Big Science Business Forum 2024

TRIESTE
1 – 4 OCTOBER 2024

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REGIONE AUTONOMA FRIULI VENEZIA GIULIA

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AREA SCIENCE PARK

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Technology Transfer Track Posters

Weld Deformation Prediction

Natec has created an advanced simulation and analysis tool designed to predict the effects of welding on massive and complex assemblies. This tool, known as Welding Distortion Analysis (WDA), utilizes step-by-step thermo-mechanical simulations of the welding process. The primary objective of this tool is to optimize manufacturing processes and jig structures during the design phase, ensuring the highest quality of the final equipment by controlling dimensional tolerances and preventing deformations.

The WDA tool allows for the testing, comparison, and evaluation of various welding options. It helps in predicting the distortion and forces on supporting jigs, thereby avoiding misalignment and mismatching that can result from thermal and mechanical effects of welding operations. This predictive capability is particularly beneficial for industries dealing with large and intricate assemblies, such as building and public works, space, nuclear facilities, electronic cases, and plugs.

The application of this technology is extensive. It is used in the design phase of fusion reactors, including components such as vacuum vessels, coil cases, and port plugs. Additionally, it is considered for applications in space, nuclear, and oil and gas facilities, as well as architecturally complex infrastructures like buildings, bridges, and ports.

The WDA services offer significant advantages, including the optimization of jig structures from a mechanical resistance and weld distortion perspective. This leads to a compliant manufacturing route, minimizing the risk of deformation and ensuring the alignment and fit of assembled pieces.

Benefits of the technology:

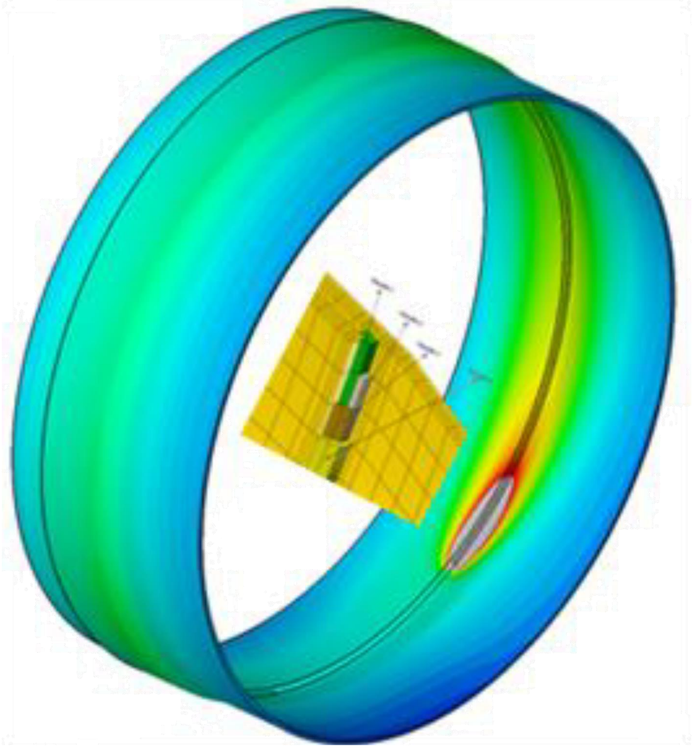
- Applicable to massive and complex assemblies.
- Optimizes the welding process and reduces costs related to non-expected distorsions during the welding process.

Application Areas:

- Nuclear reactors (vacuum vessels, coil cases and port plugs).
- Big and complex infrastructures (buildings, bridges, etc.).
- Components for the space industry.
- Others.

NATEC INGENIEROS pensando en futuro

FUSION FOR ENERGY



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