



## APMS 2010

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Comau SpA

Cernobbio, October 11, 2010



# Agenda

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- **COMAU** CORPORATE PROFILE
- **FIAT GROUP SUSTAINABILITY TARGETS**
- **eCOMAU**: ENERGY EFFICIENCY SOLUTIONS
- **EN 16001**: COMAU APPROACH
- **CECIMO (SRI)**: ENERGY EFFICIENCY WORKING GROUP



# COMAU CORPORATE PROFILE



## Our Mission



COMAU IS A **GLOBAL AND INNOVATIVE**  
PROVIDER OF SUSTAINABLE AUTOMATION  
AND SERVICE SOLUTIONS

MARKET IS THE AUTOMOTIVE  
SECTOR AND OTHER  
INDUSTRIES REQUIRING  
**PROCESS**  
**AUTOMATION SOLUTIONS**

BASED UPON COMAU  
**TECHNOLOGICAL KNOW-HOW**  
AND **EXPERIENCE**





## Our Distinctive Strategy



- **HIGH COMPETENCE** TO COVER A WIDE RANGE OF KEY TECHNOLOGIES
- **FULL INTEGRATED CAPABILITY** IN PRODUCT, PROCESS AND SERVICE SOLUTIONS

### SOLUTION ORIENTED

- **HIGH DENSITY AUTOMATION** CELLS TO TUNE AND OPTIMIZE INVESTMENTS
- **ENERGY SAVING** PRODUCTS AND SERVICES SOLUTIONS
- **LEAN PRODUCTION APPROACH**

### INNOVATIVE



### GLOBAL

- A NETWORK OF **23 OPERATIVE CENTERS** LOCATED IN **14 COUNTRIES**, LED BY GLOBAL PROCESSES
- **60% RESOURCES IN BRIC COUNTRIES**
- **GLOBAL PROJECT MANAGEMENT** SYSTEM BASED ON PMI® STANDARDS, CUSTOMIZED ON LOCAL MARKET NEEDS AND CULTURES



## Core Competence



**BODY WELDING**  
**FINAL ASSEMBLY**

**METAL CUTTING**  
**ASSEMBLY & TEST**

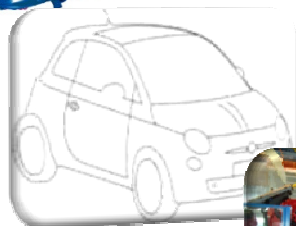


**LASER WELDING**  
**ARC WELDING**

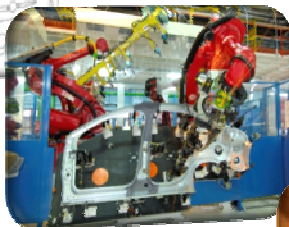
**SEALING**  
**DRILLING & RIVETING**



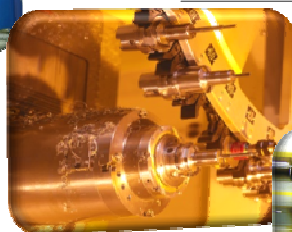
# Multi Technology Competence



***BODY SHOP  
TECHNOLOGIES***



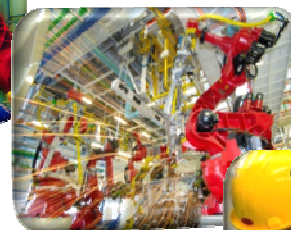
***POWERTRAIN  
MACHINING  
& ASSEMBLY***



