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Upgrade a heavy section mill to produce high-strength beams with Danieli Thermo-Mechanical Control Process (TMCP)

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A heavy beams producer selected Danieli technology and construction capability for the turnkey Thermo-Mechanical Control Process (TMCP) project at its rolling mill.
Thanks to this process, the product portfolio will be expanded with high-strength beams according to Grade 80 ASTM A913/A913M and S500ML EN 10025-4 standards.
High-strength beams offer substantial savings in construction in terms of material weight and fabrication costs (mainly welding) for a wide range of applications, such as high-rise buildings, long-span bridges, constructions in seismic areas, and offshore structures.
These beams are obtained through TMCP from low-alloy grades chemistry steels that provide excellent weldability (no pre-heating required) while achieving good toughness at low temperatures.
The thermo-mechanical control process will be performed by Selective Flange Cooling (SFC) in combination with Quenching & Self-Tempering (QST), treating the entire beam.
The SFC equipment will be installed at the entry and exit sides of the reversing finishing mill through cooling side guides, followed by the QST system at the exit side.
Tests carried out at the Danieli Research Center demonstrated that the new Danieli QST package will grant water savings of up to 30% compared to the previous version.
Carrying out the works during the plant shutdown, which lasts only 30 days, is an engineering challenge that requires plant and civil surveys with 3D scanning, integrated design of the plant and civil works for both existing and new parts, prefabrication of civil and plant components, as well as detailed planning for the site activities to be carried out before and during the shutdown.

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