

In Focus

THE MAGAZINE FOR THE CUSTOMERS OF TMD

TMD Wins \$10 Million Contract in USA



TMD regularly supplies TWTAs for defence helicopter radars (photo courtesy aviation-images.com)

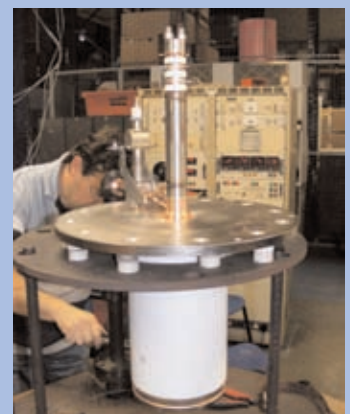
UK SME TMD Technologies Limited (TMD) has been awarded a purchase order by Telephonics Corporation of Long Island, New York, USA, in support of the Spares Supplement to Telephonics Multi-Year Full Scale Production contract for a Multi Mission Helicopter.

This purchase order is in addition to previously exercised options to TMD that provides for the delivery of Travelling Wave Tube Assemblies for the radar. The previous contract award to Telephonics of the Multi-Year Full Scale Production contract included the delivery of 139 radars, for which TMD will supply a share of TWTAs for the radar transmitter. TMD's share of the

total award will be US \$10M over the Multi-Year Full Scale Production. The radar was designed to meet the demanding mission needs of the helicopter community in the blue water and littoral sea environment in all weather conditions, day and night, providing maritime domain surveillance superiority.

Important advanced features of this radar include small target detection, inverse synthetic aperture radar (ISAR), and a unique, fully integrated identification friend or foe (IFF) interrogator capability. "We have a long relationship in supplying Telephonics with state of the art, reliable products", said Graham Brown, Sales Director of TMD, "and we are proud to be part of the successful Telephonics team".

INSIDE New Gridded Electron Gun



Choose a Radar Transmitter from TMD - the Reliable, Cost Effective and Environmentally Friendly Option!

Following the front page article in the last issue of *In Focus*, No.25 there has been heightened interest in our PTX7602 50 kW S band transmitters for air traffic control and general surveillance radars.

Key to the success of this product is the hybrid design, which combines a solid state power supply with an S band microwave tube, exploiting the strengths of both technologies.

User Benefits

- Modular power supply for ease of maintenance
- High voltage sections insulated with silicon based solid encapsulation rather than oil, providing a clean, safe and user friendly environment
- Low phase noise and spurious emissions, ensured by TMD's innovative PSU design - easily meeting the stringent requirements of modern radar systems
- High power capability for optimum target recognition (solid state technology has severe limitations at high power)
- High efficiency, ensuring minimum cooling requirements
- High transmitter reliability (calculated MTBF >12,000 hours)
- High TWT reliability (typical life >40,000 hours)
- Low cost of ownership

'... a very important factor is the greater operating efficiency'

A very important factor is the greater operating efficiency of TWT (Travelling Wave Tube) based systems - more than **40%** at S band compared with around **20%** for solid state. At X band the difference is even more marked, with TWT systems being nearly **three times** more efficient than the solid state equivalents!

Fundamentally this accounts for the heat dissipation difficulties in solid state systems which can lead to reliability problems, particularly at higher power.



TMD's PTX7602 combines a solid state power supply with an S band microwave tube (PT6055). This hybrid design takes advantage of both technologies to offer a product which is reliable, cost effective and environmentally friendly

Another factor contributing to the higher reliability of TMD transmitters is the long life dispenser cathode at the heart of the PT6055 TWT, which has the capability of resistance to poisoning and in situ regeneration of the active surface.

According to TMD's Engineering Director Howard Smith: "At higher powers and frequencies, TWT systems can always outperform solid state systems".

Obviously, improved reliability results in lower cost of ownership for the user and TMD is also fully committed to providing the required in-field support

to its customers, including operator training and documentation.

Returning finally to the fundamental issue of efficiency: higher efficiency ultimately equates to less energy usage - an increasingly important factor for us all. Many industries are setting goals for the reduction in their carbon footprint, including the UK MoD who has pledged a reduction of 15% by 2012.

Commented Sales Director Graham Brown: "TMD is very pleased that we can support this process by continuing to design environmentally 'green' products based on microwave tube technology".

Ground-breaking 150 kV Gridded Electron Gun

A ground-breaking gridded electron gun operating at 150 kV and 10 A has been developed by TMD. The device is believed to be one of the highest voltage shadow gridded designs ever built.

The design has a low emittance beam and the cathode is magnetically immersed, making the beam less susceptible to external magnetic fields. Both these features improve the quality of the electron beam.

The programme was funded by UK MoD via the DTIC (Defence Technology Innovation Centre).

“We completed the development in under twelve months,” explained TMD’s Engineering Director Howard Smith.

