

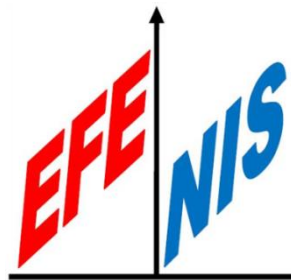
# Future Industrial Parks

Energy & Resource Efficiency through Integration & Symbiosis

Workshop Session - „Future Industrial Parks – New Ideas“

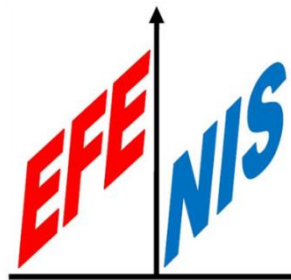
- Wrap Up Day 1
- Introduction – Process - Topics
- Working Phase
- Presentation of results- plenary discussion
- Wrap up Day 2

# Workshop Session - Overview



8:30 - 9:00	Welcome Coffee
9:00 - 9:30	Workshop Introduction Introduction – Process - Topics for discussion
9:30 - 10:30	Discussion Round Group discussions
10:30 - 11:00	Coffee Break
11:00 - 12:30	Plenary Discussion Presentations by topic leaders & plenum Q&A
12:30 - 12:45	Wrap –up of Workshops
12:45 - 13:30	Lunch
> 13:30	Possibility to visit F3- factory

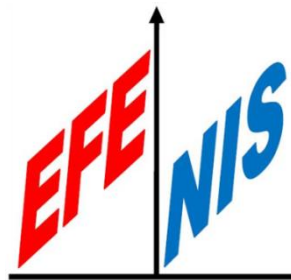
# Workshop Session – Wrap Up Day 1



Based on identified current challenges for EU industrial parks the **LOCIMAP** project aims to carry out opportunities to substantially improve energy & resource efficiency, reduce CO<sub>2</sub> emissions and improve, by doing so, the parks' competitiveness. The project is identifying potential for Industrial Symbiosis.

The **EFENIS** project contributes to the EU research agenda of establishing a low carbon industry by improving the understanding of overall process integration of reaction, separation, heat recovery and utilities as well as site-wide management for design and operation of utility systems and further developing and implementing tools and assets

# Workshop Session – Wrap Up Day 1



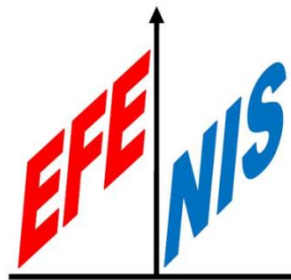
## Challenges:

- Increasing worldwide competition
- Lower growth in Europe
- Increasing costs
- Environmental targets
- .....

## Barriers:

- Financial, economic, regulatory, technological barriers
- Trust between partners
- Lack of „Cross-sectorial knowledge“
- Lack of global agreement of emissions reduction
- .....

# Workshop Session – Wrap Up Day 1



Tools to address challenges and to overcome barriers:

- Total site integration (Pinch analysis, heat integration, scope extension: Incorporation of renewables, including variability of demand and supply)
- Synergy development in an organised manner
- Development of business models
- Industrial symbiosis

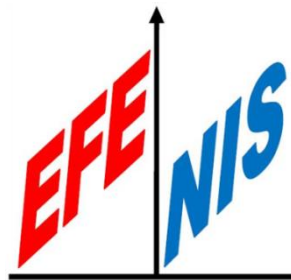
.....and examples from energy intense industries:

- Kalundborg Kommune
- Cross sectoral approach in the pulp and paper industry
- Steel industry- usage of coke oven gases and furnace gases
- Energy efficiency tool STRUCTESE

**The workshop's goal: Gaining deeper insights!**

# Workshop Topics

16<sup>th</sup> July – „Future Industrial Parks – New Ideas“



Lisbeth Randers  
(Kalundborg  
Kommune)

Parks, Networks & Communities: What are the opportunities for integration beyond district heating?

Park Structure: How to achieve a sustainable integrated site operation in a globalized world?

Tony Alderson  
(Parsons  
Brinckerhoff)

New Technologies: Is CCS & CCU a solution & how can we get these established more quickly?

New Technologies: How can parks and the design of new process technology contribute further to resource minimization and integration between manufacturing processes? What technologies and industries might be integrated? What are the barriers to innovation & how to overcome them?

Scott Taylor  
(Sembcorp)

New Technologies: The role of renewable energy and energy from waste in the future industrial park. Can it be done, is it low carbon and economic, what support is needed, when is it likely, how do parks work with Smart Grid ideas and technology?

Malcolm Bailey  
(Link2Energy  
Ltd)

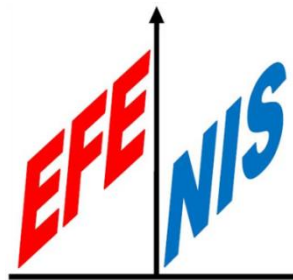
Sustainability Metrics: How can resource efficiency be quantified in a uniform way for integrated sites & industrial parks with processes from different industry sectors? What are appropriate metrics? What data basis is needed and how can it be measured / collected?

Ioannis Siskos  
(INSEAD)

IT & Management Systems: Which are the main levers for resource efficiency that have to be addressed by an integrated energy and resource management system in order to sustainably ensure an improved efficiency in the process industries?

