



**Project no.:** 296003  
**Project full title:** Efficient Energy Integrated Solutions for Manufacturing Industries  
**Project Acronym:** EFENIS  
**Deliverable no.:** 8.2  
**Title of the deliverable:** BASE-CASE FOR PINCH ANALYSIS AND TOTAL SITE ANALYSIS WHICH WILL BE USED FOR EVALUATION OF THE METHODS TO BE DEVELOPED DURING THE PROJECT (Public Summary)

**Contractual Date of Delivery to the CEC:** Month 18  
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**Lead beneficiary:** P5 IPLOM

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The following steps have been performed and are described in detail in the following sections:

- (1) Data collection for different load cases for each unit (Initially performed in D8.1)
- (2) Data storage systems
- (3) Model calculations
- (4) Static Pinch Analysis of the existing units
- (5) Perform a static Total Site analysis
- (6) Calculation of the overall carbon footprint for the total site target

It has been structured as the Main report supported by Annexes with process data, detailed calculations and software description.

The task covered by the deliverables has been very comprehensive, required very close collaboration and site visits. It took some time to be completed to sufficient details, however due to close collaboration and synergy amongst the project partners it has been achieved.

The completion demanded comprehensive researcher work documented and disseminated it the listed literature.

This task results in a consistent base case, which enables evaluating the results of the whole project in an industrial environment. The base case includes extensive data from the site as well as reference results obtained from standard tools and methods. The data obtained is required to implement and validate the improved methods developed within the project. Based on this a competitive benchmarking of the new approaches against standard procedures to validate the improvement can be carried out in the next working phases. It is very important in this respect to accurately collect and analyse the necessary data, strictly following the rules for Data Extraction for Process Integration. The latter includes also correctly identifying heat loads genuinely belonging to the process energy demands and those belonging to the local and central utility supplies.

Pinch Analysis studies and Total Site Analysis with common available tools have been performed defining a reference case. These have utilised the data set after the data collection and data extraction process. This involves confidential data to a certain level that cannot be disclosed to other parties. The current deliverable comprises a base-case for Pinch Analysis and Total Site Analysis for the IPLOM refinery. This involves critical analysis of the obtained raw data strictly following the data extraction rules of Heat Integration, followed by Pinch Analysis of each of the extracted processes and Total Site analysis of the whole IPLOM site.

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This deliverable provided a base case for steady state Pinch Analysis of individual process of the IPLOM total Site and based on this a base case Total Site Heat Integration Analysis.

The most demanding task has been to collect the processes data, create the data storage system and based on this to run the analysis.

The Total Site base case has been assessed and the results recorded for the next step comparison.

In the final part the base case carbon footprint has been assessed based on Total Site Analysis. This Deliverable create a base for the further project steps, which will cover the demonstration of the novel methodology and will make possible to compare the suggested demonstration actions by energy consumption and especially savings as well as carbon footprint reduction.