



This 187m tall guyed mast was procured under a design and build contract. It was built for Arqiva as part of the £700m Digital Switch Over (DSO) project to allow terrestrial television to be broadcast using a new high-power digital network.

The mast is a square steel lattice with five permanent stay levels. Although of conventional form, the design incorporates a number of novel features:

- A modular design that provided economy of scale in the purchase of materials and repetition in the sequence of fabrication, assembly and erection.
- Permanent attachment points for temporary stay levels to facilitate easy stay replacement in future. The system was designed so that the mast could survive the design wind storm with any one stay fixed to a temporary stay level.
- An anti-rotation mechanism at the base to limit rotation about a vertical axis but allow freedom of rotation about any horizontal axis. This feature was necessary to meet the tight deflection and rotation requirements of the digital television antennas. This was particularly important as the arrangement of the antennas was asymmetric so that signal was not broadcast towards France.
- The ability to survive the sudden rupture of any guy.

The design of the erection derrick was integrated into the detailing of the mast to provide a compatible system.

This project forms part of a wide range of services provided by F&N in support of the DSO project. This has included assessment of existing masts, development of conventional and radical strengthening schemes, wind tunnel testing, computational wind engineering, structural monitoring and dynamic analyses. F&N has acted as independent check engineer for two other tall guyed masts, constructed for DSO.

**Client:**  
Babcock International Group PLC

**Location:**  
Rowridge, Isle of Wight

**Service Dates:**  
2009 - 2010

**Services:**  
Tender design, detailed design of the mast and its foundations, erection analysis and detailed design of the erection derrick.

