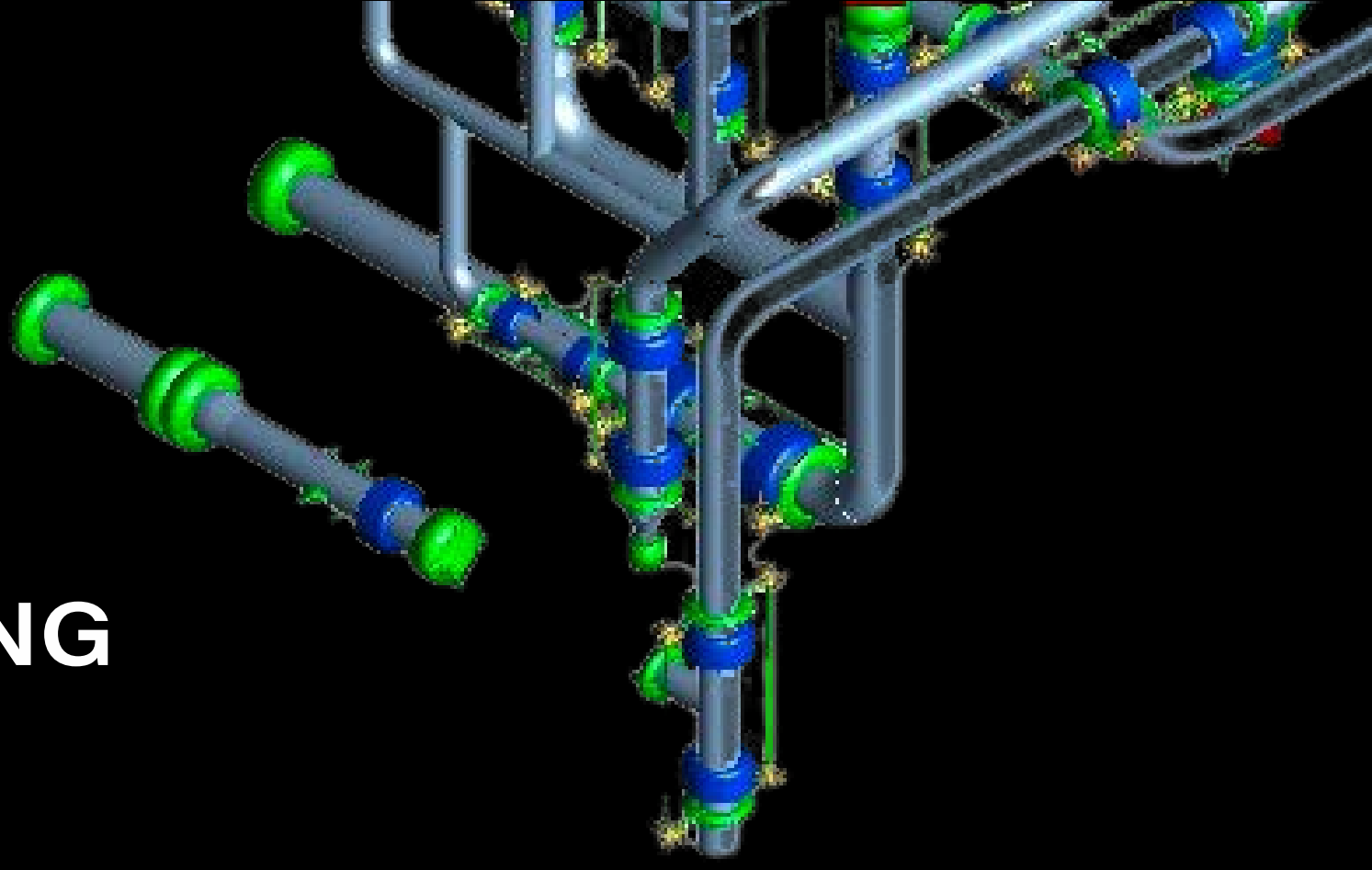
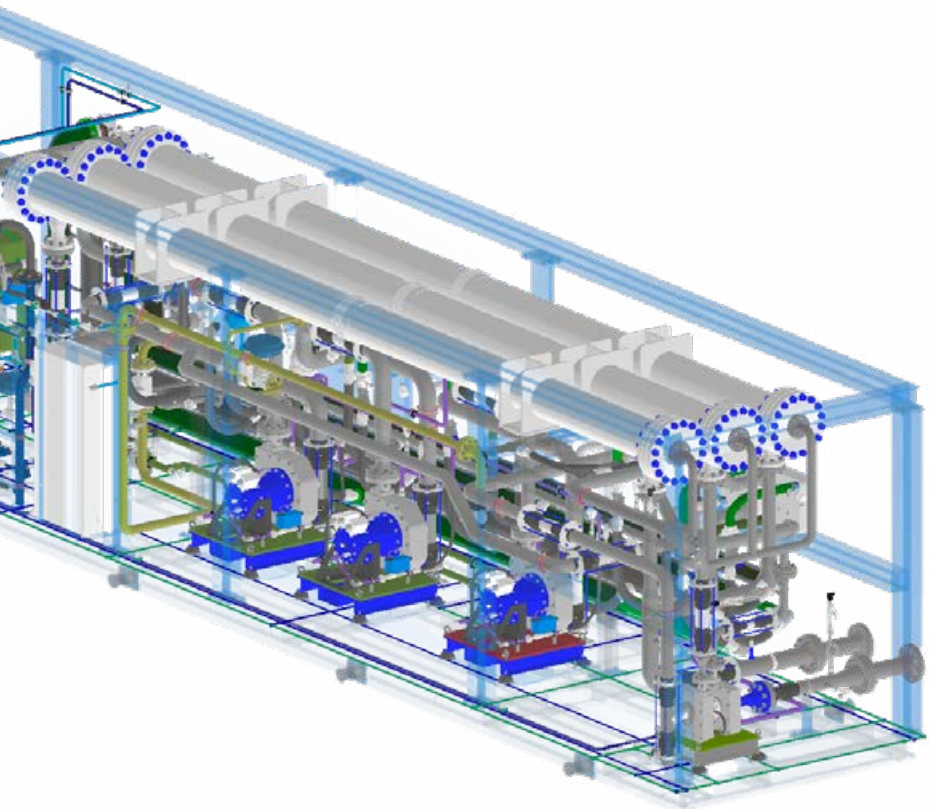


