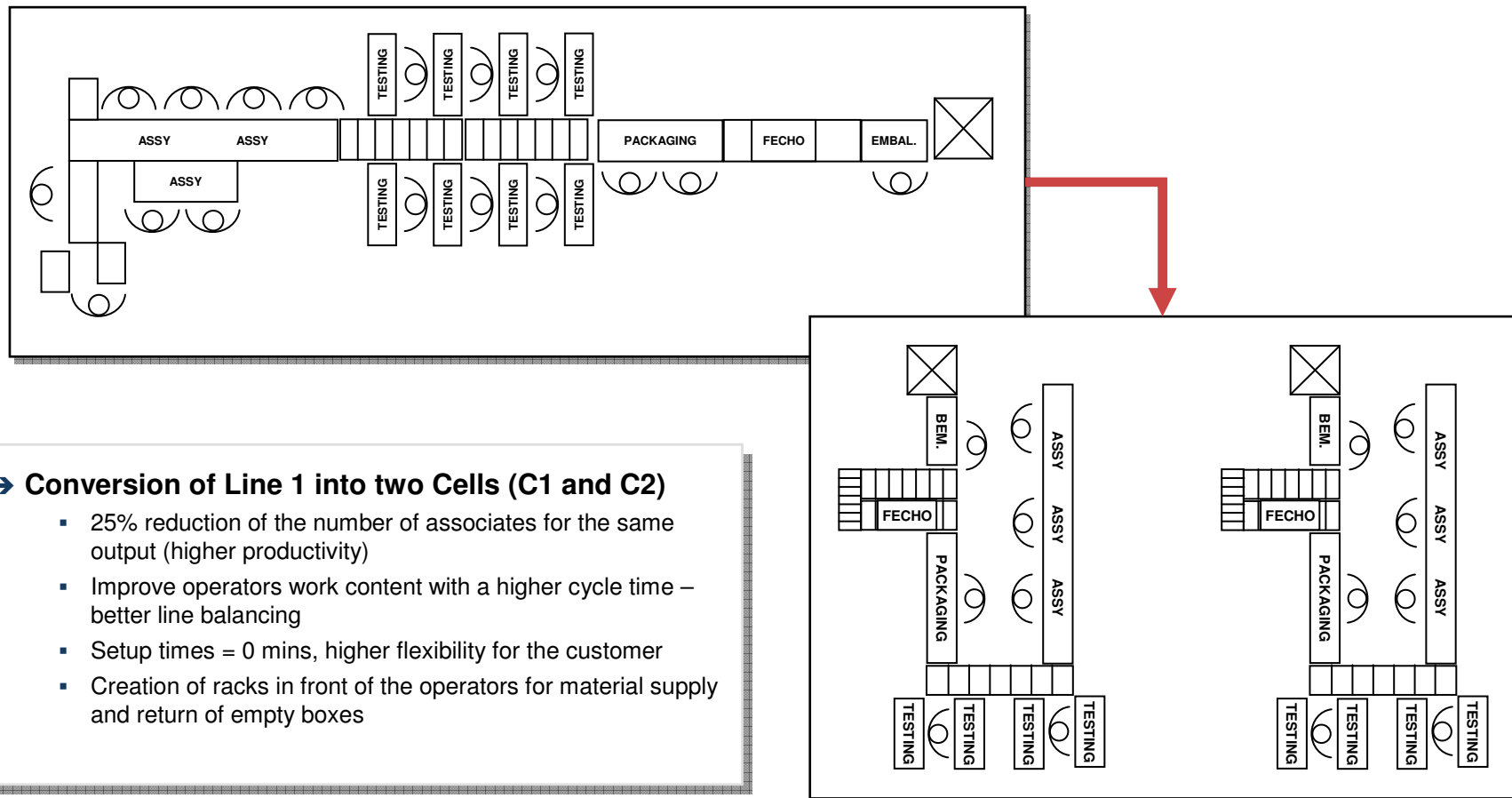
### Activities “Make”





## Pull Flow Iberia

### Activities “Make”



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## Final Line 2 – Before (06.2008)



