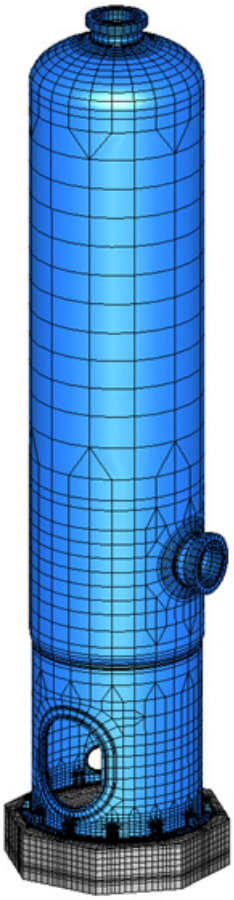
MOLECULAR SIEVE TOWER DESIGN

FCL's depth of expertise in the pressurised equipment industry enables us to offer our clients far more than just a resource for design or independent assessment of equipment. Where required, FCL also has an excellent track record in providing technical project management support, which can provide significant 'added value' to our clients. One example of this involved the development of a replacement train of four Molecular Sieve Towers for a client in the United Arab Emirates (UAE).

The technical aspects of this project alone drew on many of FCL's areas of expertise since the existing columns had required frequent maintenance to address in-service cracking caused by pressure and temperature fluctuations associated with the periodic switches between adsorption conditions (cold, high pressure gas flow) and regeneration conditions (hot, low pressure gas flow). After reviewing the existing design, FCL proposed a number of significant modifications aimed at improving fatigue resistance, including the use of removable top and bottom 'bonnet' assemblies and a significantly reinforced process bed support system. Design substantiation was carried out in accordance with ASME Section VIII Division 1, using a combination of design-by-rule and design-by-analysis methods based on the results of linear elastic stress and thermal analyses carried out using Pro/MECHANICA (now CREO/Simulate) and ANSYS MECHANICAL finite element software.



Besides the development and substantiation of the new column design, FCL also played a significant role in a number of other areas. At the outset of the work, assistance was provided in developing the design specification, a task which was complicated by a lack of documentation on the existing vessels. During the subsequent design stage, FCL identified and coordinated with third-party suppliers for the internal refractory lining and process beds, which permitted input from these suppliers to be seamlessly fed back into the design. Once the design phase was complete, FCL then went on to produce a complete set of fully detailed fabrication drawings, permitting our client to approach their selected fabricator with a simple, fully defined task which virtually eliminated unforeseen costs and delays in the fabrication process.

With fabrication under way, FCL also implemented a system for handling concession requests raised by the fabricator, which produced a formal QA trail on all such issues and facilitated the necessary level of review and approval of each of the requested changes. As a result of choosing FCL, our client was able to successfully execute a challenging and complex project with minimal cost and schedule over-run.

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