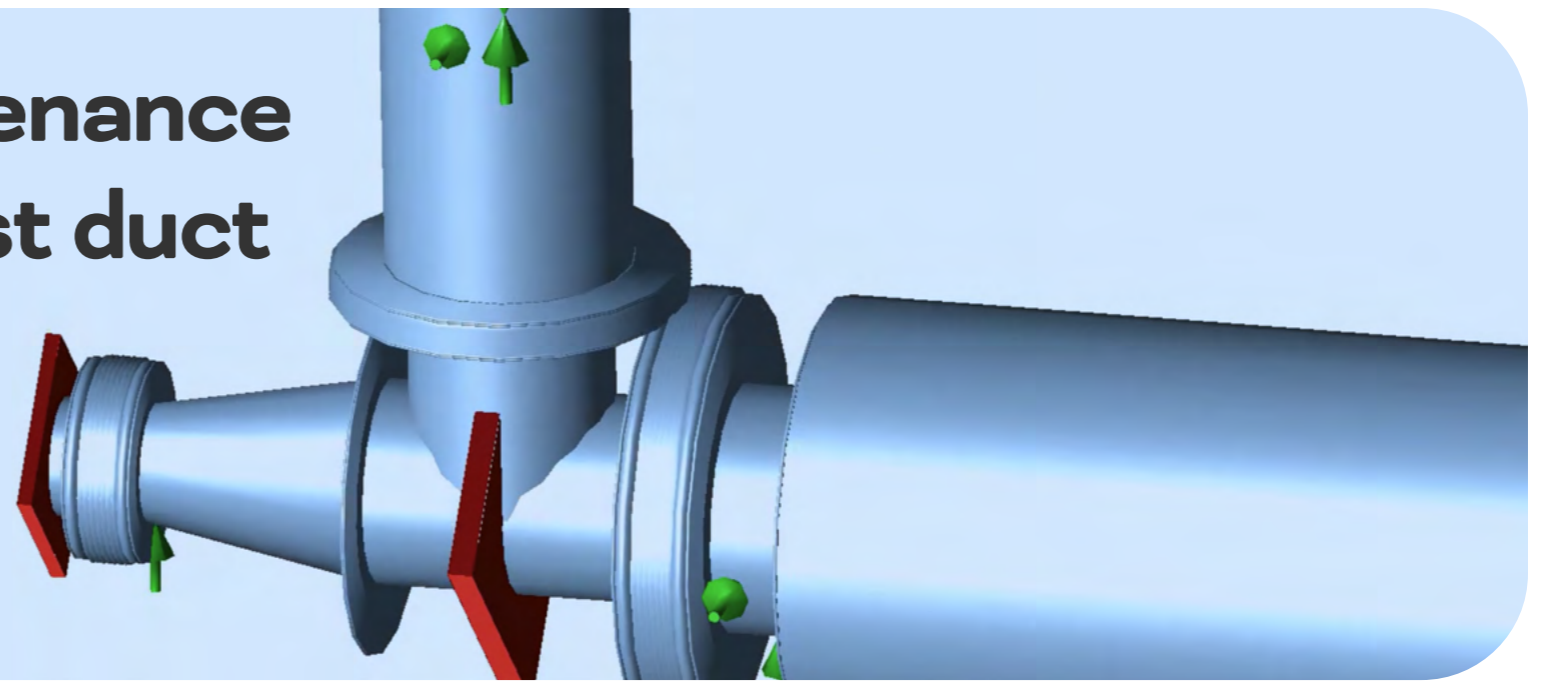


Extraordinary maintenance of the turbine exhaust duct



We have been commissioned by a major global leader in the production and sale of baking ingredients to carry out extraordinary maintenance on the turbine exhaust duct DN1400/1700, which is out of service due to incorrect design. This design flaw resulted in the rupture of the line in several places after only a few months of operation.