## Final Line 2 – Before (06.2008)





## New Assembly Cells – Current Status



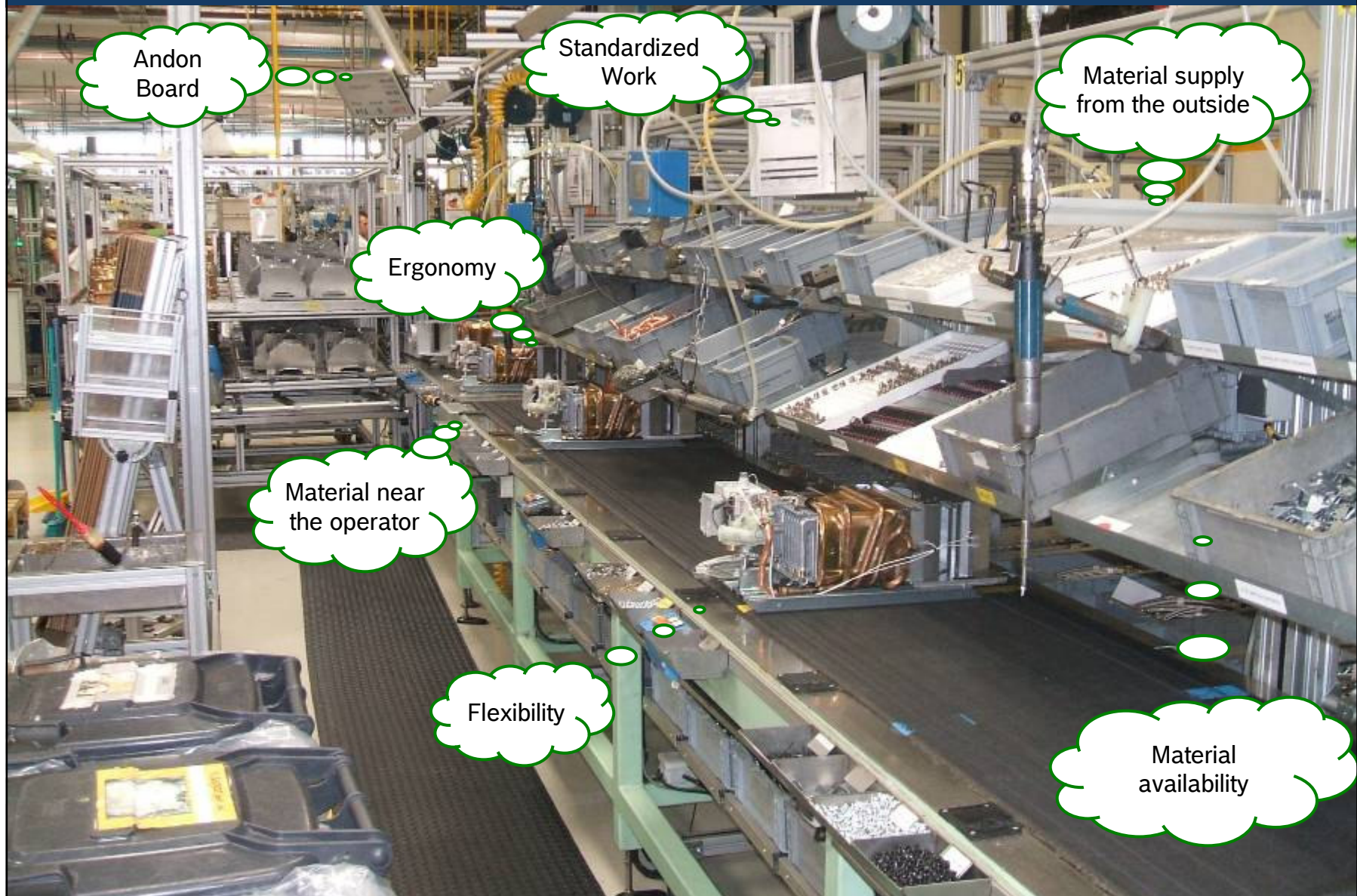


## New Assembly Cells – Current Status





## New Assembly Cells – Current Status

