

In Focus

THE MAGAZINE FOR THE CUSTOMERS OF TMD

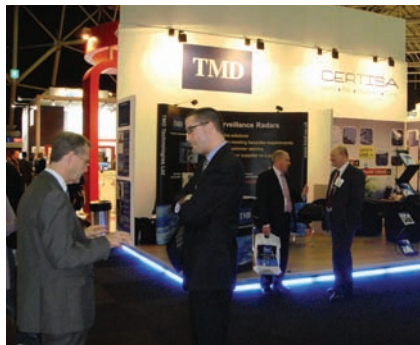
TMD's ATC System Goes Global



TMD is capable of offering a top quality radar system upgrade or a complete system replacement (photo courtesy of NATS and BAA).

TMD is moving into a new and exciting era with a move towards a full systems capability for ATC Primary Airport Radar. This bold step showing strategic ambition in this market will be realised through TMD's Airport Surveillance Radar, the ASR 2020 radar project, which was announced at this year's ATC Global exhibition. The exhibition was once again a big success for TMD with the new ASR generating much interest from potential customers around the globe.

At the heart of the new ASR 2020 is TMD's PTX7610 50 kW transmitter. However, this strategic step also requires the design, development and manufacture of a brand new receiver/exciter and signal processor, and this



TMD's ASR 2020 radar project was announced at this year's ATC Global exhibition in Amsterdam.

work is being undertaken by some of the finest radar system and software development brains in the world. In order to bring all these sub-systems together we needed to employ an

experienced senior manager, which comes to us through the addition of Steve Brook - the new Head of ATC Systems Division. With a broad background in systems, radar and software, Steve is a welcome and skilful addition to TMD's team and by working with other sub-systems and systems manufacturers, TMD will be able to offer a fully integrated suite to provide controllers with accurate and reliable radar data. TMD will lead the ATC system integration and development but it can also deliver systems to customers for their onward integration into larger systems.

TMD's ASR 2020 is different from most other systems as it has the benefit of providing an upgrade capability for existing airport radars such as Watchman. It brings older systems like Watchman up to modern standards of all round capability, without the need to discard any of the more modern sub-systems, such as already upgraded controller working positions; or the older components with years of life still remaining, such as antenna, rotating joint, turning gear and tower. Whilst TMD will offer a turnkey solution we are keen to work with customers to integrate their needs into any proposed solution. TMD remains committed to exemplary customer service and support.

The ASR 2020 is a bold step for TMD but we are relishing the challenges of this worthwhile and rewarding development. We feel that by offering a top quality radar system upgrade or a complete system replacement, that not only will we provide the customer with a better and greener choice, but we will also make ASR more affordable.

John Paige
ATC Radar Sales Manager

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Latest MPMs & Tubes from TMD

MPMs for Military Communications

TMD is pleased to announce the introduction of two new microwave power modules (MPMs) designed specifically for military datalinks on UAV platforms. These products have evolved from TMD's existing range of MPMs for radar and EW.

The PTX8208 and PTX8209 units cover the frequency bands 7.9 - 8.4 GHz and 13.75 - 14.5 GHz at output powers of 100 and 110 W respectively. These two units have particularly low noise performance and include linearisers, ensuring good linearity and resulting in high useable carrier powers. In common with all TMD's microwave tube based MPMs, the units are efficient, lightweight and reliable compared with solid state alternatives.

Further MPM products are being developed and will be announced in due course.

For further information and datasheets, please refer to TMD's website www.tmd.co.uk or contact Guy Howard, Sales Manager for Military Communications, email: guy.howard@tmd.co.uk

An Expansion in Small Tubes!

Contrary to predictions in some quarters that microwave tubes are a dying breed,

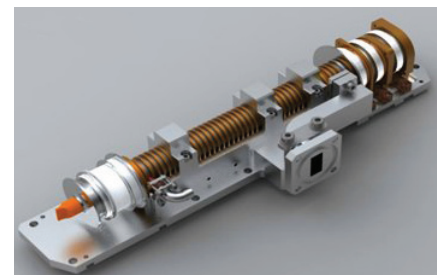


Above: TMD's two new MPMs are designed for UAV platforms (Courtesy Aviation-Images).
Right: New Ku band microwave tube.

TMD's Tube Division has shown an impressive record over the past five years for new product development in this field. This development has been mainly in the area of high power ring loop Ku band travelling wave tubes (TWTs) for missile seeker applications, a good example being our 1 kW 25% duty PT6789 'super tube' (reported in Issue 26 of In Focus).

Other recent developments include:

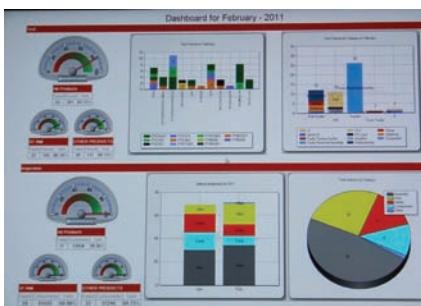
- A dual mode Ku band tube for an application which required switching between two power levels; this tube also incorporated a triple depressed collector for increased efficiency.