***FINAL ASSEMBLY  
SYSTEMS***



***ROBOTICS &  
AUTOMATION***



***MAINTENANCE  
SERVICES***







## References



### AUTOMOTIVE



DAIMLER



PSA PEUGEOT CITROËN



### AEROSPACE



NORTHROP GRUMMAN



### ENERGY



### HEAVY INDUSTRY



### DEFENSE



### PUBLIC TRANSPORTATION



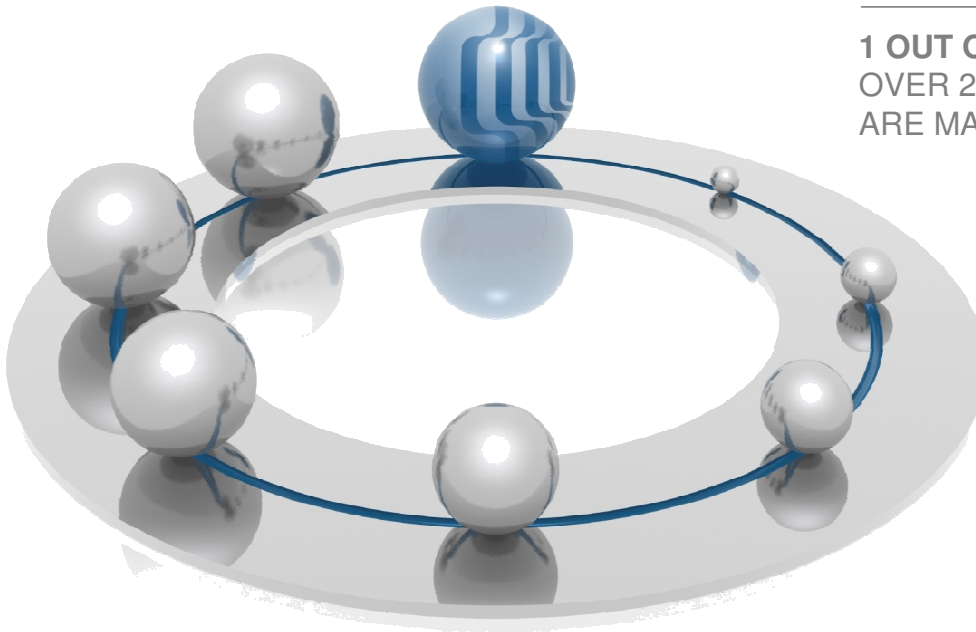
### RECREATIONAL







## Facts



### AUTOMOTIVE

**1 OUT OF EVERY 3 VEHICLES** IN THE WORLD,  
OVER 20 MILLION ANNUALLY,  
ARE MANUFACTURED WITH COMAU TECHNOLOGY

### AEROSPACE

**AUTOMATIC DRILLING AND RIVETING** FOR  
JOINT STRIKE FIGHTER  
WITH NORTHROP GRUMMAN

### ENERGY

**SOLAR CELLS MANUFACTURING** PROCESS  
WITH BOEING

### SERVICE

**HIGHEST MARKET SHARE** IN INDUSTRIAL  
MAINTENANCE SERVICES IN BRAZIL, FROM  
AUTOMOTIVE TO DIVERSIFIED GENERAL INDUSTRY



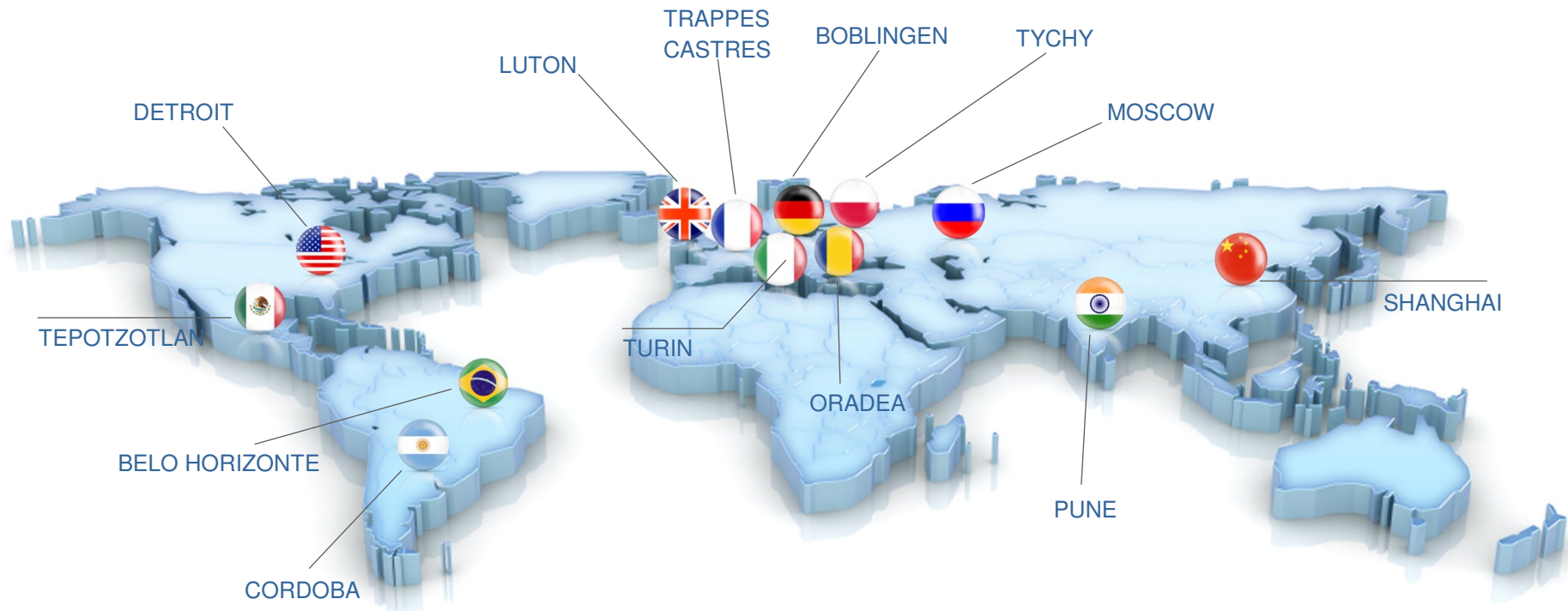
## Figures



- **ONE TEAM**
- **OVER 35 YEARS OF EXPERIENCE**
- **3 RESEARCH & DEVELOPMENT CENTERS**
- **14 MANUFACTURING PLANTS**
- **23 DIFFERENT LOCATIONS**
- **14 COUNTRIES**
- **84 PMI® CERTIFIED PROJECT MANAGERS**
- **11,700 EMPLOYEES WORLDWIDE**
- **7,900 EMPLOYEES IN EMERGING COUNTRIES**



