Cluster Experience in the Tooling Industry

Rui Tocha
CENTIMFE
Clusterplast

28-29 June 2010
Lyon, Rhône-Alpes (France)

Event Towards a common European and Regional strategy for plastics clusters

Municipality of the city Marinha Grande
CENTIMFE
OPEN
CEFAMOL
IST LISBON

Engineering & Tooling FROM PORTUGAL
Topics

- Engineering & Tooling Cluster (Portugal)
  ✓ Cluster Dimensions
  ✓ Facts & Figures
  ✓ Key Players
  ✓ Tooling Strategy

- European Tooling Platform (MANUFUTURE)
* Product Development & Engineering
* CAD/CAM/CAE
* Rapid Manufacturing (PR/RT)
* IT Security
* Knowledge Management
* Processes Reengineering
* High Speed Milling
* Micro-Manufacturing
* Management & Planning
* Quality, Environment, Health & Safety Work
* Jigs & Measurement Systems
* Reverse Engineering
* Plastics Injection
* Die Casting Tools
* PIM – Powder Injection Moulding
* Bi-Injection
* RIM-Reactive Injection Moulding
* In-Mould Assembling
* Gas injection;
Tooling Companies

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<thead>
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<tbody>
<tr>
<td>Leiria</td>
<td>91</td>
<td>107</td>
<td>18%</td>
</tr>
<tr>
<td>Marinha Grande</td>
<td>121</td>
<td>165</td>
<td>36%</td>
</tr>
<tr>
<td>Oliveira de Azeméis</td>
<td>50</td>
<td>66</td>
<td>32%</td>
</tr>
<tr>
<td>Other</td>
<td>151</td>
<td>198</td>
<td>31%</td>
</tr>
<tr>
<td>Total</td>
<td>413</td>
<td>536</td>
<td>30%</td>
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</table>

Figura 16: Dimensão das empresas portuguesas do sector dos moldes, de acordo com o número de trabalhadores.

Fonte: Quadros de Pessoal, Ministério do Trabalho e Solidariedade Social
## Human Resources

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<tr>
<td>Leiria</td>
<td>1062</td>
<td>1179</td>
<td>11%</td>
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<tr>
<td>Marinha Grande</td>
<td>2169</td>
<td>2710</td>
<td>25%</td>
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<tr>
<td>Oliveira de Azeméis</td>
<td>1731</td>
<td>2197</td>
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<tr>
<td>Other</td>
<td>1749</td>
<td>2283</td>
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<tr>
<td>Total</td>
<td>6711</td>
<td>8369</td>
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<td>Localização</td>
<td>Quota de Mercado (%)</td>
<td>Crescimento da Quota de Mercado</td>
<td>média</td>
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<td>2003</td>
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<td>1 Alemãnia</td>
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<td>24,2</td>
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<tr>
<td>2 Itália</td>
<td>14,3</td>
<td>12,2</td>
<td>12,4</td>
</tr>
<tr>
<td>3 Suíça</td>
<td>9,2</td>
<td>10,1</td>
<td>10,7</td>
</tr>
<tr>
<td>4 França</td>
<td>7,3</td>
<td>5,5</td>
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</tr>
<tr>
<td>5 Portugal</td>
<td>3,7</td>
<td>4,1</td>
<td>4,8</td>
</tr>
<tr>
<td>6 China</td>
<td>1,5</td>
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<tr>
<td>7 Áustria</td>
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<td>4,1</td>
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<td>8 Japão</td>
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<td>9 EUA</td>
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<td>10 Bélgica</td>
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<td>2,9</td>
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<td>11 Rep. Checa</td>
<td>6,7</td>
<td>5,1</td>
<td>2,7</td>
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<tr>
<td>12 Hungria</td>
<td>2,7</td>
<td>2,1</td>
<td>1,9</td>
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<tr>
<td>13 Países Baixos</td>
<td>2,1</td>
<td>2,2</td>
<td>1,8</td>
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<tr>
<td>14 Coreia do Sul</td>
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<td>1,7</td>
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<td>15 Espanha</td>
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<td>1,6</td>
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<td>16 Polónia</td>
<td>2,2</td>
<td>1,4</td>
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<td>17 Reino Unido</td>
<td>1,9</td>
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<td>1,3</td>
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<td>18 Luxemburgo</td>
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<td>1,6</td>
<td>1,2</td>
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<tr>
<td>19 Taiwan</td>
<td>0,7</td>
<td>0,7</td>
<td>1,1</td>
</tr>
<tr>
<td>20 Roménia</td>
<td>0,6</td>
<td>0,7</td>
<td>1,0</td>
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Fonte: elaboração própria a partir de dados Eurostat através de IAPMEI e GEE do MEI; José Ferro Camacho - IED
MARINHA GRANDE MUNICIPALITY
Marinha Grande is an industrial city developed around a glass factory (XVII Century);

