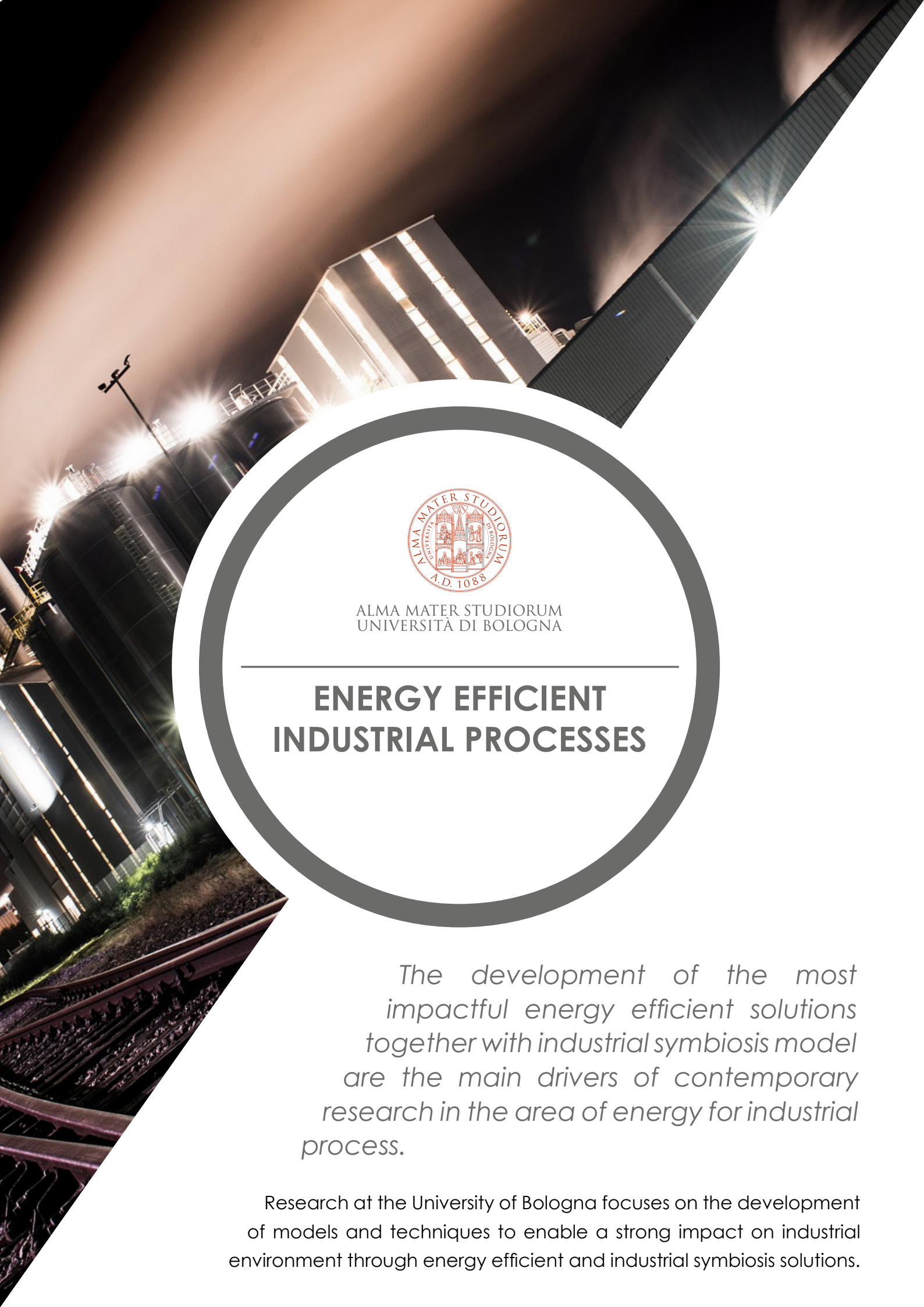
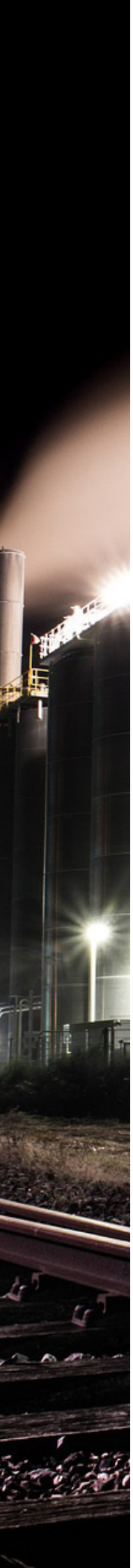


ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

ENERGY EFFICIENT INDUSTRIAL PROCESSES

The development of the most impactful energy efficient solutions together with industrial symbiosis model are the main drivers of contemporary research in the area of energy for industrial process.

Research at the University of Bologna focuses on the development of models and techniques to enable a strong impact on industrial environment through energy efficient and industrial symbiosis solutions.



Energy efficient solution for industrial processes

- Development and test of solutions for the improvement of the industrial equipment aimed at maximizing energy efficiency
- Development and test of tools for the performance of energy audits and able to give support to management about energy decisions
- Design or optimization of technical solutions and integrated control systems for the smart operation for renewable heating and cooling systems in industrial application
- Design and development of technical solutions that cover the highest possible heating and/or cooling demand by means of solar thermal energy

Industrial waste energy recovery

- Design and development of solutions for an efficient and cost effective heat recovery in industrial facilities
- Development and validation of simulation tools able to perform cost-benefit assessments for the selection of the best technologic option to recover industrial wasted energy
- Design and development of cost effective solutions for district heating and/ or cooling systems

Optimization of the value chain and industrial symbiosis

- Design and development of cost effective solutions for production, transformation, transport and temporary storage of thermal and electrical energy in industrial districts
- Development and test of devices and instruments for the implementation of energy cooperation in industrial clusters
- Development and validation of business models and service concepts at service provider level for joint energy services

HIGHLIGHTS

Cooperation with Laboratories on industrial solution for energy efficiency, such as **Henergia** to assess solar technologies for the production of electricity and heat, and the production, storage and use of hydrogen for large scale application.

Research on **Aquifer Thermal Energy Storage** (ATES) systems is carried out at the University of Bologna. ATES systems have still not been explored but they allow using aquifers as a source for thermal energy, providing heating and cooling for buildings and reducing up to 60% CO2 emissions.