Mark Lewis  
(NEPIC)

IT & Management Systems: How do industrial parks exploit communications and information technology developments in data handling, information exchange? What are the barriers and how can they be overcome?



**Parks, Networks & Communities:** What are the opportunities for integration beyond district heating?

**Park Structure:** How to achieve a sustainable integrated site operation in a globalized world?

Integration:

Cluster

district cooling

biogas

wastewater treatment

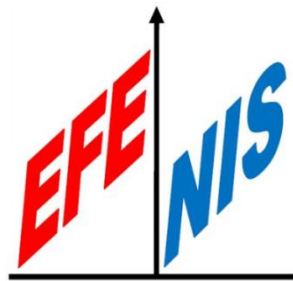
shared services

Local community:

- dialogue- not war
- mind-set among civilians
- need of neutrale broker, representing many companies

Legislation as a significant barrier

Mind-set of the financial crisis

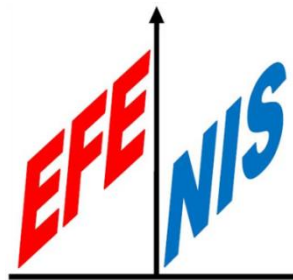


**New Technologies:** The role of renewable energy and energy from waste in the future industrial park. Can it be done, is it low carbon and economic, what support is needed, when is it likely, how do parks work with Smart Grid ideas and technology?

### Industrial Heating

- Switch away from fuel combustion to electrical heating from decarbonized grid
- High grade storage to facilitate flexibility





**Information & Communications Technology:** How do industrial parks exploit communications and information technology developments in data handling, information exchange? What are the barriers and how can they be overcome?

CCU- No demand for existing high purity CO<sub>2</sub>

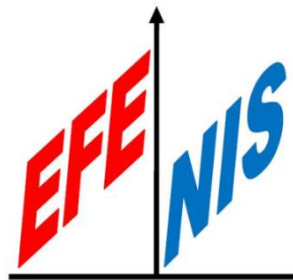
- Need new technology

CCS- is it really needed by industry?

- Can we do enough by using decarbonized energy & still emit „process“ CO<sub>2</sub>

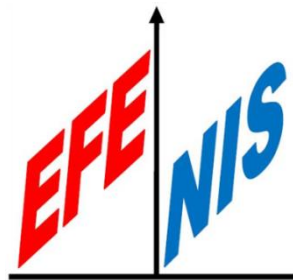
Feedstock integration

- Needs economic incentive to switch
- High commercial risk if too closely coupled with supplier/offtaker



**Sustainability Metrics:** How can resource efficiency be quantified in a uniform way for integrated sites & industrial parks with processes from different industry sectors? What are appropriate metrics? What data basis is needed and how can it be measured / collected?

<p><b>Relevance of Topic</b></p>	<ul style="list-style-type: none"> <li>▪ Who are we trying to influence.....why are we using Sustainability metrics?</li> <li>▪ Government?</li> <li>▪ Corporate?</li> <li>▪ Operational management?</li> <li>▪ Investors?</li> <li>▪ Influence on Policy Setting</li> <li>▪ <b>Need for harmonised data from common data set with different levels of resolution</b></li> </ul>
<p><b>How might we Measure...at the individual process level?</b></p>	<ul style="list-style-type: none"> <li>▪ Absolute measurement eg pinch target setting</li> <li>▪ Relative</li> <li>▪ Historical. Including weather compensation</li> <li>▪ Peer Process comparison</li> </ul>
<p><b>Integrated Sites_ Parks</b></p>	<ul style="list-style-type: none"> <li>▪ Complex Barrel equivalent?</li> </ul>
<p><b>Does always come down to Economics?</b></p>	<p>Risk Management Better to integrate with well optimised site or poorly optimised site??</p>
	<p>Its COMPLEX.....but knowing who you are. Strengths. Weaknesses must help!</p>

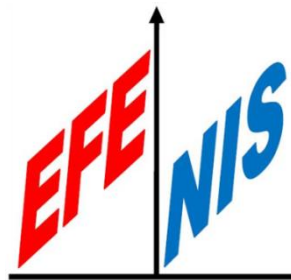


**Information & Communications Technology:** How do industrial parks exploit communications and information technology developments in data handling, information exchange? What are the barriers and how can they be overcome?

**Management Systems:** Which are the main levers for resource efficiency that have to be addressed by an integrated energy and resource management system in order to sustainably ensure an improved efficiency in the process industries?

- IT and Management systems exist & are able to be used for decision making on a process level and on site level.
- Benchmarks – Theoretical and against industry should be used
- No fundamental technological barriers – industrial standards to be developed
- Commitment to the IS concept – optimisation on a site level is challenge.
- Information sharing barrier – sensitive data.
- Benefit sharing mechanisms need to be developed - incentives alignment

# Workshop – Follow-Up & Next Steps



- EFENIS / LOCIMAP will provide a detailed summary for all topics under discussion
- Caretakers for activity areas will further define next steps
- Identify existing and/or define new funding programs
- Connect interested partners for research projects & setup consortia
- Organize workshops with other scientific & industrial communities



Science For A Better Life

Thank you!