Sustainable Manufacturing in the Future: 
EPSRC Centre for Innovative Manufacturing in Industrial Sustainability

1. OVERVIEW
Nine new UK based “Centres for Innovative Manufacturing” have recently been awarded funding by the Engineering and Physical Sciences Research Council (EPSRC) – March 2011

Unilever are an industrial partner in one of these Centres: “Centre for Innovative Manufacturing in Industrial Sustainability” will rapidly reduce the resource and energy-intensity of the production of existing goods, and investigate options for a radical redesign of the industrial system. Led by Cambridge University with an EPSRC grant of £4.5m over a period of 5 years.

2. Centre for Innovative Manufacturing in Industrial Sustainability

- Unilever : SEAC and Unilever Discover Team (R&D) - jointly funded
- SEAC have played a major role in shaping the proposal

The Centre will focus on the following “Key Challenges”

Key Challenges Specific Activities

- Eco-efficiciency
- Eco-factors
- Sustainable Industrial System

- How is knowledge transferred within an organisation ?
- How do manufacturing organisations learn ?
- How can process, plant and material life cycles be integrated into product life cycles?
- How can performance variation in manufacturing be reduced across the value chain?
- Zero waste factories
- What business models offer resilience, performance and potential for profit ?
- How will resources, raw materials and the lifecycle be integrated into product life cycles?
- Supply chain configurations to meet industrial sustainability challenges
- Supply chain configurations to meet customer demands and potential for profit ?
- Eco-factories

- Obviating added value and improving production capability and efficiencies, decreasing the consumption of capital, decreasing the consumption of natural resources (water, energy, waste)
- Performance metrics, resource data and interpretation
- Energy efficient, carbon efficient, and mechanical performance

Specific Activities

Key Challenges

- Eco-efficiency
- Eco-factors
- Sustainable Industrial System

- Integrating product design and production processes and business models
- Optimising value creation across total life cycle
- Integrating product design and production processes and business models
- Optimising value creation across total life cycle

3. Centre for Innovative Manufacturing in Industrial Sustainability

Interests – SEAC
- Sustainable manufacturing
- New technologies to reduce footprints
- Tools to assess sustainability

Interests – DISCOVER Platform
- Process synthesis
- Flexible manufacturing
- Manufacturing technologies

5. The Journey – Becoming Greener

Yesterday
- Pollution
  - End of pipe solutions
  - Compliance led operation
  - Environmental concerns such as water scarcity and resource constraints together with other factors will influence the potential location of our factories in the future

Today
- Eco-efficiency
  - Leading practices for doing more with less
  - Resource efficient manufacturing

Tomorrow
- Eco-factory
  - Eco-intelligent factory design
  - Sustainable manufacturing
  - Technology roadmaps
  - Methodologies to assess sustainability
  - Sustainable Industrial System

6. What Could Tomorrow’s Supply Chain Look Like ?

We cannot consider a “concept factory” in isolation without taking into account how it fits within its supply chain. This is where the “Sustainable Industrial Systems” key challenge will focus :

The way we do business will change ……
- The way we do business in the future will change and impact on how we design our supply chains.
- We will need to be able to react and adapt to these changes e.g. product customisation at the point of delivery
- … and there will be impacts on the way we manufacture our products
- Our factories will need to operate flexibly and be able to adapt to these changing demands
- The drive for improving manufacturing sustainability will continue (Compass)
- Environmental concerns such as water scarcity and resource constraints together with other factors will influence the potential location of our factories in the future
- … and there will be choices
- Should we consolidate our manufacturing sites into fewer larger sites with greater production output or move to local manufacturing units within localised supply chains ?