vol. 74 - n. 25

Spring issue 2023

TECNICA MOLITORIA

INTERNATIONAL

WITH SUPPLIER DIRECTORY

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Supplemento al n° 04 del 2023 di Tecnica Molitoria - Sped. in A.P. - D.L. 353/2003 (Conv. in L. 27/02/2004 n° 46)
art. 1 comma 1 DCB TO - n. 1 anno 2023 - IP

ISSN0040-1862

RESEARCH LEADS TO EXTRAORDINARY RESULTS

Our results confirm it: Fava's research leads to exceptional pasta quality levels, guaranteeing extraordinary solutions for the field. The new range of long and short-cut pasta lines, GPL 180 and TCM 100, are proof of the important technical and technological developments which, together with our innovative R&D laboratory and our ever-evolving value-added services, demonstrate the exclusive advantages of our know-how.

www.fava.it

FAVA
pasta equipment

Fava's research achieves new objectives

In 2019, **Fava** started working on a research project, called **Genesis**, to produce an innovative range of long and short-cut pasta production lines and new added-value lifecycle services. The project was driven by the need to satisfy the demands of both the traditional semolina pasta market and the emerging market (use of unconventional raw materials, such as soft wheat flour and other cereals, including gluten-free flours).
The company identified its targets based on market necessities: optimization of finished product quality with the same raw materials (through value-added technology); optimization of overall flexibility and yields of process equipment, by minimizing whole lifecycle costs; minimization of initial investment costs; reduction in energy consumption, maintenance costs and footprint area for each production line; improved user-friendliness and ergonomics; improve the level of automation and traceability; provide easy and efficient remote access and assistance; integrate, on the new range of process lines, predictive and automatic services, such as finished product quality control and predictive maintenance for the most critical mechatronic components; improvement and implementation of new training courses, provide services for process optimization and research of new products to make them more accessible and sastisfactory for the final consumer.
All objectives, both in terms of research and experimental development, were reached in March, in co-operation with a network of universities and specialized companies. The industrial prototype, a 5000 kg/h short-cut pasta line, was started-up and the product and service innovations, identified through accurate market analysis, were qualified between December 2022 and March 2023; to date, other monitoring and technological optimization activities are in place. In addition to what was presented during the design stage at last year's Ipack-Ima exhibition, significant results have been achieved, such as extensive analytical knowledge on thermo-fluid dynamics and mechatronics of dough formation, pre-drying, drying and cooling systems, obtained through CFD analysis techniques. The new R&D laboratory was launched together with numerous value-added services, including more advanced comprehensive technological training courses and the possibility of carrying out pasta-making tests, aimed at improving current long/short-cut pasta and couscous processes and at developing products with traditional and innovative raw materials. Furthermore, the following services were completed: die inserts which enhance improved cooking performances; artificial intelligence (AI) mathematical models and machine learning related to colour and moisture analysis of raw materials and end products, maintenance of critical components, in order

Long-cut pasta line GPL 180 (Fava).

Short-cut pasta line TCM 100 (prototype) presented at the 2022 Ipack-Ima exhibition (Fava).

Fava Innovative Research Centre.

to develop high added-value predictive digital services; testing of the IIOT system integrating predictive AI models and control dashboard; on-line spare parts portal; augmented reality system, with integrated IIOT dashboard access applications such as remote assistance, machine technical documentation database; research, prototypes and characterization of new high efficiency heat exchangers; start-up phase and short-term qualification of the prototype, launched at an industrial pasta factory.

The comparison between design expectations and performance measured on-site, demonstrated the targeted improvements in production capacity in relation to overall dimensions, reduction of specific energy consumption, product quality and efficiency of the applied predictive services, as well as the operational functionality of the AR system, designed in accordance with the best solutions currently available on today's market.

The prototype enabled to validate, in an integrated way, all measurable short-term research and development results, to obtain an experimental database to complete the development of the new **TCM100** range of equipment with capacities from 1000 to 6000 kg/h, making it possible to connect the laboratory to IIOT Fava and to develop the "value-added services".

In terms of finished product quality, the application of the most advanced dough-mixing, extrusion and drying technologies has made it possible to enhance the raw materials available, achieving qualitative results such as brighter colour and better cooking resistance.

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