

TECNALIA brings its commitment to connected machines, cybersecurity, and new manufacturing processes to Basque Industry 4.0

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The research and technological development centre will showcase the latest breakthroughs in digital transformation to improve the competitiveness of companies



Bilbao, 19 November 2019. Modern industry is based on continuous technological renovation in search of greater competitiveness. This has pushed it to merge the Industrial World with the Digital one, thus becoming Industry 4.0. In this context, the research and technological development centre TECNALIA is implementing new technological solutions that allow companies to turn technology into results and help them to join the future direction set by the markets.

The main Industry 4.0 lines of action in which TECNALIA is working on for companies are: connected machines, new manufacturing processes and cybersecurity. In fact, TECNALIA is a member of four of the Basque Digital Innovation Hub nodes, whose aim is to provide industrial companies, particularly SMEs, with the necessary technological capabilities to face the challenges of Industry 4.0.: Flexible and Collaborative Robotics, for which it is the coordinator; Additive Manufacturing; Cybersecurity; and New Materials.

This will be transferred to the next Basque Industry 4.0 to be held tomorrow and Thursday at the Bilbao Exhibition Centre (BEC), the conference organised by the Basque Government and the SPRI Group in which Basque companies reflect on the 4th industrial revolution. Here, TECNALIA will showcase its latest breakthroughs and developments in digital transformation to improve the competitiveness of companies. The presence of the air taxi developed by TECNALIA will also be highlighted. It is the first prototype in Spain for autonomous passenger and goods transport over short distances in cities and consists of an aerodynamic cab with four drones placed at the top and bottom.

CONNECTED MACHINES

Today's society is built on a cornerstone: connectivity. Access to data, information, other people and information stored in the cloud all merge together in the new model of the future industry. This leads to new technologies

such as digital twins and robots that are connected to their environment, as TECNALIA will demonstrate at Basque Industry 4.0.

A digital twin is a virtual model of a process or product that digitally and faithfully reproduces the behaviour and performance of its real version. In this context, TECNALIA is working on the implementation of these virtual replicates of factories and their production processes in the industry, construction or energy sectors, in order to predict faults and anomalous behaviour, and to achieve advanced processes and products adapted to any circumstance in real time.

During the Conference, TECNALIA will use holograms to demonstrate the digital twin of its own developments that are being carried out in electrical substations, wind turbines, additive manufacturing machines and in the Kubik smart building. The latter is a pioneering experimental building in Europe for the research, development and implementation of technologies in the field of sustainable construction and energy efficiency.

In the field of robots, TECNALIA will present a collaborative robotic arm capable of automatically polishing parts with a high degree of flexibility and reconfiguration capacities, fundamental aspects in the new Industry 4.0. Specifically, it will perform a demonstration with an aeronautical part..

NEW MANUFACTURING PROCESSES

TECNALIA researches new production processes such as additive manufacturing and the development of new advanced materials, so as to transform the sector and generate new business opportunities. The aim is to innovate in order to create more efficient and accurate processes along the entire production chain: from the development and handling of the materials themselves to joining processes and the final finish.

In this context, TECNALIA will apply its knowledge in additive manufacturing through two aeronautical building hardware elements created with WAAM technology. This new method makes it possible to manufacture larger parts while using less raw materials and with shorter manufacturing times. Both parts have been made using the WAAM metal component manufacturing machine jointly developed with the company Addilan.

On the other hand, TECNALIA will be showing different developments in the advanced materials field: a hydraulic bimetal motor component that has been replaced by a steel part coated with a thermally projected nanostructured layer which improves engine efficiency; toothed crowns manufactured by hybrid forging (conventional and rotary), which makes it possible to get closer to the final geometries of the part and provides advantages such as improved mechanical properties and savings in machining costs and raw materials; and an internal vehicle part created through an innovative, fully automated cell used to connect automotive multi-material (metal-plastic) parts.

CYBERSECURITY

In the field of cybersecurity, TECNALIA develops systems and technologies to increase the capacity of companies to face problems and attacks on systems that endanger the continuity of critical infrastructure services such as electricity or transport, among others.

Along these lines, TECNALIA will present the cybersecurity laboratory for autonomous vehicles and electrical grids. The autonomous vehicle laboratory enables potential points of attack in vehicle communication systems which could affect both privacy and security to be analysed and reduced. On the other hand, the electrical grid laboratory displays a controllable and safe environment in which cybersecurity incidents can be simulated and advanced detection and protection solutions tested.

The Cyber-Ranges laboratory will also be demonstrated, which is a virtual platform that allows real operational environments to be simulated to train professionals and to experiment, test, and validate new technological, technical and tactical cybersecurity and cyberdefence concepts.

TECHNOLOGY CLASSROOMS

On another note, TECNALIA will play a leading role in one of the blocks on the conference programme: Big Data Technology Classrooms, Digital Twins, 5G and Wireless Communications and Additive Manufacturing. These Technology Classrooms are focused on specialised keynote speeches for attendees with technical profiles and were a huge success at the last edition of Basque Industry. Specifically, TECNALIA's keynote speeches will address key issues such as the Big Data Revolution and its application to industry; the processing of large volumes of data; digital twins as predictive models integrated into manufacturing processes; the distinctive features of 5G compared to other technologies; the latest developments in additive manufacturing through case studies and projects; and the role of women in cybersecurity.

ABOUT TECNALIA

TECNALIA is a benchmark Research and Technological Development Centre for Europe; with 1,400 experts from 30 different nationalities, focusing on transforming technology into GDP to improve People's quality of life, by creating business opportunities for Companies. It is also a member of the Basque Research and Technology Alliance (BRTA).

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