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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

Extending the standard static process integration analysis and total site analysis as described in deliverable D5.2 new methods and tools as developed within the project have been applied to the base case for further improvement. The following additional aspects beyond the scope of the conventional total site methodology should be covered by a fundamentally total site analysis. The various additional aspects considered in the novel methodology can be divided into methods for the optimization of individual units and for the optimization on total site level. This has been implemented in a sequential workflow starting with the identification of energy savings and integration potentials on unit level followed by methodologies dealing with the total site.

Additional aspects to be considered for the optimization of process integration inside battery limits of individual production units:

- Process design improvements for energy consumption reduction
- Conceptual design modifications for optimized heat integration
- CHP integration within unit battery limits
- Dynamic behaviour of the individual units

Additional aspects to be considered for the optimization of process integration on total site level:

- Determination of steam and power targets based on new methodology as D1.1
- Optimized conceptual design of site utility systems & infrastructure
- Dynamic behaviour of site utility systems
- Incorporation of operability (of individual units as well as site utility systems)
- RAM (Reliability, Availability, Maintainability) analysis
- Waste heat recovery

Methodologies for process design improvements and conceptual design modifications as the replacement of an absorbent solvent and mechanical & thermal vapor compression are presented in this deliverable. These improved heat integration measures result in a significant steam saving potential and thus a reduction of primary energy within the demo plant can be attained. Regarding to CHP integration measures, the expansion of available steam has been identified to be a promising way for the generation of electricity.

After completion of the improved total site analysis the savings potentials are summarized and compared with the conventional methodology from D5.2. Finally, the improved overall footprint for the total site target is calculated.