Marinha Grande took advantage of the sand and pines trees to launch the Glass Industry;

During the 40’s of the last Century, Tooling Industry has been created and supported on the expertise of the glass industry specialists;

Marinha Grande & Oliveira de Azeméis become two Industrial communities supported by the Tooling & Plastic Industry (industrial spin-offs);

The Portuguese Tooling Industry become a Cluster:
The **Engineering & Tooling Cluster (Pôle de Competitivitee)**.
Marinha Grande Municipality is an example of co-operation, between Public Authorities and Industry, being a Founding Member of CENTIMFE and OPEN.

Marinha Grande Municipality has been a partner of the Tooling Industry, promoting several projects and initiatives like Marinha Grande Digital City, Leiria Digital Region, Moulds Event Weeks, Entrepreneurship Weeks, and recently (2008) the “Jornadas Económicas”, an Economic & Social Forum held in this Region, involving all stakeholders in order to discuss and establish priorities to address to the emergent and future challenges being posed to this Community;

In address to European priorities, Marinha Grande Municipality has been promoting several projects (e.g. Territorial Pact for Employment), to support the Regional Industry (specially the Tooling & the Glass Industries), creating economic links and complementary Instruments for sustainability & competitiveness.
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28-29 June 2010
Lyon, Rhône-Alpes (France)

Event Towards a common European and Regional strategy for plastics clusters

CEFAMOL
Portuguese Tooling Association
The Portuguese Tooling Association, **CEFAMOL** has been founded in 1969;

Located at Marinha Grande, **CEFAMOL** has 120 members, which represent more than 90% of the Tooling production in Portugal;

**CEFAMOL** holds the presidency of **Pool-Net - Portuguese Tooling Network**;

Promotes the Industry at International markets;
Founded in 1991, **CENTIMFE**, is a Non-Profit Private Organization (recognized by the Portuguese Government as a Public Utility Institution) to promote RTD, Specialized Training, Consultancy to the Industry;

- Associated organizations:
  - 226 Industrial Companies;

- Industrial Associations:
  - CEFAMOL and OPEN
  - APIP – Portuguese Association for the Plastics Industry
  - MANUFUTURE European Technology Platform
  - European Tooling Platform

- **CENTIMFE** holds the vice-presidency of **Pool-Net** and is a member of the Board of Directors of **RECET - The Portuguese Technological Centers Association**, Lyon, Rhône-Alpes (France)
- Product Design
- Rapid Production (RP/RT/RM)
- Production Technologies (Laser/EDM/HSM)
- Processes Optimization
- Technological Audits
- Reengineering
- Training
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- Technology Watch
- Innovation & Prospect
- Industrial Property (IPR)
- Prospect Studies (Market, Technologies, Materials)
- Networks & Networking
- R&D + Innovation
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- Security Systems
- Platforms & Interactive Portals
- Global Networks
- Videoconference & Communication
- e-Learning
- Informatics Audits
- Dissemination
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- Benchmarking
- Quality/Safety/Environment Systems
- Training
- Entrepreneurship
- Metrology & Labs
- Audits
- Economic Studies
- Project Management
*Clusterplast*

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**OPEN**

*Incubator Center*
OPEN is a private Incubator Center, founded in 2004 to support the industrial entrepreneurship in Portugal;

Located at Marinha Grande, OPEN has 57 members, involving SMEs, Municipalities and Industrial Associations;

OPEN has created the OPEN Business Angels to support new Entrepreneurs & Businesses;

OPEN is a member of RIERC - The Innovation & Entrepreneurship from Center of Portugal.
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IST LISBON

University
IST is a Higher Education Institution, in the areas of Engineering, Science & Technology, having more than 10.000 Students, being the largest Engineering School in Portugal. IST is a member of Pool-Net and an associate of OPEN Incubator, promoting academic spin-offs and evaluating entrepreneurship proposals;