# Comau Group Network





# 2009 Sustainability Report

## Economic, Environmental and Social Responsibility

**FIAT**  
**GROUP**



## A year of Sustainability: Facts and Figures



FIAT S.P.A. ENTERS **DOW JONES  
WORLD AND STOXX  
SUSTAINABILITY  
INDEXES**



**Dow Jones  
Sustainability Indexes**  
Member 2009/10

FOR THE THIRD YEAR RUNNING FIAT IS NAMED  
**LEADER** FOR THE  
**LOWEST CO<sub>2</sub>  
EMISSIONS** IN EUROPE AT  
**127.8 G/KM**

CENTRO RICERCHE FIAT: PATENTS FILED FOR  
**29 INVENTIONS**  
AND APPROXIMATELY **360** NEW  
**PATENTS OBTAINED**  
WORLDWIDE

THE **NOMINATING  
CORPORATE  
GOVERNANCE** COMMITTEE  
IS ASSIGNED RESPONSABILITY FOR  
**SUSTAINABILITY** ISSUES

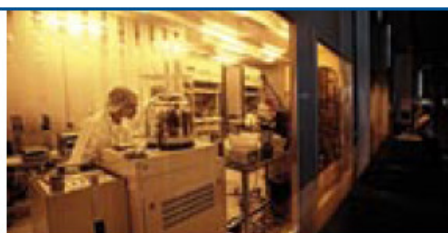


FIAT S.P.A. RECEIVES SPECIAL MENTION AS  
**SAM GOLD CLASS** AND  
**SAM SECTOR MOVER**

THE GROUP'S  
**SUSTAINABILITY  
INTERNET** SITE NAMED  
**BEST IMPROVER**  
IN ITALY AT CSR ONLINE AWARD

**MULTIAIR**  
PRESENTED ON ALFA MITO AND  
FIAT PUNTO EVO:  
**-10% CO<sub>2</sub> EMISSIONS**

**€1.7 BILLION** SPENT  
ON **RESEARCH** AND  
**DEVELOPMENT** WITH 14,000  
PEOPLE LOCATED IN 117 R&D CENTRES



**123 ISO 14001**  
ENVIRONMENTAL CERTIFICATIONS





## A year of Sustainability: Facts and Figures



FIAT AND IVECO **EUROPEAN LEADERS** IN SALE OF **NATURAL GAS** VEHICLES



**11% OF ENERGY** CONSUMED BY THE GROUP IS FROM **RENEWABLE SOURCES**

**-12.6% OVER 2008** IN **CO<sub>2</sub> EMISSIONS** PER VEHICLE PRODUCED AT **FIAT GROUP AUTOMOBILES** PLANTS WORLDWIDE



**ABS SUPERSTEER™** FROM NEW HOLLAND AWARDED **SILVER MEDAL FOR INNOVATION**

**€21.8 MILLION** COMMITTED BY THE GROUP TO LOCAL **COMMUNITIES: +16% OVER 2008**

**2,150 YOUTH** TRAINED THROUGH **TECHPRO<sup>2</sup>** PROJECT



**-9.7% OVER 2008** IN **WATER** CONSUMED PER VEHICLE PRODUCED AT **FIAT GROUP AUTOMOBILES** PLANTS WORLDWIDE

FOR THE ARVORE DA VIDA PROJECT, FIAT WINS AWARD IN BRAZIL FOR **BEST COMPANY** IN THE **MANAGEMENT** OF **SOCIAL AND ENVIRONMENTAL RESPONSIBILITY**

MORE **431,000 HOURS** OF TRAINING TO THE NETWORK ON **SAFETY** AND THE **ENVIRONMENT: +80% OVER 2008**

**91%** OF THE VALUE OF DIRECT MATERIALS PURCHASED BY FIAT GROUP AUTOMOBILES COMES FROM **ISO 14001** CERTIFIED **SUPPLIERS SITES**

