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FRAUNHOFER INSTITUTE FOR ENVIRONMENTAL, SAFETY, AND ENERGY TECHNOLOGY UMSICHT

in|FARMING®

1 *ALTMARKTgarten is the first inFARMING® project in Germany.*
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SUSTAINABLE APPROACHES FOR URBAN HORTICULTURE PRODUCTION

BUILDING INTEGRATED SYSTEM SOLUTIONS

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We are driving forward the integration of agriculture in cities and metropolises under the umbrella brand inFARMING®. To do so, we develop materials, new cultivation systems, specific lighting scenarios as well as circular systems for nutrients, water and energy. On behalf of our clients we are carrying out feasibility and implementation studies as well as acceptance and participation studies.

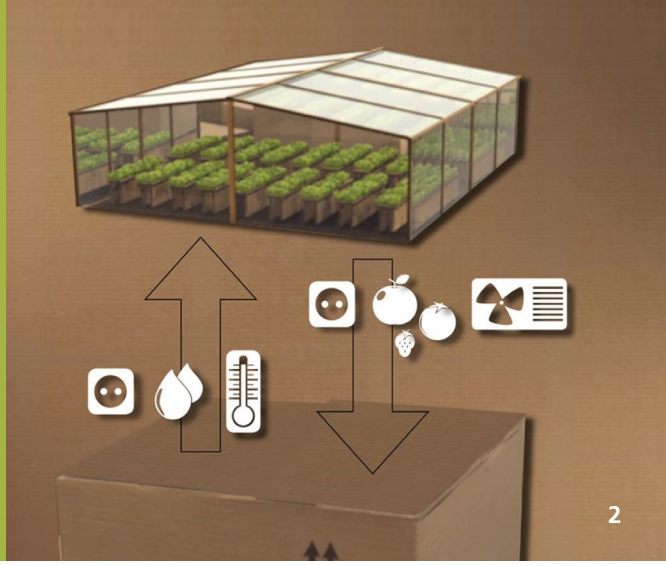
Intensive plant production systems, which can be integrated spatially at the place of need, regardless of location and type of plant, can be of great interest to many industrial sectors. Wherever a year-round need for high and consistent plant quality is required, such systems will be intensified used in the future.

Keywords

- Building integrated farming
- Vertical farms
- Hydroponics, aeroponics and drip watering
- Process water usage
- Waste heat usage
- LED lighting

Industries

- Architecture and construction sector
- Agricultural sector
- Water and energy supply
- Facility Management
- Pharmaceutical, cosmetics and food sectors



1 *Within our photonics laboratory we are developing specific lighting scenarios for indoor cultivation needs.*
2 *Synergy concept inFARMING®.*

Motivation

Advantages of controlled horticultural production

- Higher yields, i.a. through year-round production
- Plants with higher quality (e.g., metabolites)
- Consistently high and predictable quality
- Minimization of fluctuations in production (climate, weather, seasons)
- Higher quality without chemistry
- Decentralized production at the place of further processing

Sustainability

- Closed loop production
- Less pollution from agrochemicals
- Through inFARMING® transport costs are reduced and fresh products in close proximity to the consumer are produced

Objectives

- Further development of building integrated plant production systems
- Optimized fertilizer production and utilization
- Less transport and emissions through urban logistics concepts
- Agriculture and energy industry – using synergies through integrated control concepts
- Quantification of environmental impact and relief through life cycle assessment
- Improvement of internal processes and ensuring successful project implement-ation under sustainability aspects

Our services

- Support and monitoring of projects for building integrated plant production systems
- Development of dynamic lighting systems and specific lighting scenarios for plant varieties
- Development of functionalized materials and polymer formulations
- Development of components, processes and interfaces for the use of secondary resources as fertilizers
- Market and feasibility studies