ANALYSIS AND DESIGN OF MASTS AND TOWERS

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RAMBOLL IS RANKED AS THE NO. 1 DESIGN FIRM IN THE WORLD WITHIN ANALYSIS, DESIGN AND CONSTRUCTION OF MASTS AND TOWERS

Today none of us can enjoy modern life even for a single day without being able to communicate with each other or receiving information from radio and TV. Nevertheless, very few of us recognize that these modern conveniences are literally supported by masts and towers properly designed, constructed and maintained for that particular purpose. This is what we do.

We know that masts and towers are special structures

The analysis and design of masts and towers require special knowledge and experience, especially when it comes to guyed masts. “A guyed mast is one of the most complicated structures an engineer can be faced with” has been said by many experts, and the special problems related to these structures are underestimated by the many collapses over the years. The design bases for such antenna supporting structures are sometimes many and often mutually contradictory, and the overall structural layout may have a dramatic effect on the load on the structure. The loads are mainly meteorological from wind and ice and combination of these, and the dynamic nature of the wind has to be taken into account as masts and towers are sensitive to dynamic loads.

Ramboll is ranked the no.1 design firm globally by ENR

Ramboll has been heavily engaged in the analysis, design and construction of masts and towers ever since the formation of the company in 1945. Today, we are ranked as the no.1 design company globally within this field by ENR.

Around 25,000-30,000 masts, towers and poles all around the world bear the stamp of Ramboll design. Extensive engagement in international standardisation along with R&D ensures world-class designs.

Our designs build on 70 years of experience

Today, Ramboll’s design philosophy is well-known in the global telecommunication industry. With a constant focus on reducing the total site costs for our clients, our masts and towers have been optimised with regard to minimising wind load, foundations, logistics and installation time while maintaining high quality at all times. The experience gained from inspections of masts and towers during operation makes up an important part of Ramboll’s design procedures, including the careful detailing of vital components and connections. One example is the guy tension systems which have been developed and improved over the years.

We are trendsetters in international standards

Ramboll actively contributes to national and international committees and working groups concerned with the development of new standards and recommendations in the field of masts and towers. For instance, Ramboll is chairing the IASS Technical Expert Group for Mast and Towers, the only global forum related to masts and towers, and is heavily involved in the development of the new Eurocode for atmospheric icing (EN 1991-1-9) and the Eurocode on towers and masts (EN 1993-5).

Through these engagements Ramboll is at the forefront of the development within analysis, design and construction of masts and towers on the global scene.

Our masts and towers are tailor suited to your needs

Our designs are produced by quality manufacturers in several countries, and we make sure that the structures are optimised especially for our clients’ projects and in high quality. Several of our customers purchase the specific optimised structures directly from our partners or obtain the right to have their masts and towers produced at their preferred manufacturer.

We develop our own analysis and design computer software

It has always been essential to Ramboll to be in the very front within the technology and development in the field of masts and towers. Every day we develop and improve our computer programs for design and analysis of masts and towers resulting in probably the most advanced and sophisticated computer package in the world for this particular purpose.

On the basis of the experience gained through six decades, Ramboll has developed a computer program named MAINMAST. There is no doubt that MAINMAST is the most advanced and accurate computer system for full dynamic analyses of guyed masts.

RamTower and iTower are also included in Ramboll suite of computer programs.

iTower

iTower is a commercially available software package especially developed for analysis and design of self-supporting towers. Besides being a very effective and advanced software tool for both transmission line towers and telecommunication towers, iTower is user friendly and has a series of features for various analyses.

RamTower

RamTower is a very effective and extremely user friendly program for the design of lattice towers with triangular or square cross-sections exposed to wind and ice loads. Several national and international codes and standards for the design of towers are implemented in RamTower.

Ramboll is a truly multidisciplinary consultancy

Being a multidisciplinary engineering consultancy, Ramboll can undertake all engineering services and special analyses that may be needed within the field of telecom infrastructures. For masts and towers, this may involve geotechnical evaluations and designs, electrical and power evaluations and solutions, inspection during manufacturing and installation, etc.

We can naturally also undertake the project management of major rollouts of network.

More information
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