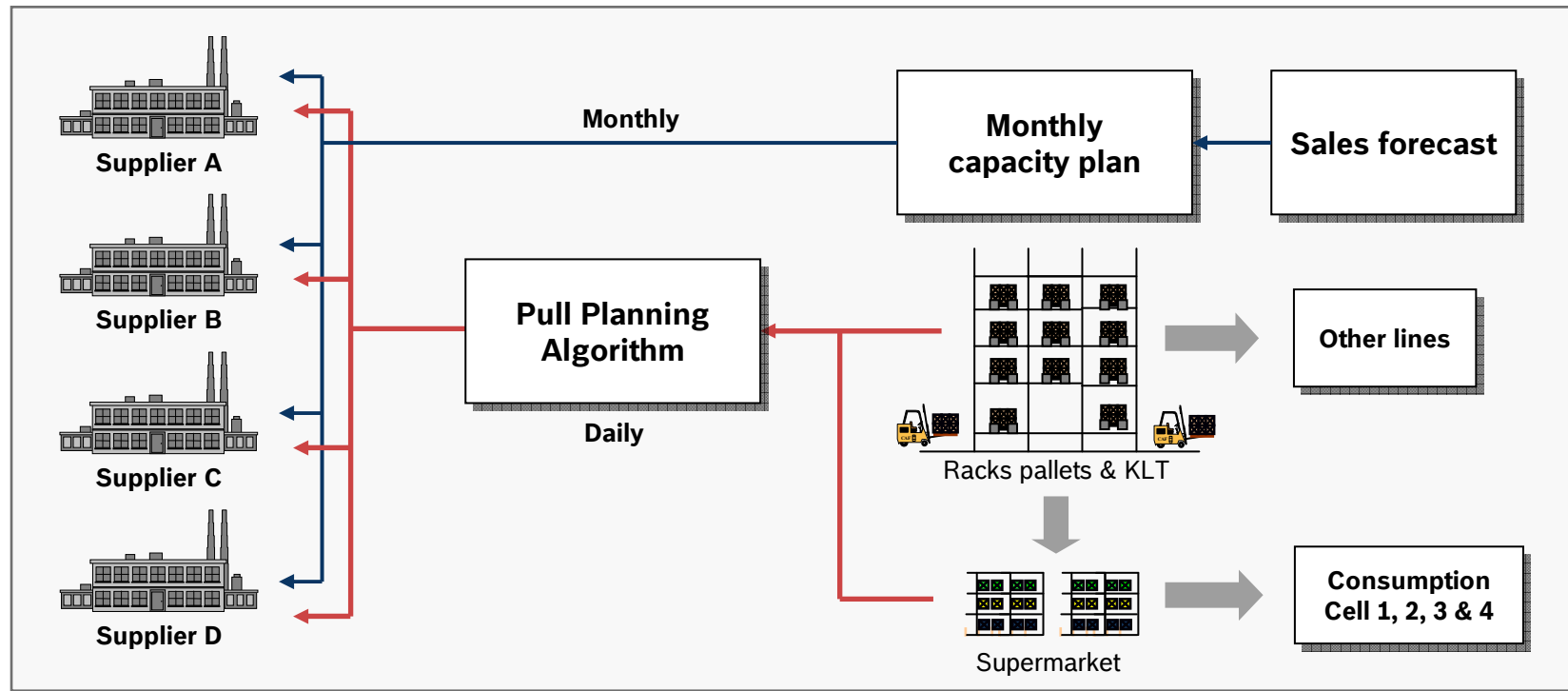






### Activities “Source”

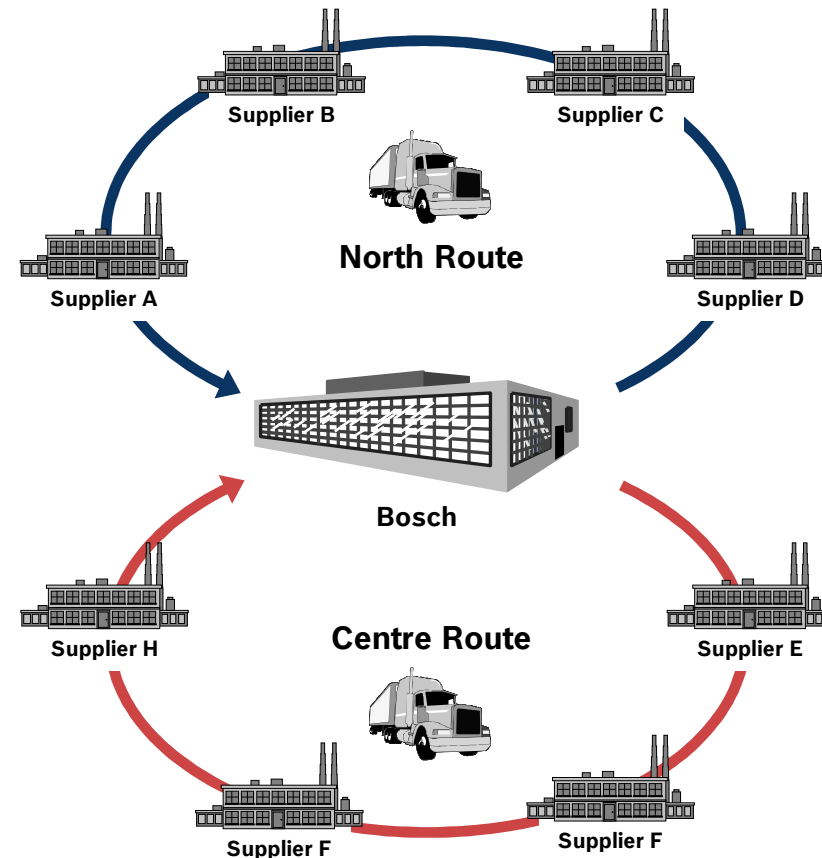
- ➔ Pull Flow with suppliers
  - Material delivery based on consumption;
  - Replenishment of stocks;