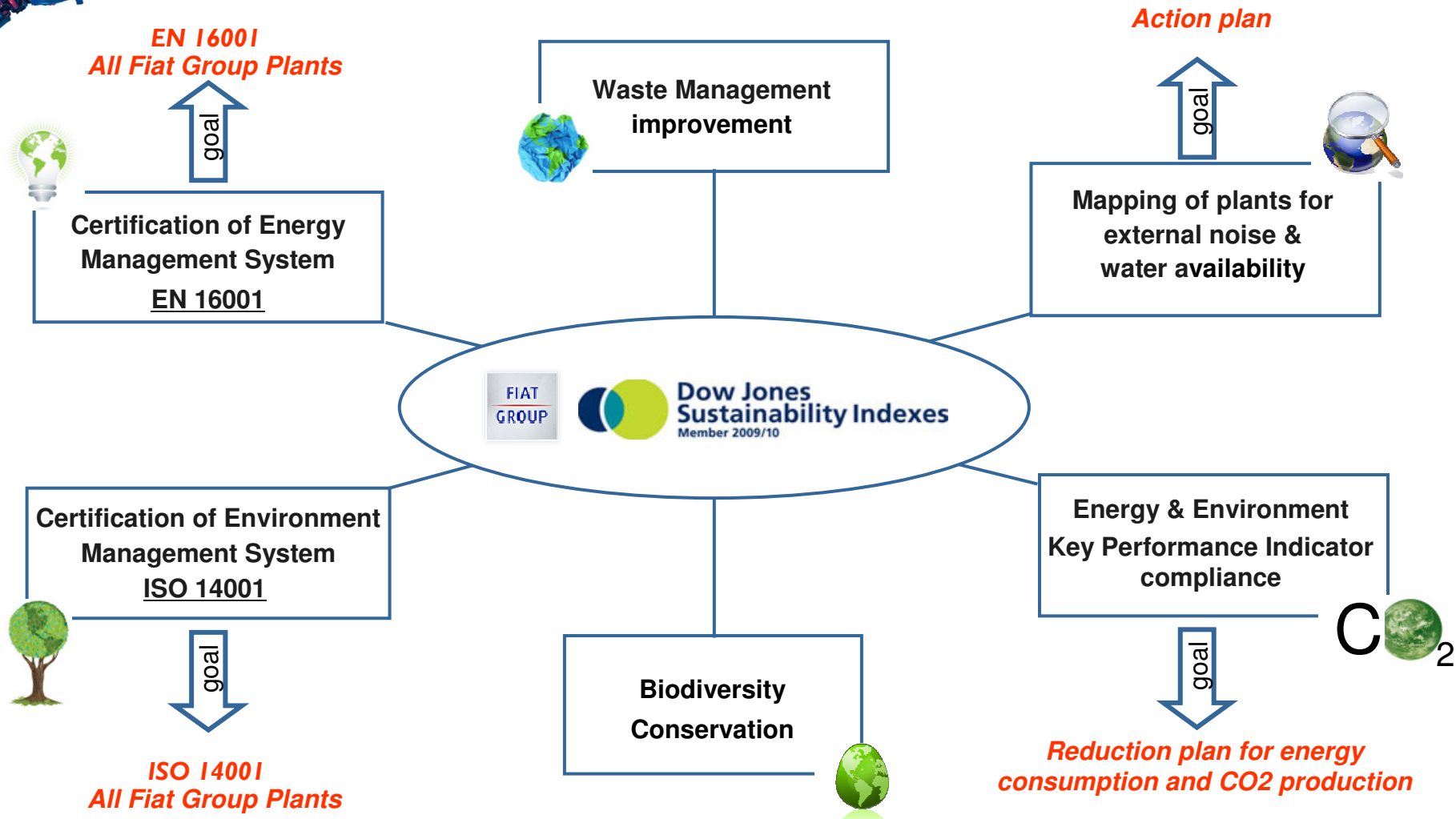


**€225 MILLION** SPENT ON **HEALTH AND SAFETY** IN THE **WORKPLACE**





# Fiat Group Sustainability Main Targets





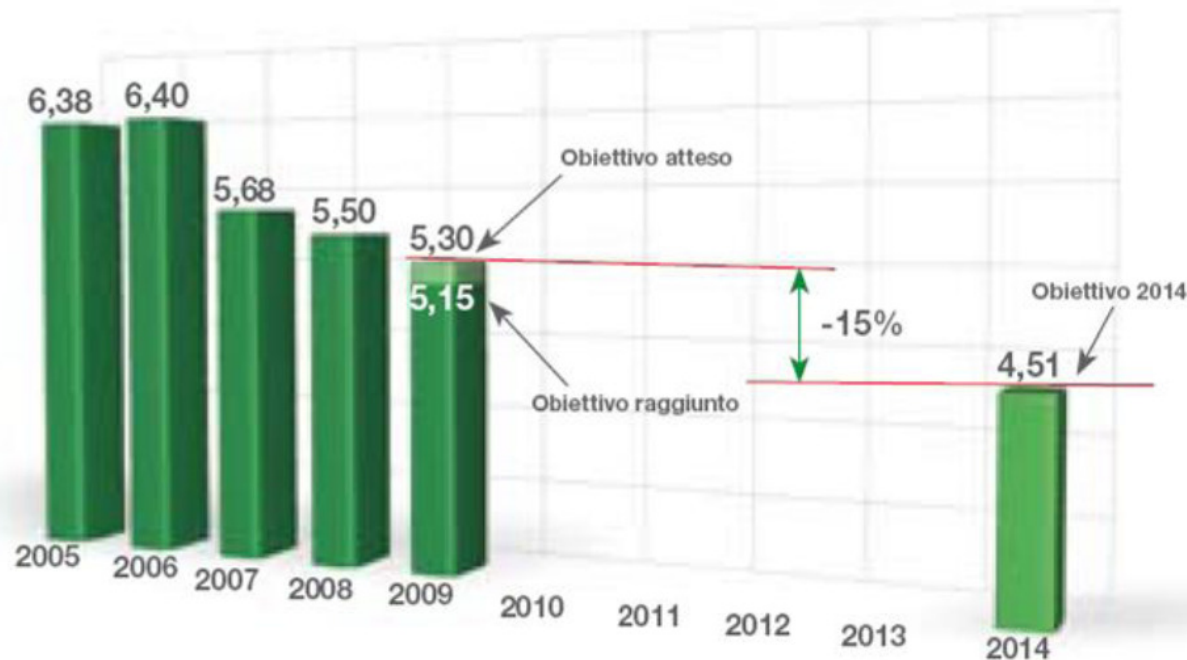
## Fiat Group Sustainability - Energy Consumption



### Target

2014: **-15% vs 2009** in energy consumption and CO<sub>2</sub> emissions per unit values at **every Group Sector**

Consumo totale di energia (GJ/vettura prodotta)  
Fiat Group Automobiles mondo



**-15% IN ENERGY  
CONSUMPTION  
AND CO<sub>2</sub>  
EMISSIONS  
BY 2014**

Energy Efficiency  
Solutions



Note: for detail by Sector, go to <http://sustainability.fiatgroup.com/>



## ENERGY-EFFICIENT INDUSTRIAL SOLUTIONS



## Green Automation Consulting



COMAU DEVOTES SIGNIFICANT RESOURCES TO TURN  
THE **GREEN-COMMITMENT** AND  
**ENVIRONMENTAL RESPONSIBILITY**  
INTO REAL **ENERGY SAVING RESULTS**

DEVELOPING SHORT-TIME PAY-BACK  
**GREEN AUTOMATION SOLUTIONS**  
IN MATERIAL HANDLING, WELDING,  
METAL CUTTING AND ASSEMBLY SYSTEMS

COMAU ALSO OFFERS **GREEN-FIT CONSULTANCY**  
ON EXISTING MANUFACTURING SYSTEMS





### Consulting

#### *Industrial Energy Efficiency Team*

- Industrial Energy Managers
- Product / Process Experts focused on Design for Sustainability, GreenFit, Life Cycle Cost Analysis



### Service

#### *Energy Efficiency Service Team*

- Team dedicated on achieving energy targets/objects on shop floor
- Skilled on Energy Efficiency Parameters, Method and Action Plan execution



### Eco Products & Technologies

#### *“ Plug & Save Solutions ”*

- Comau Robotics: New Robot generation
- Comau Powertrain: Smart Drive
- Comau BWA: Versaroll

