The dawn of a new era: sustainable drying with PIM's HSCD SSD-SA 001

PIM presents a real revolution in the world of food drying at ANUGA 2024: the HSCD SSD-SA 001 system. An internationally patented innovation that represents a revolutionary step forward towards a more **efficient**, **sustainable** and **environmentally friendly industrial future** , totally compliant with the requirements of the European Industry 5.0 directives

On 13 January 2022, a study was published by the **Esir (Group of experts on the economic and social impacts of research and innovation)**, commissioned by the European Commission, on the topic of "**Industry 5.0**".

PIM's HSCD SSD-SA 001 effectively meets the objectives of this document:

1. **Energy saving**: The document highlights the importance of reducing energy consumption and promoting energy efficiency as an integral part of the industrial transformation towards sustainability. This implies the adoption of technologies and practices that reduce the energy required for industrial activities, optimizing production processes and improving the efficiency in the use of energy resources. This includes implementing energy monitoring and control systems, using renewable energy sources and improving the design of industrial plants to reduce energy losses.

2. **Resource remanufacturing:** Resource remanufacturing is identified as a key pillar of the entire manufacturing and supply chain design. This concept refers to the transition to a circular economy, where resources are used efficiently and sustainably through reuse, recycling and restoration. This involves a review of production processes to minimize waste and maximize resource recovery, for example by designing products that can be easily dismantled and recycled at the end of their life cycle.

3. **Mandatory environmental dimension**: It is proposed to integrate a mandatory environmental dimension into all phases of industrial design. This means that environmental sustainability becomes a fundamental criterion for the design and operation of industries, considering the interdependence with natural systems and trying to minimize the environmental impact of industrial activities. This includes adopting cleaner production practices, reducing polluting emissions and constantly monitoring the environmental impact of industrial activities.

4. **Circular Economy**: The circular economy is presented as a regenerative economic model that aims to protect and regenerate nature while providing solutions to global challenges. This approach involves a continuous cycle of resource use, where materials are reused, recycled and restored at the end of their life rather than being disposed of as waste. The circular economy promotes closing the material loop, reducing waste and creating long-term value for businesses and society as a whole.

Global challenges and the current context:

Today's panorama presents us with urgent and mandatory challenges: **energy saving** , **dependence on fossil fuels**, **the need for circularity** , **environmental protection** and **recovery of every possible resource**. The food industry, in particular, finds itself at a crossroads: continue with an obsolete and environmentally harmful production model, or embrace innovation and sustainability.

PIM's answer: the HSCD drying system

In this context of challenges and opportunities, **PIM** stands out with its revolutionary **HSCD drying system** . A cutting-edge technology that combines **energy saving** , **environmental sustainability** and **high performance** in a single solution, paving the way for a more responsible and resilient future of food production.

Non-ionizing electromagnetic waves

The non-ionizing electromagnetic wave technology uniformly heats the raw material, instantly activating the process of evaporation of water from the internal part to the surface of the product. This ensures linear drying, from inside to outside, which drastically reduces heat dispersion and increases the profitability of the process.

Vacuum Drying

The characteristics of vacuum drying have been combined with the waves with the creation of new dryers which allow the product to be dried at a temperature always lower than 35°C, up to a minimum drying temperature of -20°C, safeguarding all the characteristics of the final product.

The Recovery of Extracted Water

With HSCD it is possible to remove water in the desired quantity from any product. Once the evaporation temperature of the water at the established pressure is reached, the evaporation process begins. The steam is immediately condensed in order to recover the extraction water, which can be reused for other phases of the production process, thus preserving a primary resource that is increasingly precious for the environment.

The pillars of HSCD innovation:

- **Energy saving:** The HSCD allows **energy savings of up to three times** compared to traditional air technologies. An extraordinary result obtained thanks to the use of innovative low-temperature and vacuum drying technologies. The HSCD can completely eliminate the use of fossil fuels, favoring the use of **only renewable sources** to power the plant, thanks to the low energy requirement necessary for its operation. A **100% green** drying method that represents a fundamental step forward in the fight against climate change and energy dependence.
- **Environmental sustainability:** CO2 emissions are drastically reduced, in line with Industry 5.0 decarbonization goals. HSCD contributes to a more sustainable and responsible industrial future by minimizing the environmental impact of food drying.

- **Product quality:** The organoleptic and nutritional properties of the product remain **100% unaltered**. Drying takes place at low temperature (between 20°C and 40°C) thanks to vacuum and non-ionizing electromagnetic waves. An innovative process that preserves the characteristics of the " raw " product, guaranteeing the consumer a final product of the highest quality.
- **Production efficiency:** Process times are reduced by up to 90% for some products, resulting in an increase in production capacity up to 9 times compared to traditional methods. HSCD allows you to obtain more in less time, optimizing production costs and increasing the competitiveness of companies in the sector.
- **Space optimization:** The compact design of the HSCD requires up to a third of the space compared to traditional systems. A feature that makes this technology ideal for companies that wish to optimize the use of space in the factory or that need a flexible solution that can be adapted to different needs.
- **Circularity and recovery:** The water extracted during the drying process is 100% recovered. A result that translates into lower water consumption and a more circular production model, in line with the principles of the circular economy and sustainability.

HSCD: a technology ready for Industry 5.0

HSCD is not only a revolutionary drying system, but it is also a technology perfectly aligned with the principles of Industry 5.0. The system is controlled and monitored in real time thanks to the use of advanced technologies, which allow processes and energy efficiency to be optimised. HSCD allows data collection and analysis, promoting predictive maintenance and intelligent plant management.

PIM: a philosophy of innovation and responsibility

PIM does not just provide a drying system, but offers a complete solution that includes:

- **Product analysis:** Product characteristics are carefully studied to identify the optimal drying process.
- **Customized design:** The system is designed and made to measure for the specific needs of the customer.
- **Complete service:** PIM offers pre- and post-sales assistance, training and technical support to guarantee maximum system efficiency.

As CEO Sonia De Bortoli Gazzuola states: “ We respond to the pressing needs of a sector, that of industrial food drying, which still uses solutions that are always too energy-intensive and obsolete compared to the requirements of Industry 5.0, we promote a new concept of drying.
also collect the customer's needs, study their product by researching its physical, chemical and nutritional (organoleptic) characteristics and model the drying system based on the needs of the product and the customer.
Each product has its own working point determined by its chemical-physical characteristics, our aim is to maintain the original characteristics (raw) unchanged by optimizing space, processing times and energy consumption, with consequent optimization of production capacity and environmental sustainability of the processes adopted.
This is why we have an internal R&D laboratory and collaborate with leading universities."

The PIM revolution: a sustainable future for the food industry

PIM's HSCD represents a revolutionary breakthrough in the food drying sector, offering a more efficient, sustainable and environmentally friendly production model. The adoption of this revolutionary technology will have a positive impact on the energy efficiency, circularity, product quality and competitiveness of the food industry.

PIM's HSCD represents a revolutionary innovation that has the potential to transform the food industry. A fundamental step forward towards a more sustainable, efficient and responsible future.