IST co-operates actively with the Engineering &Tooling Cluster. Being a key partner in several RTD projects (like EuroTooling 21), technological Missions and in several Industry’s activities, it also promotes studies and PhD Thesis in domains of central relevance to the Industry, in an active interaction involving Industry and Academy;

IST is participating in the NMP working group within the umbrella of DG Research, in straight articulation with the Portuguese Tooling Industry;
On February 13th, 2009, the Technology and Competitiveness Pole was formally recognized by the Portuguese Government, by joint order of the Minister for Economy and Innovation, the Minister for Environment, Spatial Planning and Regional Development and the Minister for Science, Technology and Higher Education.
Pool-net - Portuguese Tooling Net

Energy & Environment

Electronics

Automobile

Aeronautics

Packaging

Medical Devices

CENTIMFE
Innovation & Intelligence

CEFAMOL
Market

Helpdesk

Management & co-ordination Of the Cluster

- Tooling Companies;
- Industrial Associations;
- Technological Center;
- Training Centers;
- R&D Centers;
- Universities;
- Polytechnic;

- 80 % Portuguese Tooling Production
Clustérlast

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**Health**: growth potential, innovation and quality focused, highly regulated (barriers to entry to potential competitors from low cost countries)

**Electronics**: Sales channel, key sector, multiplicity of applications miniaturization

**Automotive**: sales channel, new applications and innovation

**Packaging**: sector’s growth, innovation opportunities, support policies

**Energy and Environment**: sector’s growth, innovation opportunities, support policies

**Aeronautics**: innovation opportunities, highly regulated (barriers to entry to potential competitors)
Pool-net is a private Association created in October 2008 to MANAGE the Portuguese Tooling Cluster;

Pool-net is located at Marinha Grande, having 65 members, namely, Tooling and Plastic Companies, Universities, Technological and Training Centers, Industrial Associations, Local Government Institutions.

Pool-net has the responsibility of gathering the Engineering & Tooling Industry from Portugal, promoting the integration of this Industrial, Technological and Scientific Community;

Pool-net is supporting the market standard:
Action Plan:

- Management, follow-up and networking & network promotion
- National and international promotion
- Qualification of Human Resources and Training
- Technology development
- Intelligence and Prospect
- Entrepreneurship
- Cooperation, Networks & Partnerships
- Sustainable development
# Clusterplast

**Event:** Towards a common European and Regional strategy for plastics clusters

**Date:** 28-29 June 2010

**Location:** Lyon, Rhône-Alpes (France)

## MARKET

<table>
<thead>
<tr>
<th>Automobile</th>
<th>Packaging</th>
<th>Aeronautics</th>
<th>Energy &amp; Environment</th>
<th>Medical Devices</th>
<th>Other</th>
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</thead>
</table>

## Companies / Industry

- Technology Watch & Intelligence
- Entrepreneurship
- Training & Qualification
- R&D + Technology + Innovation
- Business Models
- Marketing & Internationalization
- Sustainable Development

## INNOVATION

- Competitiveness
- Productivity
- Image

## R&D System

## Public & European Co-operation
European Projects

50 M€
RTD Projects
Approved in 2010

Strategy

Key Projects
- B&M Branding to Market
- ETF Tooling Factories Of the Future

Complementary Projects
- Engineering & Tooling from Portugal
- DI Markets
- Training Qualification Sensibilization
- MM Tooling

European Projects

GES Tooling — Coordenação e Animação da Rede
http://www.toolingplatform.manufuturenet.eu

A privileged link to

EU’s FP7

&

Public Private Partnerships

“Factories of the Future”
● The **Tooling Industry** (moulds, dies and special tools) **in Europe represents** an average annual turnover of 13 Billion USD and comprises more than 7,000 companies, being 95% of them SMEs, representing a high added value workforce (more than 100,000 workers directly in the sector) with a remarkable know-how in design and manufacturing processes.