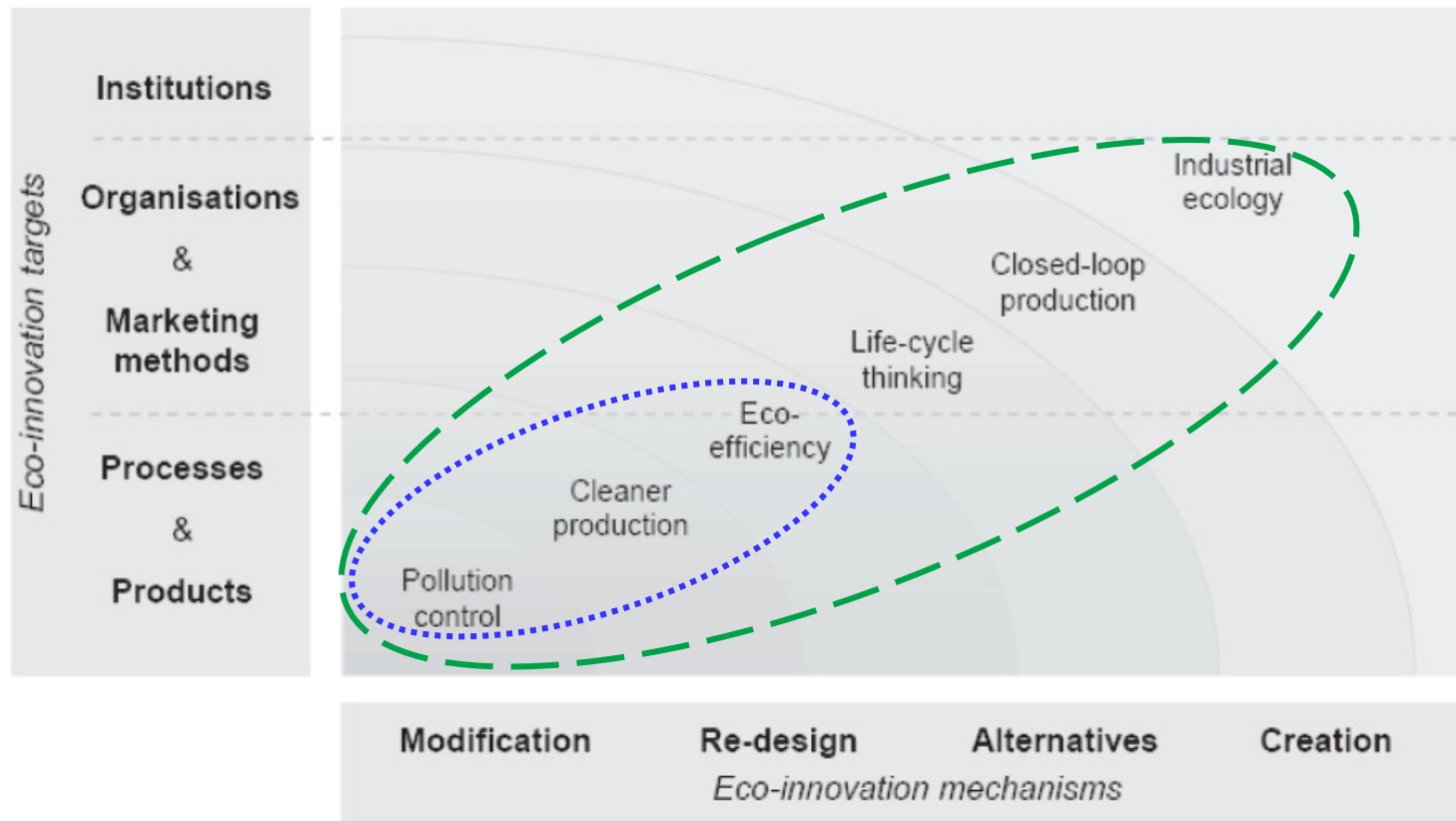




## eCOMAU positioning



### Eco-innovation as driver of sustainable manufacturing



.....  **Phase 1**

-----  **Phase 2**





## CASE STUDIES



## eCOMAU check list improvement



Organized in 7 Chapters



1. *Motor & Drives*
2. *Hydraulic System*
3. *Air System*
4. *Cooling System Control Cabinet*
5. *Power Electronics*
6. *Peripheral Devices*
7. *Controls*

➔ 47 check-list points, as potential improvements

For each potential improvements and for each assessment subject,  
eComau Team investigates feasibility and applicability,  
proposing to the Customer a list of

### GREENFIT IMPROVEMENTS

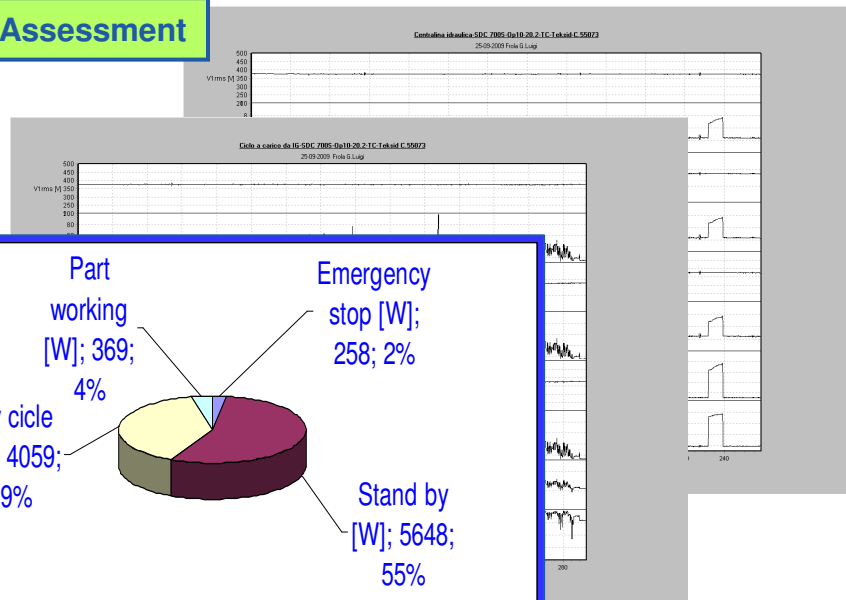
Cost of intervention (Euro), Saving (%), Pay-Back (years)  
to be agreed, based upon time, technical requirements, energy cost data



