

USE OF LOW COST 3D PRINTERS IN ANTENNA RESEARCH.

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3D printing technologies hold the promise of simplified manufacturing of complicated structures. The available printers range from high end printers used in industry for production to low cost hobby machines that fit on a desk. The last years have seen a rapid development in the quality offered by the latter, and a wider range of materials being available. This opens up the technology to be used by a larger group of researchers and engineers.

At Lund University we have been using desk top printers to facilitate antenna research during the last years. Here will be presented some of the possibilities and limitations of the current desktop 3D printing technologies that have been found. Even though these printers are typically restricted to print in isolating plastic materials, there have been recent developments in conductive and metal filled materials that open up new possibilities. Presented here are results of experiments with these materials within the field of antenna design. Of special interest is methods of metallisation of the structures to get radiators with high efficiencies. Experiments in the lab have shown that in some cases these methods even compare favourable to direct 3D printing in metal. Isolating structures are also of interest in antenna development, as they are easily designed in arbitrary shapes. They are particularly useful within the field antenna design for medical applications.