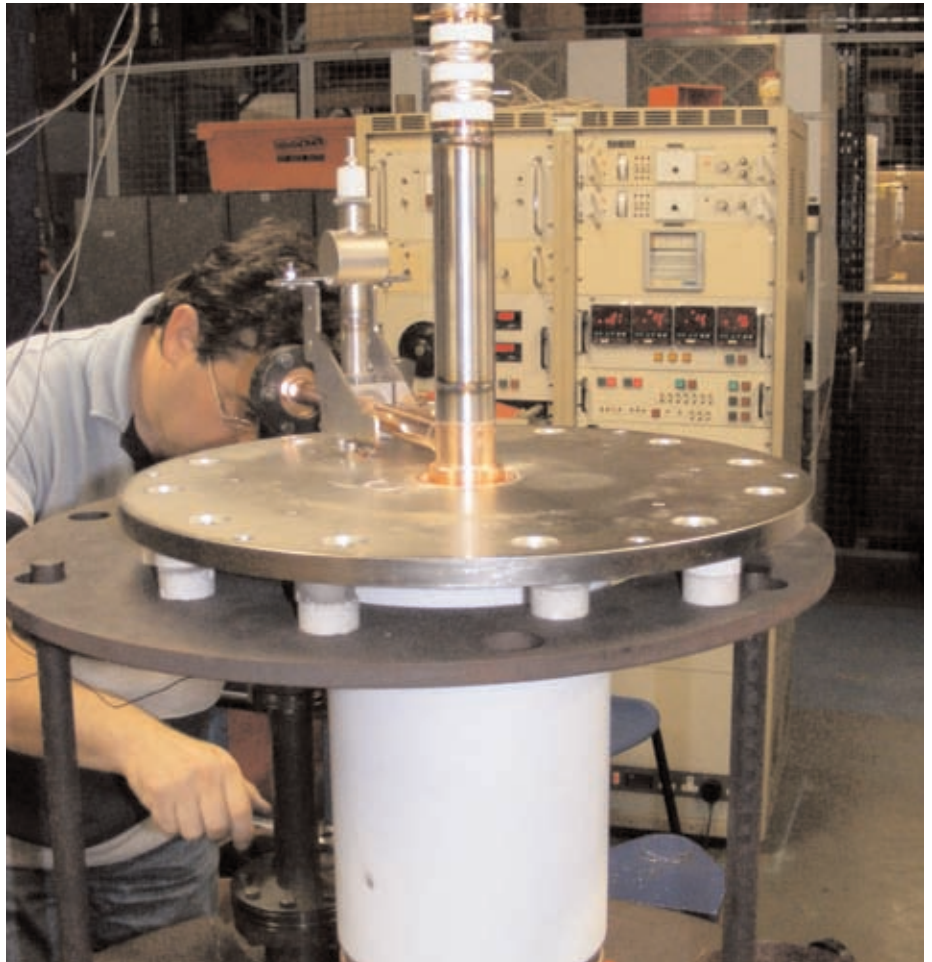


“This was only possible due to our extensive experience in high voltage electron gun design”.

The company has previously developed un-gridded guns up to 250 kV and many other gridded designs at 30, 50 and 90 kV. Uses for these types of electron guns include high power radar systems, particle accelerators and other scientific research applications.

TMD employs finite element computer modelling and makes use of its in-house machine shop to provide rapid prototyping. The company has in-depth knowledge and experience of the wide variety of materials and processes involved in the design and manufacture of electron guns and thermionic dispenser cathodes.

TMD is able to produce designs for a wide variety of applications, including scientific research, medical LINACS and defence.



TMD’s gridded electron gun is believed to be one of the highest voltage shadow gridded guns ever built

TMD Turns Up the Power with Ku Band TWT

Responding to customer demand, TMD is now offering a higher power, fast warm Ku band TWT. Peak power of the PT6789 is 1000 W, with an average power of 400 W continuous or 600 W for short periods.

Designing this TWT was a considerable technical feat as it operates at the top of the Ku radar band, at a high duty of up to 33%, and at very high PRF. The tube is also required to work in a harsh environment.

Currently the PT6789 is not optimised for any specific application, but TMD can tailor its performance to customers’ particular requirements.



The performance of the PT6789 can be optimised for specific applications

TMD on Show

EMCUK October 2007

Dedicated to the EMC industry, the event was held at Newbury Racecourse. Said Guy Howard, TMD's Sales Manager, Instrumentation Microwave Amplifiers: "This exhibition was particularly successful for us because we were sharing a stand with our antenna partners Q-par Angus. Thus we were ideally placed to discuss our powerful amplifier/antenna solutions for HIRF testing with the many potential customers attending the show".

AOC Symposium & Convention October 2007

Said Paul Davies, Sales and Marketing Executive for TMD: "We made many new contacts at this specialised EW show held in Florida, which we look forward to developing further this year in Reno".

(See 'Forthcoming Events' below).

ATC Global March 2008

At this International Air Traffic Control exhibition, held at RAI Amsterdam, TMD launched its new highly reliable, oil free PTX7602 S band transmitter - a microwave tube/solid state PSU hybrid design (see 'In Focus', No 25 and centre page of this issue). Said Stuart Love, Radar Sales Executive for TMD: "A life-



Above: At EMCUK 2007, TMD shared a stand with antenna partners Q-par Angus



Left: TMD launched the PTX7602 S band transmitter at ATC Global in March

size mock-up on the stand stimulated a great deal of interest, and we are in the process of negotiating several new orders".

Eurosatory June 2008

TMD recently attended this exhibition, held in Paris, for the first time. "This is a well established and respected event for suppliers to the military," said TMD's Paul Davies, "and it proved of great value for us to be there". (More information in the next issue of 'In Focus').

Forthcoming Events

EMCUK 2008 14-15 October

See us once again at Newbury Racecourse on Stand **15**, which we will be sharing with antenna partners Q-par Angus, and discussing our latest high power amplifiers for HIRF testing.

AOC Symposium & Convention 2008 19-22 October

On Stand **419**, in Reno, Nevada USA, TMD will be showing examples of its wide range of pulse, CW and ICW amplifiers for ECM EW applications.

ATC Global 17-19 March 2009

At the RAI in Amsterdam next March, TMD representatives will be pleased to discuss the company's high reliability, microwave tube based transmitters for ATC and general surveillance radars. See you on Stand **H513**.

TMD

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