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PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	X

Scope

This deliverable provides a base case for the second demo site which allows evaluating the EFENIS-project results in a large scale chemical park. With the deliverable two load cases are provided.

The chemical park clusters several companies which do not share process information with each other due to confidentiality reasons. This adds the typical complexity of a modern site to this demo case.

To handle this complexity, the plants on the site were arranged in three levels:

- Level 1 units: big energy consumers with full access to the process data
- Level 2 units: small energy consumers where only the temperature levels and the amount of utilities consumed was considered
- Level 3 units: energy consumers from third parties not disclosing details about their energy demand and very small energy consumers. These consumers were considered only with their total yearly energy consumption

The case includes data from the site and the reference results obtained from standard tools and methods.

Process modelling has been used as assisting data source e.g. if no measured data of important energy consumers is available.

Data collection

Data sets for the level 1 units were provided with in- and outlet temperatures as well as the enthalpyflow differences for two exemplary load cases in the table template below.

		Load Case 1			Load Case 2		
Stream Name	Segment	T_{in} / [°C]	T_{out} / [°C]	Enthalpy / [kW]	T_{in} / [°C]	T_{out} / [°C]	Enthalpy / [kW]

For level 2 units the consumption figures of hot utilities and the respective utility-temperatures were assembled in the following table template.

		Load Case 1	Load Case 2
Stream Name	T_{dew} / [°C]	Stream / [kg/h]	Stream / [kg/h]

Level 3 units could only be characterized by a sum of their total utility consumption. The table template was identical to the above one.

Static Pinch Analysis of the Level 1 Units

Pinch studies of the single level 1 units have been performed to define a reference case

Static Total Site Analysis of the Cluster formed by level 1 Units

A total site analysis of these units with commonly available tools completed the reference case.

First Evaluation of Improvement Measures by Heat Integration

A first improvement measure derived from the reference case analysis was examined and its resulting energy saving potential was determined.