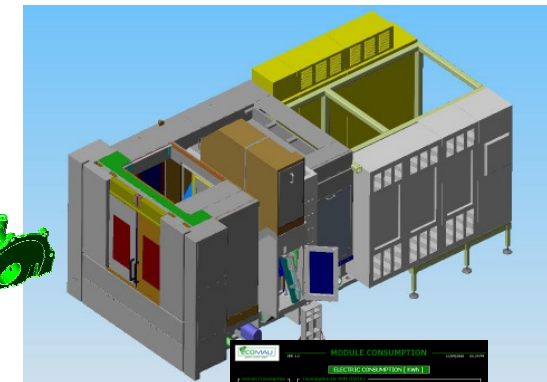
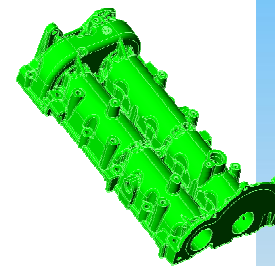
# GreenFit by Comau Powertrain



## Assessment



## Intervention definition and site implementation



Monitored period: **Power** – 17% **Air** – 22% **Coolant** – 29%

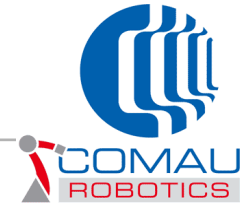
Standby mode : **Power** – 77% **Air** – 48% **Coolant** – 100%

## Monitoring and Results validation





# COMAU Robot C4G: Energy-Efficient Solutions



## REP (Robot Energy Package)

- **KERS**  
Capacitors module accumulating the kinematics energy during robot arms deceleration phase
- **Fan control optimization**  
fan speed reduction module when the robot is in stand-by or in drive-off
- **Stand-by optimization time**
- **Shut-off valve management** (via SW management)





# EN 16001: COMAU APPROACH



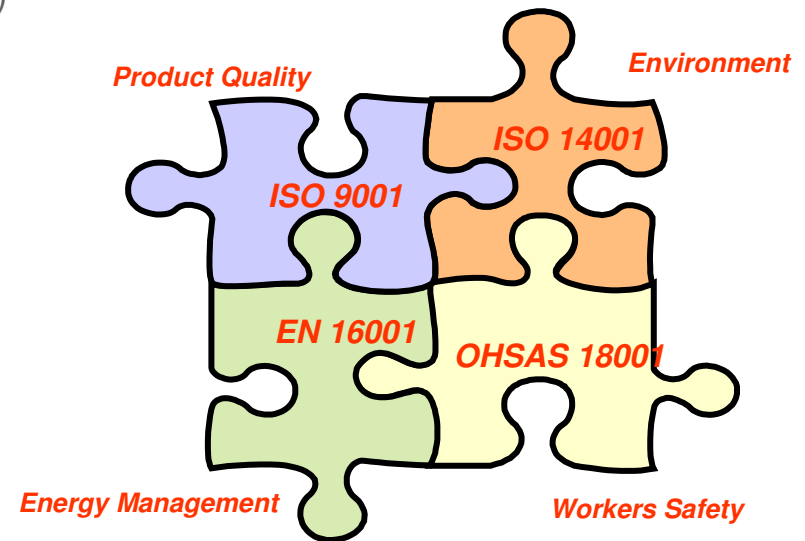
## Why EN 16001



- To implement a certified Energy Management System (EnMS)
- To develop a policy which take into account legal requirements and information about significant energy aspects
- To build and maintain systems and processes necessary to improve energy efficiency
- To reinforce the ISO 14001: 2004 Environmental Management System (Comau already certified on most locations)
- To avoid “Green washing”

### Energy Management certifications

- EN 16001: 2009
  - European standard reference
  - Released: July 2009
- ISO 50001
  - Worldwide standard
  - Proposed to replace the EN 16001 being fully compliant
  - Estimated release: May 2011



