



1 Solar panels.

ZERO EMISSION FOOD PRODUCTION RE-DESIGN & OPTIMIZATION

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The food processing industry requires a huge amount of water and fossil energy. However, with state-of-the-art technologies it is already possible to turn the production facility from an energy consumer into an energy producer as well as into a nutrient supplier.

With respect to climate change, political decisions to reduce CO₂ emission, an increasing world population, limited raw materials and resources as well as the consumer's wish for sustainably produced food the food industry will have to face these challenges sooner than later.

Keywords

- Resource efficient food production
- Renewable energy integration
- Assessment of production facilities
- Efficient processing technologies
- Utilization of all "wastes"
 - Heat and cold
 - Side streams
 - (Waste)Water streams

Industrial sectors

Food processing industry:

- Dairy
- Fruit and vegetable processing
- Beer and beverage
- Sugar and starch
- Meat and fish processing
- ... others possible on request



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Technological specification

The necessary technological specifications are related to the current state of the production facility as well as to the local circumstances. Relevant technologies and concepts for a zero emission food production encompass:

- Renewable energy integration
 - Wind
 - Solar heat and cold
 - Biomass
- Energy storage concepts
- Cogeneration
- Heat pumps
- Innovative wastewater and recycling systems
- Treatment and conversion of side streams into energy and nutrients
- Efficient processing technologies
- Change from steam to hot water supply

Our service

Changes in production can often go along with certain difficulties due to legal requirements (e.g. wastewater load limit) and limitation of production capacities because of the available energy.

Fraunhofer UMSICHT supports and advises you on your way to a zero emission production facility. This includes:

- Analysis and evaluation of existing processes
- Balancing of all mass and energy streams
- Recommendations for the achievement of a zero emission production
- Concept development and implementation of innovative technologies
- Lab and pilot testing in order to identify optimum utilization strategies for side streams (e. g. biogas, biochar, protein extraction etc.)

Your benefit

- Pioneer and role model for others including reputation
- Profit maximization by energy production instead of consumption
- Cost reduction by implementation of more efficient technologies
- Additional utilization possibilities by processing of side streams
- Production of sustainable food
- Zero Emission Label