

SECTOR:
LAND SYSTEMS

OFFERINGS:
BUILD TO SPECIFICATIONS

TECHNOLOGY:
ELECTROMAGNETICS

DEVELOPMENT OF A DOUBLY CURVED ANTENNA SURFACE

Our customer is a leading research lab and is involved in the design and development of large antenna. Since these are specialized antenna, their shape is in form of doubly curved surfaces using complex mathematical algorithms. For the antenna to function, it is covered with sheets and conductor wires on top of the sheet. The requirement is to have the conductor wires parallel in the projected 2D plane for proper functioning. Since this is very high accuracy application, the wires are to be aligned with very high accuracy.

Complex mathematical surface was generated by coding the algorithms. To ensure accuracy, very fine mesh was used to generate the surface. Since only 2D flat strips can be pasted on the surface to populate it with conductor wires, the whole surface was divided in various strips. Optimization algorithm was written to make the strips of non-equal width but same error bound. Once the strips were generated very thin conductor wires were generated on the strips. To fix the strips on the antenna surface marker points are generated. These help in the alignment while fabrication.

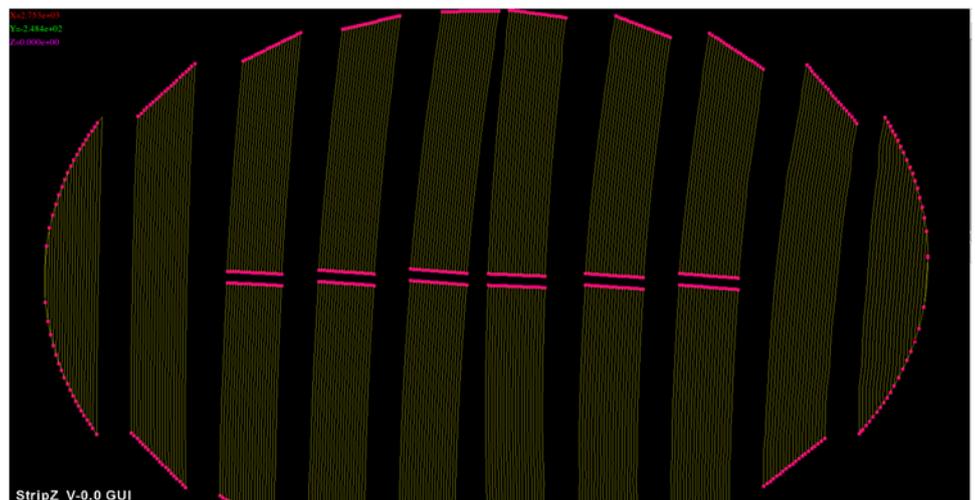
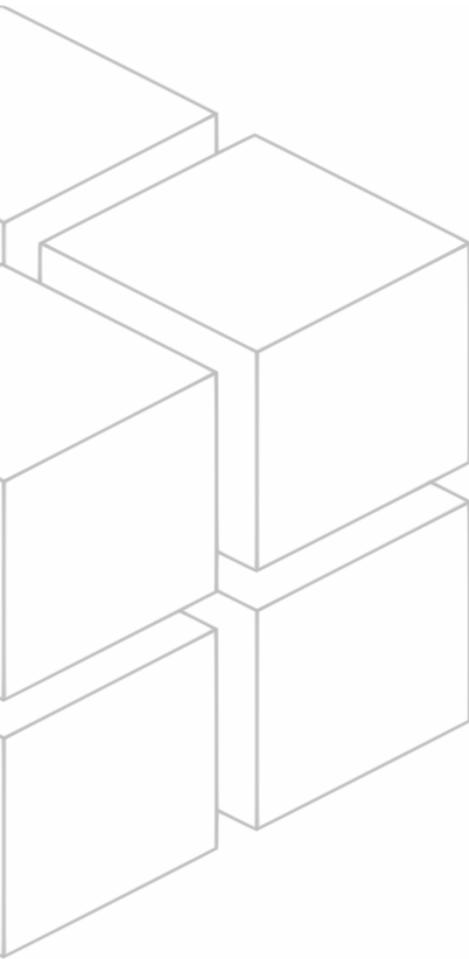


Figure 22: Grid lines and strips on the antenna

Customized software has been developed that is end-to-end software for this application. The software is capable of taking coefficients, STL and IGES file as surface input and then automatically generates the outputs. Automatic report is also generated that gives brief idea of all the inputs and vital output parameters easing the documentation.