### Activities “Source”

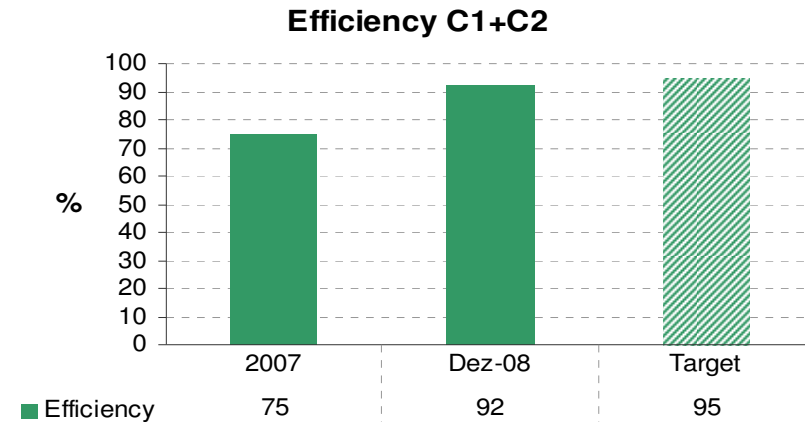
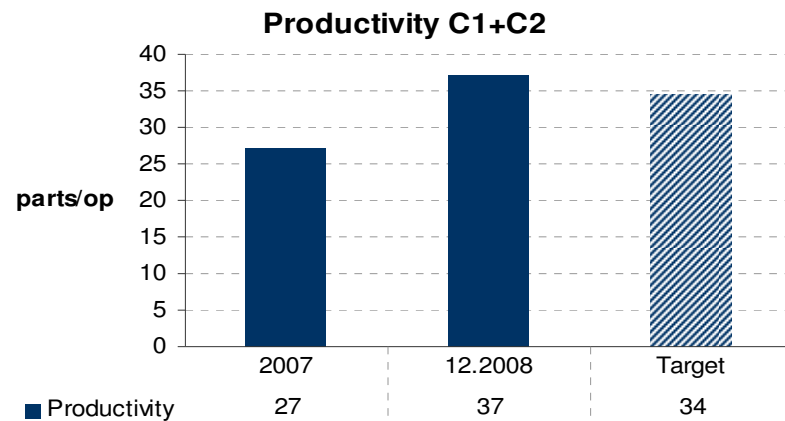
#### **External Milk Run – Current Status**

- Deliveries empty boxes and picks full boxes
- Daily deliveries
- Fixed route
- Fixed time-schedules at the supplier
- Daily quantities
- Loading/Unloading optimization at Bosch
- In place with 28% of Iberian suppliers
- Started with 2 routes, we have 4 at the moment;

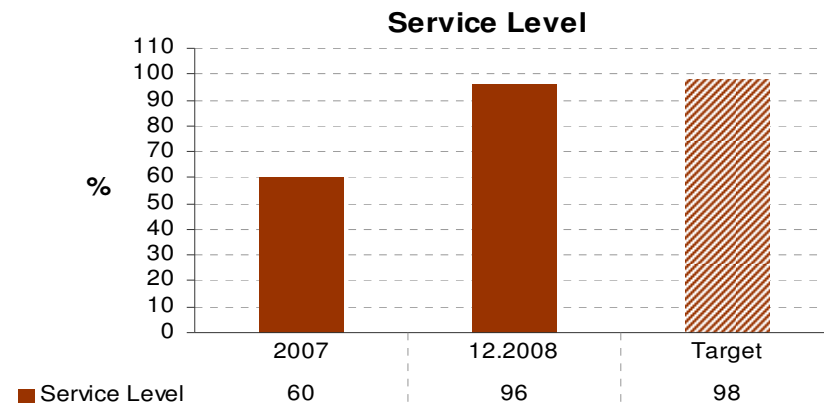


## Pull Flow Iberia

### Results



- Zero change over times
- 27% Productivity increase
- Service Level improvement
- Maximum output of 1000 units/shift with ~25% reduction of associates, from 37 to 27.
- Stock reduction near the assembly lines, 45' maximum coverage;



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# Experiences & Lessons

- The change process is not possible without the continuous support from the top management and the full commitment of the associates;
- A clear definition of a Future State (Vision) is essential to align all projects and activities;
- The implementation of a market-driven system implies an holistic approach to the value stream;
- The involvement of third parties (suppliers & customers) is key for the success of the system;
- *“Stable situations do not exist, either we are improving or we are going backwards”*



Everything is possible. BPS



## Bosch Production System

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