WHAT WE OFFER

NewSpace Systems (NSS) offers clients bespoke and custom RF design and novel filter systems from X-band to Ka-band, which are metal 3D printed. We use our proprietary manufacturing, smoothing and plating techniques to produce high-quality waveguide products with unparalleled design flexibility and excellent RF performance. NSS works either on products with a build to specification approach or offers clients the opportunity to be involved in the product design phase. This collaborative approach extends to the testing of the finished products.

While our designs currently undergo validation through simulation, structurally the waveguide products can undergo rigorous environmental testing to further verify the part if required. Ultimately, the NSS team strive for closer collaboration with our clients, seeking to solve their most demanding challenges through our technological innovation and expertise.

BENIFITS/ FEATURES

- Enhanced RF performance
- Insertion losses as low of -0.1 dB have been achieved.
- Significant weight reductions achieved
- Streamlined production stages, reduced lead time
- Geometric design freedom without the limitations of traditional manufacturing
- Lower cost
- Monolithic manufacturing with no excess and cumbersome flanges
- No waste material from the manufacturing process
- Rapid manufacturing/prototyping of bespoke low volume custom design products
- Batch manufacturing is possible
NewSpace Systems (Pty) Ltd.
12 Cyclonite Street, The Interchange
Somerset West 7130, South Africa
T: +27 (0)21 300 0160
E: mark@newspacesystems.com
www.newspacesystems.com

Version: 1a

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WAVEGUIDE PRODUCTION PROCESS

Waveguide systems are used extensively in communication payload of satellites. The increasing demand for the limited frequency spectrum has pushed industry towards higher frequency waveguide systems. This requires innovative RF design and new disruptive manufacturing technologies, to produce these systems. Furthermore, today’s space communication infrastructure demands high flexibility, low cost and reduced weight components.

NSS has developed a proprietary post-processing and plating method to supply on demand metal 3D printed waveguide products, which are ideal for the harsh space environment. By combining expertise in RF design and simulation, mechanical engineering, materials science and system optimization focused on Additive Manufact NSS can provide 3D printed RF products with a significantly reduced size, weight, lead time and cost, with as good or better RF performance then conventionally manufactured systems.

The guides are 3D printed using metal Selective Laser Melting (SLM) technology, which builds-up the hardware, layer by layer, enabling designs that simply could not be achieved by any other means. 3D printing allows for the manufacture of extremely complicated shapes without the need for joints or welds which yields high quality parts. Monolithic production, combined with our proprietary process developed to optimize the manufacturing process and improve the surface finish, leads to products with very high RF performance. In conjunction with a unique post-processing technique, SLM printing technology is used for this application because of the fine resolution it provides for microwave RF functionality. 3D metal printed parts have virtually the same properties as a solid piece of the same material for RF performance.