CRYOGENIC COOLING PROTOTYPE



CHALLENGE

GEA Engineering Consulting was commissioned to verify all piping systems installed on a new prototype cryogenic cooling skid through a detailed piping stress analysis. The study was required to evaluate piping movements, thermal expansions, and stress levels, ensuring full compliance with current applicable codes and standards.



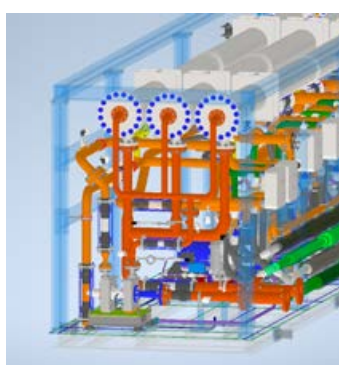
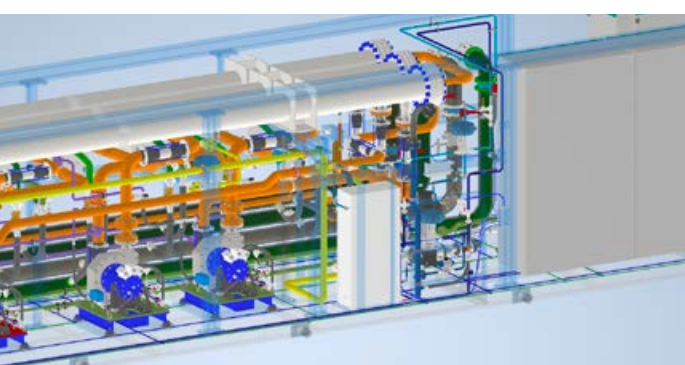
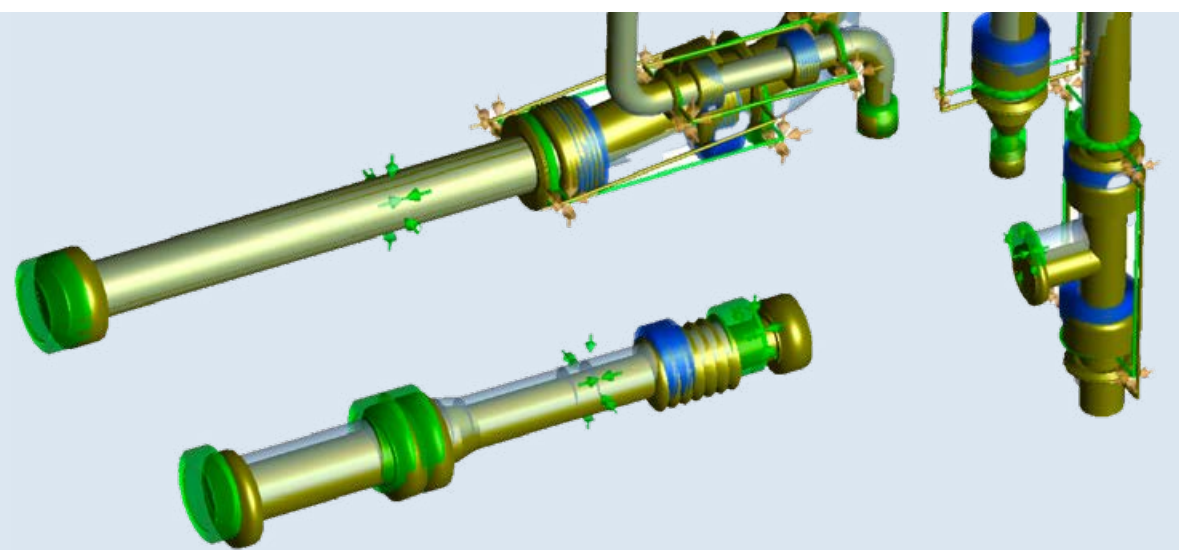
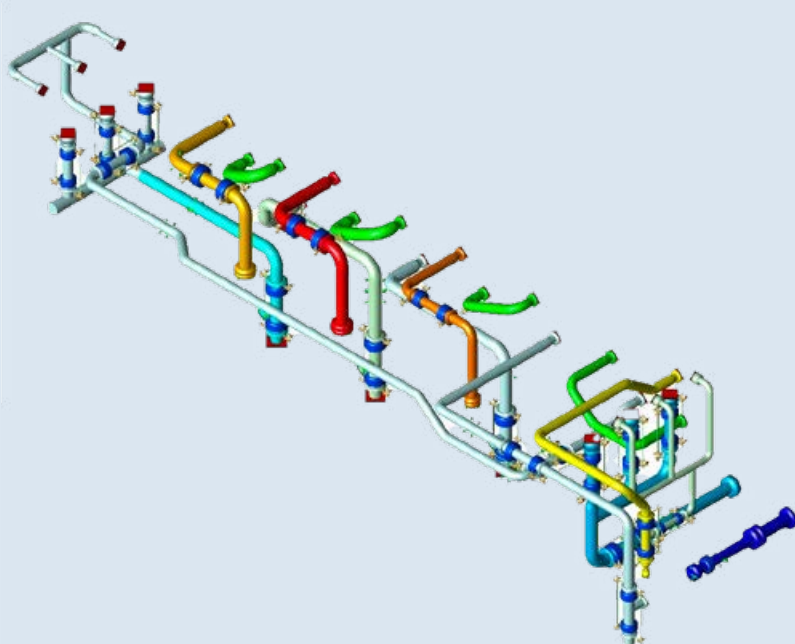
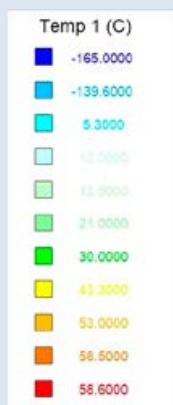
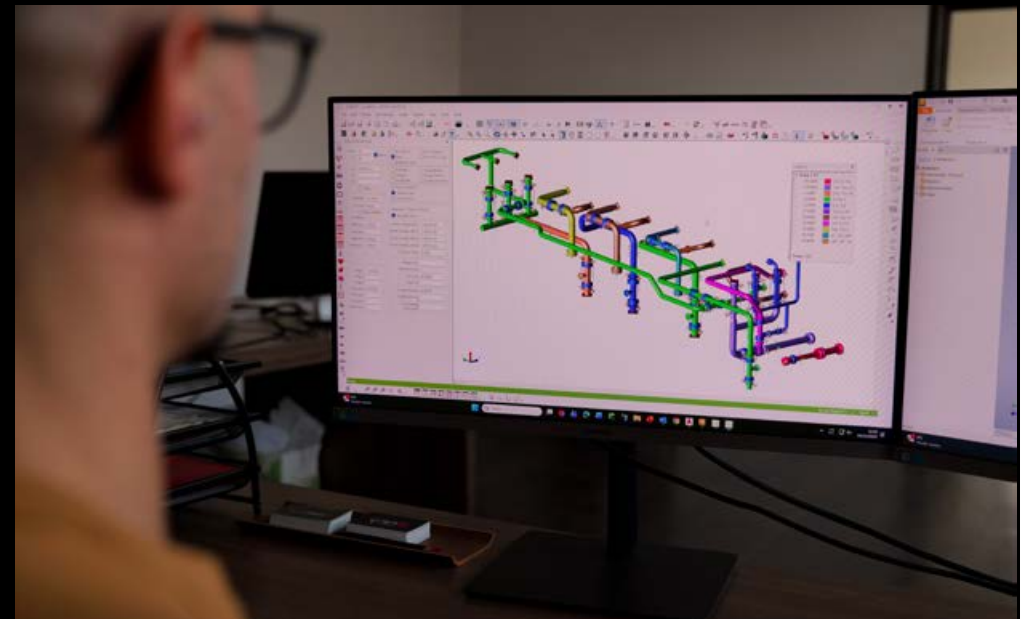
SCENARIO

The process P&ID and a preliminary 3D model were provided as the main input documentation. These documents were used to approximately define the piping routing, layout geometry, and relevant process data.

SOLUTION

GEA Engineering Consulting performed a comprehensive piping stress analysis of the entire system using CAESAR II software. The objective was to prevent potential piping failures and to assess the flexibility of the proposed routing, ensuring that stress levels remained below the allowable limits prescribed by applicable regulations.

All relevant input data, operating conditions, and all equipment connected to the piping system were fully considered in the analysis.



Due to the high stress levels generated by the extremely compact piping layout typical of skid-mounted units, GEA Engineering Consulting also carried out a detailed assessment of the positioning and type of expansion joints to be installed. This activity was essential to maintain stresses within code limits and to avoid mechanical failures during plant start-up.

CONCLUSIONS

Giorgi Engineering successfully delivered the engineering design of the new cryogenic skid. Currently developed as a prototype, the skid is intended for future installation in industrial facilities worldwide requiring cryogenic cooling for liquefaction, separation, and storage applications.