

Press release

ENDESA, VIA MINSAIT, INTRODUCES VIRTUAL REALITY TO SAFETY TRAINING FOR EMPLOYEES IN THE POWER GENERATION DIVISION

- More than 700 professionals, distributed among the group's 24 thermal generation plants in Spain, have begun their training in managing discharges —equipment lockout—, using the solution developed by Indra
- The initiative is part of Endesa's digitalization process, consisting of the application of cuttingedge technologies for digital transformation, and the recent implementation of LOTO methodology (Lockout, Tagout), a new signaling and equipment lockout procedure whose objective is to ensure that equipment and facilities are in safe conditions for maintenance operations
- The main benefits provided by the project are the reduction of accidents in the workplace, a greater motivation in learning and a better understanding of procedures without exposure to risks

Madrid, February 20, 2019. From this February, more than 700 professionals in the thermal generation division of Endesa in Spain, the leading company in the Spanish electricity sector and the second in the electricity market in Portugal, will train in a risk-free environment and more efficiently in key operations thanks to an advanced immersive virtual reality solution developed by Minsait, an Indra company.

The VIVES project (Virtual, Immersive, Vision, Endesa, Security) has a dual objective. On the one hand, it serves as a fundamental tool of the LOTO methodology, a new signaling and equipment lockout procedure recently implemented at Endesa, aimed at guaranteeing that equipment and facilities are in safe conditions during operations that may pose a risk to the employee. On the other hand, it seeks to offer greater training and motivation to professionals through the most advanced training techniques based on new technologies, contributing at the same time to the company's digital transformation project.

In particular, the LOTO system is a safety procedure to disconnect and record the various sources of energy of industrial equipment while maintenance, cleaning or repair operations are carried out. The LOTO procedure protects workers both from an accidental 'live' energy breakout, as well as from residual energies and unscheduled equipment activation which could cause an accident during maintenance or insulation services (cuts, entrapment, burns, electric shock, etc.)

The training solution for Endesa's employees who work at generation facilities integrates the advantages of virtual reality and serious games. In this way, the professional is trained in the effective execution of each stage in the process of discharging (both mechanical and electrical): blocking, testing and raising of the discharge. At each stage, various real situations and interactions with participants are recreated. The discharge operator will have to take action applying the procedures associated with LOTO and the use of PPE (personal protective equipment).

The solution faithfully recreates the facility's environment in 3D thanks to the immersive applications and the exhaustive previous work of image capturing and recording of blocking maneuvers, carried out by the Minsait experts in one of the thermal plants. It facilitates training in both routine and extraordinary situations without putting people or assets at risk, while significantly reducing the time needed to acquire theoretical and practical knowledge.





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Moreover, immersive experience and practice also improve the understanding of operations and procedures that must be applied to preserve safety and increase motivation in a context of learning and self-strengthening.

These initiatives are another example of Endesa's commitment to the digitalization process, in line with the strategy followed by the company's group, Enel Group. In this digitalization process, cutting-edge technologies are being applied, allowing the digital transformation of industrial assets, the relationship with the client and the improvement of the company's digital capabilities. All this, with effective management of the risks associated with cybersecurity, with a substantial improvement in processes and with further cost savings.

About Minsait

Minsait, an Indra company (www.minsait.com), is a leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America. Minsait possesses a high degree of specialization and knowledge of the sector, which it backs up with its high capability to integrate the core world with the digital world, its leadership in innovation and digital transformation, and its flexibility. Thus, it focuses its offering on high-impact value propositions, based on end-to-end solutions, with a remarkable degree of segmentation, which enables it to achieve tangible impacts for its customers in each industry with a transformational focus. Its capabilities and leadership are demonstrated in its product range, under the brand Onesait, and its across-the-board range of services.

About Indra

Indra (www.indracompany.com) is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defense markets, and the leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate, Minsait. Its business model is based on a comprehensive range of proprietary products, with an end-to-end, high-value focus and with a high innovation component. In the 2017 financial year, Indra achieved revenue of €3,011 billion, with 40,000 employees, a local presence in 46 countries and business operations in over 140 countries.

About Endesa

Endesa, a company of the Enel group, operates in the electricity and gas sector, mainly in Spain, Portugal and Morocco. To a lesser extent, the company is active in electricity and gas trading in other European markets, also providing other value-added products and services.

As regards energy generation, Endesa manages a generation mix with a production of 78,648 GWh in 2017, measured at the power station busbars, and a total installed power of 23,678 MW. 34% of this is accounted for by classic thermal energy, 24 % combined cycles, 20% hydroelectric energy, 15% nuclear thermal energy and 7% is renewable energy, through its renewables subsidiary, Enel Green Power España.