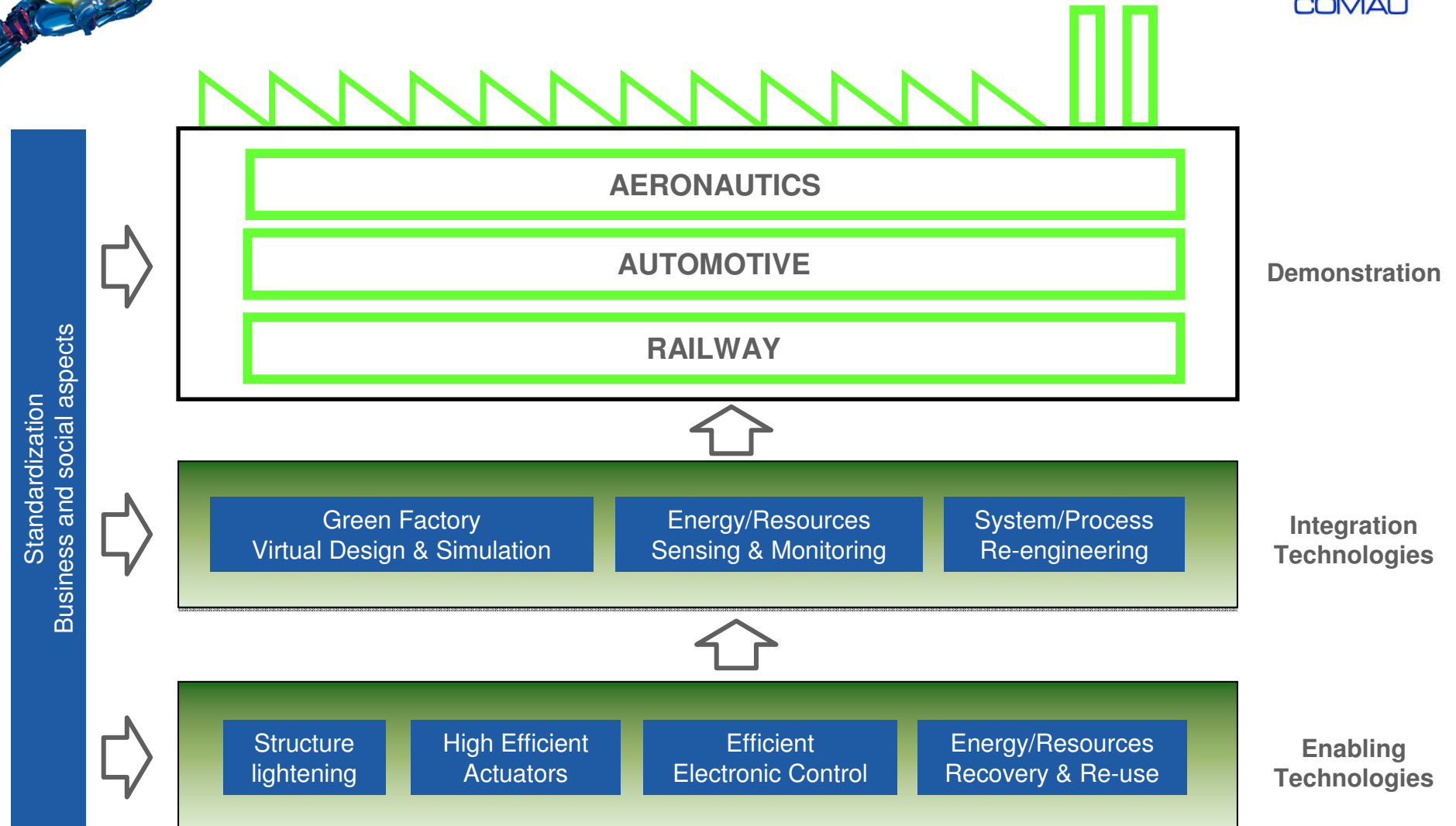




## R&D PROJECTS



## The Eco-Factory: the research approach





## Factories of the Future (FoF): The Eco-Factory



**Cleaner and more resource-efficient eco-factory aiming at increasing the overall efficiency of production systems by reducing the use of resources and energy, as well as emissions, waste treatment and recycling**

- An integrated and holistic approach is proposed for
  - - developing process simulation optimization methodologies
  - - reducing global resources consumption
  - - preventing environmental pollution



## Factories of the Future - Plant Cockpit



Title:	PlantCockpit
	Production logistics and sustainability cockpit
BU involved:	PWT France
Funding Agency:	European Commission - FP7-2010-NMP-ICT-FoF
Funding Scheme:	Large-scale Integrating Project (CP-IP)
Main Objectives:	Study of a central environment for monitoring and control of all intra-logistical processes. Production supervisors, foremen and line managers will have the required visibility to make well-informed decisions for optimizing plant processes. This includes the holistic visibility of the plant, the current status, deviations and exceptions, and bottlenecks.
Expected Results:	<p>Integrated heterogeneous, multi-vendor system landscapes including ERP, MES, SCADA, condition-based maintenance, energy management, and other special-purpose systems. The project will impact on:</p> <ul style="list-style-type: none"> <li>• delays of internal to external supply;</li> <li>• optimized purchasing processes;</li> <li>• <b>better energy/resources management</b></li> <li>• <b>overall efficiency of processes</b></li> </ul>
Timetable:	2010 - 2012 (36 months)
Partners:	SAP (DE), <b>COMAU (IT)</b> , Acciona (ES), BMW (DE), Doehler (NL), EPFL (CH), Fatronik (ES), Iconics (CR), Intel (ER), TUT (FI), UniDresden (DE)

