Press Release

Data-Driven Factory, a sustainable workshop project

Digitalizing processes to improve the sustainability of supply chains in the Packaging industry

Bologna, 30 March 2022 – *From the 4.0 factory to the precise measurement of the **Carbon Footprint** of every single piece produced: a leading player in this green transition in pursuit of digitalization is **Andi-Mec – Dico Group**, a company operating in the field of precision machining in the Bologna packaging district. The project, the only one of its kind in Italy, was developed and made operative in collaboration with the **University of Bologna**. The purpose is to use data analysis to improve the environmental impact of productions. Using complex algorithms to measure the **Carbon Footprint**, this production model also points the way to additional possible uses. These are the new frontiers in business: from **product-driven to data-driven**, as articulated in the various aspects of the concept of sustainability.*

*The **Data-Driven Factory** project will be presented at the meeting promoted by the University of Bologna, Andimec-Dico Group, Turtle:*

Real Data Matter
Sustainable Packaging Valley

Tuesday, 5 April, 4:30 PM
Aula Magna, Faculty of Engineering
Viale del Risorgimento 2 - Bologna
Invitation poster attached

Data-Driven Factory project

From factory 4.0 to measuring CO_2 emissions of every single piece produced in order to improve its productions' environmental impact. This is the goal achieved by **Andi-Mec – Dico Group,** a Bologna machining company that, with its data measurement and digitalization project, has transformed its way of producing. The implementation and study of the algorithms relating to the project's various phases were carried out thanks to research contracts with the **Università of Bologna's Department of Industrial Engineering.**

Andi-Mec, the **Dico Group's** lead company in technology investment, is a precision machining outsourcer that works for major Emilia Romagna-region packaging multinational corporations. It makes complex, customized pieces and meets the requirements of high quality standards that demand craftmanship and highly specialized processing. In 2016, its leadership decided to initiate the factory's thorough

transformation, planning major investments in three areas: real property, technology, and organization. The last of these in particular is to be done via standardization of procedures and the availability of new ICT tools (MES - Manufacturing Execution System) capable of helping integrate production processes with business ones; thanks to data sharing, the relationship with customers becomes more inclusive. Making a transition yet to be widespread in this supply segment, the company was transformed into a **Data-Driven Factory**, thus gaining an effective competitive edge. But the company did not stop there: to this highly important step, it immediately added another.

Working to digitize and decarbonize processes is one of the assets of the Recovery and Resilience Plan (Piano nazionale di ripresa e resilienza – PNRR) adopted by the Italian Government in 2021.

To achieve this goal, Andi-Mec has developed a project, again in close collaboration with the University of Bologna's Faculty of Engineering, and has produced a method for calculating the **Carbon Footprint** based on a point-by-point survey, for each particular product, of 4 parameters: **energy consumption, waste production, transport, and packaging**. It has thus acquired a system that measures the kilogrammes of CO_2 introduced into the environment and derived from its productions, comprising the entire supply chain and then tracking all the consumption, in all phases and in all the processes involved. **Turtle,** a spin-off of the University of Bologna, using **Vivace Software** – the first management software to quantify the environmental, economic, and social aspects of business – assessed the Andi-Mec model, giving it an excellent score. From here, it was a short step – one already being taken – to additional improvements, in **environmental terms,** of the quality of its products.

"Meeting the needs of the present without compromising the ability of future generations to meet their own needs"

This is the exact definition of **sustainable development** provided by the United Nations in 1987. And, for Andi-Mec, which through the development of digitalization processes has an eye on the multiple aspects of sustainability, this is the plan.

1) **Social sustainability**, to make the work more interesting for new generations. After a few weeks of familiarization, thanks to MES, young people joining Andi-Mec can access all the information in order to work efficiently. Every worker can communicate his or her observations and propose changes.
2) **Economic sustainability**, to base every economically significant choice upon clear and certain key performance indicators (KPIs), thus optimizing productions and their yield.
3) **Environmental sustainability**, also providing the Carbon Footprint – the amount of CO_2 generated by its production process – for every piece it produces, and taking corrective actions to improve the environmental impact of productions.

Digitalization, then, opens the way for new business models transitioning from **product-driven** to **data-driven**. The keystone for turning a **Sustainable Workshop** project into reality is the **Data-Driven Factory,** the open, scalable, and easily replicable production model adopted by Andi-Mec. This means offering customers – and not only customers – the sharing of information on production process, and the ability to pinpoint

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critical areas, weaknesses, and opportunities to improve performance, costs, and consumption. Thus, while preserving the artisanal excellence that has always been its calling card, Andi-Mec has transformed to become the ideal partner for companies in Italy's "packaging valley" that wish, through sustainability-oriented processes, to take their products down the path of change.