

## Structural Analysis of GRP Antenna Shrouds

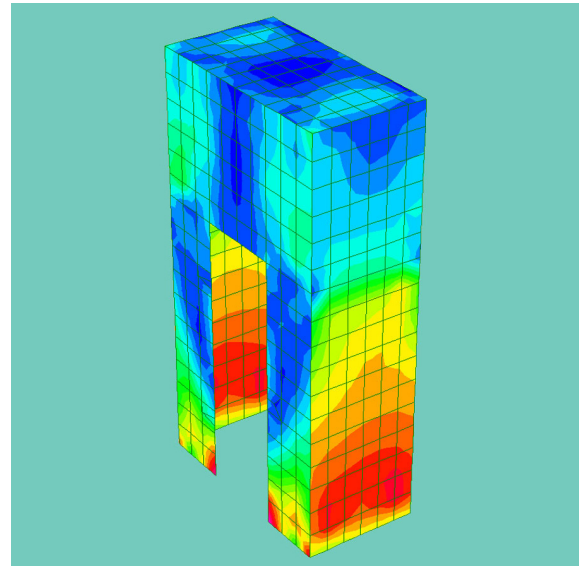
Finite Element Analysis

# Case Study

### Background

GRP antenna shrouds and enclosures have been widely used by the mobile-telecoms industry for a number of years, due to their combination of radio frequency transparency and design freedom. However recent concerns regarding the structural integrity of a number of existing installations have resulted in a series of inspection/replacement programmes being rolled out across the country.

GlassFabs Managing Director, Chris Hill, explains further, "The telecoms industry discovered that several existing GRP installations were failing due to a combination of poor design and construction. The large - and often heavy - structures had been installed onto rooftops nationwide and were either fixed using inadequate fixings, or attached to inappropriate existing structures. As a result, there was a high possibility that some of the structures could be blown to the ground. An industry task force was created and very specific guidelines were drawn up covering both new installations and the replacement of existing, defective structures."



### Can we help you with your *Design & Structural Analysis* requirements?

Our designers can help you to select the right materials for your application, and undertake the necessary calculations to evaluate product performance.

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# Case Study

## Requirement

GRP fabricator, GlassFabs Ltd, specialises in the fabrication and installation of bespoke GRP and steel products and solutions for the telecoms industry.

It enlisted the help of Coventive Composites in providing replacement antenna shrouds and enclosures for telecoms applications.

GlassFabs wanted to provide each of its clients with detailed structural analyses, to demonstrate how every installation is designed to withstand anticipated loads. However, finding a structural engineer with experience in the use of composites proved challenging.

## Our Solution

To meet the requirements of GlassFabs, Coventive Composites responded to its brief by:

- Creating a finite element (FE) model based on the client's design specification, considering all methods of fastening, fixing and structural integrity.

- Determining the load cases applicable, according to the size and shape of the construction, and the climate and terrain in which the construction will be located.
- Calculating the amounts of materials required to provide the appropriate properties for the application.
- Determining the design factors that must be taken into consideration for the FE analysis of the model.
- Analysing the FE model, using a variety of load-case scenarios and to report the conclusions clearly and concisely.

## The Result

By providing detailed structural analysis with each job, GlassFabs is able to demonstrate the robustness and reliability of its installations to its clients. Furthermore, it is able to differentiate from many of its competitors who do not routinely offer such assurances.

In doing so, GlassFabs has positioned itself as a preferred supplier for many of the telecoms companies and is now benefiting from a significant growth in sales as a result.

The solution provided by Coventive Composites was exactly what we had been looking for to take us forward into the programme of new build and remedial works. We have found that the vast wealth of experience and knowledge of Coventive Composites is second to none and the service and quality of the documentation is impressive and is serving us well. Since taking on this work for the telecoms industry, we have already seen our sales increase by over 10%. The contribution of Coventive Composites has played a vital part in helping us to achieve this success. We are now in a position to take our product to the wider market, knowing that we have the technical know-how behind us to meet all of our customers' requirements.

— Chris Hill, Managing Director, GlassFabs



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