

## **NEWFELPRO project “CARBEN”**

### **Project Summary**

The main objective of the project is the carbon footprint reduction and energy efficiency via development an advanced techniques for Total Site integration.

Reducing CO<sub>2</sub> emissions could be achieved by maximising energy recovery and increasing the share of renewables in the primary energy mix. One important development has been Total Site Integration. The current project develops an extension of the Total Site methodology covering various customers and incorporating renewable energy sources, accounting for the variability on the supply and demand sides. This is achieved by first applying improvement of heat recovery on Total Site level and an extension of the heat cascade principle and heat storage.

The second part of the project focuses on scheduling utility systems for providing heat and power to the extended Total Sites. The main goal is to optimise simultaneously the use of heat recovery, cogeneration of heat and power, renewables and fossil fuels, minimising the carbon footprint and catering for the varying energy demands and renewables availability. An analysis for supporting operator decision-making under conditions of such variations will be provided. An optimisation tool will be developed to support the operators, accounting for the costs as well as time constraints imposed by shutdowns and start-ups of the operating units.