● **Tooling Industry is a knowledge-based Industry**, being capital and Knowledge Intensive, supported on Innovation and global Co-opetition;

● **Moulds, Dies and Tools, are present in** the design and manufacturing of **almost all industrial products** from aeronautics and automotive, to electronics, household, equipment goods and micro-devices.
● MANUFUTURE Platform promoted a specialised working Group on Tooling to help on the development of a new paradigm for the European Industry;

● Recently, MANUFUTURE recognized the European Tooling Platform as a new MANUFUTURE sub-platform

● [www.europeantooling@manufuturenet.eu](http://www.europeantooling@manufuturenet.eu)
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20th – 24th September 2010, Marinha Grande - Portugal
Launch New Business, R&D Projects, challenging the future.
www.mouldsevent.com
Towards a common European and Regional strategy for plastics clusters

The Tooling Industry: Building a Network

- Mouldforce
- SMARTSKETCHES
- OPTIMOULD
- Round the Clock
- IMATECH
- HISIM
- eSeSME
- PALMIBER
- SAFEWORK
- INOCOP
- ECOVIA
- HIPERMOULDING
- Ch@t mould
- e-Learning Hybrid Mould
- VETMAN
- PTI
- INTPLASTIC
- SIMETRIA
- TRAAAP
- Rapid Design
- 1998

Clusterplast
TIPSS
ENER-PLAST

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National Networks

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The European Tooling Standard

- 12 M€ Budget;
- 35 Partners;
- 10 European Countries;
- Integrated Project for SMEs – 6FP UE;
- Industrial Case Studies from OEMs;
- Coordination - CENTIMFE;

CS1
ASCAMM
Grupo Antolin

CS2
IPT Fraunhofer Institute
Jenoptik Polymer Systems

CS3
3D TECH / CENTIMFE
BRISA
The European Tooling Road-Maps

<table>
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<tr>
<th>1-2 years</th>
<th>2-4 Years</th>
<th>4+ years</th>
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<tbody>
<tr>
<td><strong>Small</strong></td>
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<tr>
<td>1. BUSINESS MODELS AND TOOLS FOR VALUE CREATION OVER THE LIFE CYCLE AND FOR SIMPLIFICATION</td>
<td></td>
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<tr>
<td>2. TOOLS FOR VERTICAL INTEGRATION</td>
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<tr>
<td>3. NETWORKED BUSINESS MODELS AND TOOLS FOR EFFICIENT NETWORKING, DIGITAL BUSINESS &amp; EASY AND ECONOMICAL COMMUNICATION</td>
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<tr>
<td><strong>Medium</strong></td>
<td></td>
<td></td>
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<tr>
<td>4. SIMULATION METHODS AND TOOLS FOR KNOWLEDGE SERVICES (including simulation of dimensions and mechanical properties of moulded products)</td>
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<tr>
<td>5. PROFESSIONAL MANUFACTURING, SMALL SERIES AND PROTOTYPING</td>
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<tr>
<td>6. NEW DESIGN AND ENGINEERING TECHNIQUES FOR INTELLIGENT MACHINES AND TOOLS</td>
<td>7. ADVANCED MTA COMPONENTS AND ICT FOR INTELLIGENT MOLDS AND SPECIAL TOOLS</td>
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<tr>
<td>8. MOLDS FOR HIGH OUTPUT PRODUCTION OF STRUCTURAL COMPOSITES</td>
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<tr>
<td>9. ADVANCED AUTOMATION AND REMOTE CONTROL</td>
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<tr>
<td><strong>Large</strong></td>
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<tr>
<td>10. COATING AND SURFACE TECHNOLOGIES FOR SPECIAL CHAOS ABSORBING AND COMBUSTION SURFACE TEXTURING</td>
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<tr>
<td>11. ADVANCED TECHNOLOGIES FOR MICRO TOOLS AND FOR SURFACE FINISHING</td>
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<tr>
<td>12. SPECIAL MOLDING TOOLS FOR FUNCTIONAL MATERIALS</td>
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<tr>
<td>13. INNOVATIVE RAW MATERIALS FOR SPECIAL APPLICATIONS (TOOLS AND PRODUCTS)</td>
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<tr>
<td>14. MOLDS FOR NON-CONVENTIONAL TECHNIQUES ( Multi-material, multi-cavity, fluid assisted, very small)</td>
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<tr>
<td>15. MICRO MOLDING, MICRO ASSEMBLY AND CLEAN ROOM MANUFACTURING</td>
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<tr>
<td><strong>SECTOR 1.3</strong></td>
<td><strong>MANUFACTURE OF MOLDS AND SPECIAL TOOLS</strong></td>
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CLUSTERPLAST

International Network
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Competitiveness Pole
Engineering & Tooling

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