CHALLENGE GEA Engineering Consulting has been tasked with designing the duct from scratch, ensuring compliance with current regulations. This represents an important opportunity to showcase its expertise in analysis and design. For the production phase, GEA Engineering Consulting collaborated with Giorgi Engineering.

CONTEXT

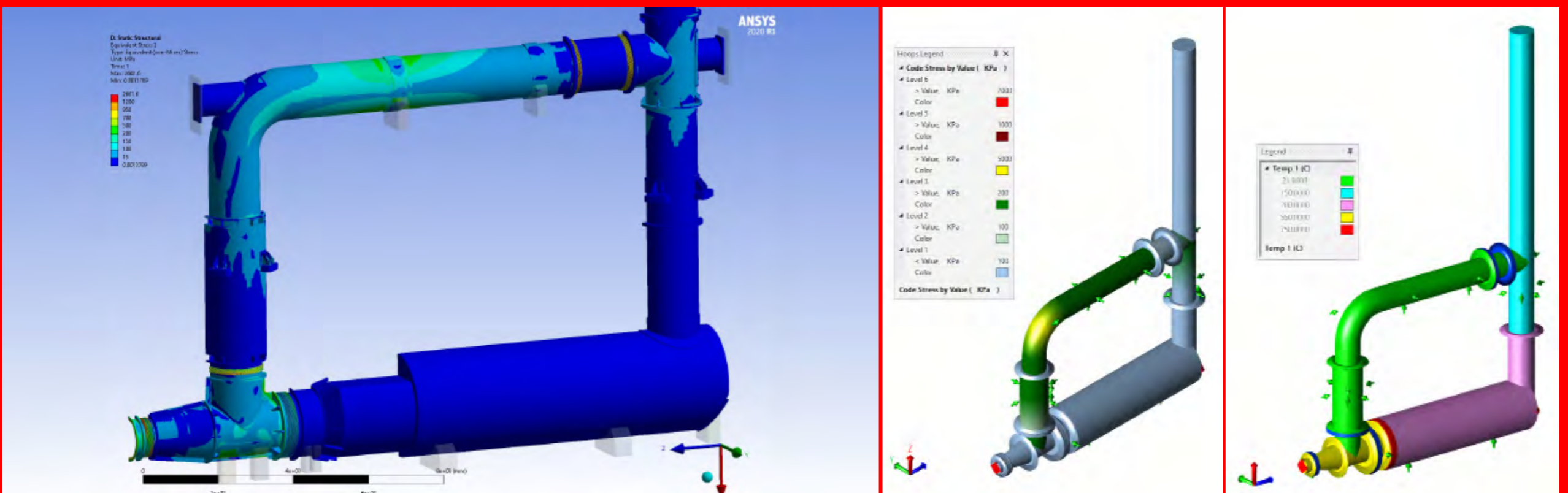
1

First, Giorgi Engineering conducted an on-site inspection to assess the current condition of the duct and to identify the main issues that led to the pipeline rupture.



2

GEA Engineering Consulting studied the turbine exhaust duct, beginning with a stress analysis using the Caesar II software, followed by a finite element analysis of the most critical and stressed points using the ANSYS program. All input data and connected equipment were taken into consideration.



Due to the extremely high temperatures (over 700°C), GEA Engineering Consulting had to carefully study the placement and type of expansion joints to be installed, as well as the positioning of fixed points and supports. This was done to ensure that the stresses caused by the temperature remained within the allowable limits set by regulations, in order to prevent breakages during the plant startup phase.

CONCLUSIONS GEA Engineering Consulting successfully provided the design for the turbine exhaust duct and subsequently supplied the necessary expansion joints to absorb the line's thermal expansions.

Nearly two years later, the turbine exhaust duct has been operating continuously 24/7 without any issues.



PROVISION OF MATERIALS AND SERVICES

- Stress analysis calculation of the duct
- FEM calculation of the duct
- Axial and universal expansion joints DN1700/1400/1000
- On-site assistance to identify potential issues
- On-site support during installation to assist the client until the plant is commissioned