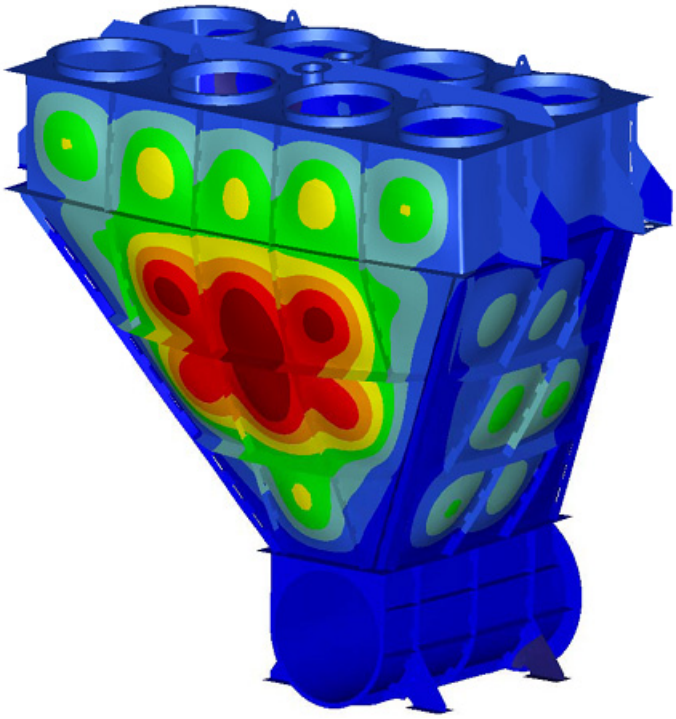
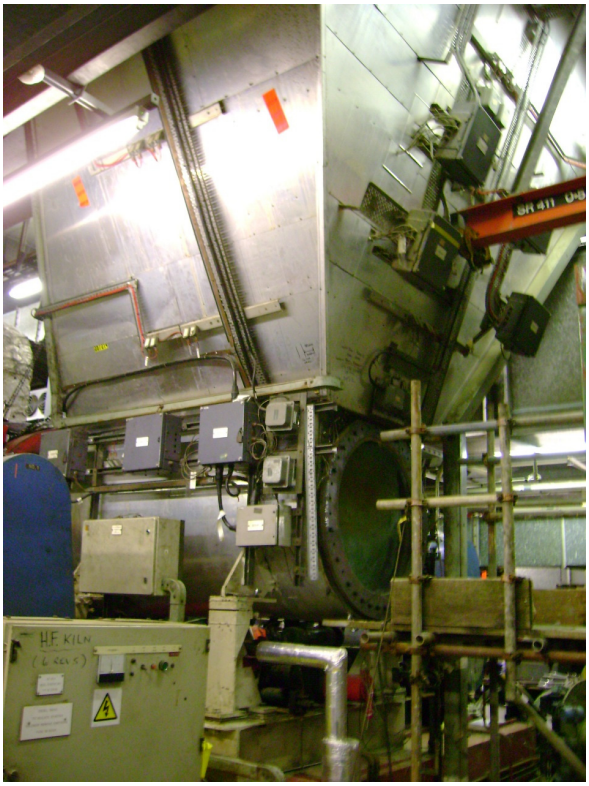
KILN HOPPER DESIGN

An example of the benefits offered by FCL's combination of experience in the application of traditional design-by-rule and design-by-analysis methods was provided by the development of a kiln feed hopper to be used in the processing of fuel for the UK nuclear industry. The design required substantiation against the requirements of ASME Section VIII Division 1 but, due to the complex geometry of the hopper, it was necessary to employ finite element methods to demonstrate the adequacy of the majority of the pressure envelope.

Development of an appropriate array of external stiffening members, required to limit stresses and displacements arising in the various flat panels comprising the hopper body under internal pressure loading, was based on the results of a series of analyses carried out using Pro/MECHANICA (now CREO/Simulate) finite element software. The use of such tools had the added benefit of permitting the accurate calculation of weight and centre-of-gravity properties, which was required to define appropriate set loads for the spring-loaded hangers used to support the hopper.





A separate series of analyses was also performed in support of design development of the hopper outlet flange, which incorporated an unusual double seal arrangement not catered for by standard design code rules.

FCL's work was completed by the preparation of a formal substantiation report for third party approval, incorporating code calculations for those features addressed by design-by-rule methods, together with detailed description of the analyses and assessment performed.

Finglow

FINGLOW CONSULTANTS LTD
Beane Bridge House, 34 Chambers Street, Hertford, SG14 1PL, UK
Telephone: +44 (0)1992 585450
Facsimile: +44 (0)1992 585460
e-mail: enquiries@finglowconsultants.co.uk
website: www.finglowconsultants.co.uk