- A Ku band ring loop tube for a TMD MPM, designed for an airborne approach radar. This example is significant because, until recently, most of TMD's MPMs incorporated outsourced mini tubes. Following this latest successful development, it is now our intention that more of TMD's MPMs will incorporate our own tubes, particularly for radar applications in Ku and X band.

New QA Dashboard

- Maximises TMD Product Reliability



Instant, up to the minute dashboard.

We recently saw the culmination of a combined operation involving the QA,

manufacturing and test departments to convert several of our Quality Assurance monitoring databases to one unified system based on SQL.

The new system provides an instant up to the minute dashboard, showing product yield and failure mode statistics for products - delivered to the shop floor via LCD displays.

It is proving invaluable in raising quality awareness, thus helping to maximise our product reliability and minimise waste and rework.

'Going Green'

As TMD is a manufacturing company, environmental issues are at the forefront of our operations and we have to meet many legislative standards. However, our environmental policy extends beyond this - embodying the spirit of continuous ecological awareness, with efficiency improvements and reduction of waste and energy usage across all areas of our business.

Effective Waste Management

Since the early 90's the regulation and control of industrial waste has become more and more stringent. This has brought about a large increase in

TMD Helps Meet EMC Challenges

(Taken with permission from a paper entitled 'Challenges of Meeting the HIRF Testing Requirements of DO-160', by Gavin Barber, Project Technical Manager, QinetiQ)

With the risk of electromagnetic interference from electronic devices ever on the increase, susceptibility testing for critical hardware is at the forefront of concern worldwide.

A particularly stringent standard is DO-160, first promulgated in 1980 to specify test conditions for the design of avionics electronic hardware in airborne systems. Since then the standard has undergone several revisions up to Revision F and now requires the equipment under test to withstand very high field strengths over a wide frequency range.

This produces high demands on electromagnetic compatibility (EMC) test houses and the test equipment used, for example amplifiers and antennas. There are two main test methods currently employed: conventional testing which takes place in an anechoic chamber, or the reverberation method which uses a conductive chamber fitted with rotatable paddles. The latter method has several advantages including high field strengths from moderate input power, low construction costs and, most significantly, it provides the most realistic simulation/equivalency for electronics



TMD is a world leader in TWTA innovation and manufacture.

functioning within a cavity - such as in an aircraft, room or cabinet.

The EMC test facility at QinetiQ, Farnborough (a long term customer of TMD) operates a range of high intensity RF testing (HIRF) facilities, including three reverberation chambers, which provide HIRF testing at field strengths of more than 10,000 V/m.

As part of an upgrade programme for their EMC HIRF testing facility, QinetiQ purchased a suite of amplifiers from TMD and antennas from Q-par Angus. "We have a very healthy set of amplifiers from TMD", said Gavin Barber, Project Technical Manager, QinetiQ - referring to

the very high field strengths they obtained with the TMD/Q-par Angus amplifier/antenna set up, enabling the demanding conditions for the DO-160 testing standard to be achieved. Gavin Barber also highlighted several challenges for the future, including the ever increasing field strength requirements, pulse width increases, and overcoming the difficulties of achieving high enough power in the frequency range 1-2 GHz.

TMD is very aware of these issues. Over the past 15 years we have been a world leader in travelling wave tube amplifier (TWTA) innovation, and we have particular strengths in the area of high power pulsed TWAs. We are committed to providing both compliant and cost effective equipment for the EMC test market.



Engineers Simon Davies, Q-par Angus and Chris Burton of TMD (right) in discussion at a recent EMCUK exhibition.

Efficiently - and Saving Time and Money

the cost of disposal. These costs will continue to rise and it will become more necessary and mandatory to recycle. As a manufacturing business we have to segregate and/or separate out our different waste streams. This is not only a legal requirement but it also has the benefit of keeping down the costs of disposal. In fact, in some instances we can actually sell our industrial waste to a recycling company!

Cardboard was, until recently, a real problem to handle. It represented at least 80% of our recycling volume, plus we also had to pay for its disposal. Then last year we purchased a 'Garbage Gorgor'



This machine eats up our cardboard.

- a machine that 'eats up' cardboard, producing a huge bale weighing around 500 to 600 kg! This has transformed our cardboard handling problem, since

we can now sell these bales to recycling companies - offsetting the capital outlay.

All this not only helps the environment but also saves us time and money, allowing more investment in new product development for our customers.

Plus Improved Office Efficiency

Recently we upgraded the document handling functionality to our ERP Manufacturing and Accounting computer system.

This takes us one step towards a paperless office, enabling the ERP system
(continued on back page)

TMD Show Roundup

The last year or so has been a record-breaker for TMD in terms of exhibitions attended.

All areas of our business were represented, covering the radar, EW, military communications and scientific/laboratory sectors at locations ranging from Anaheim, California in the west to Kielce, Poland in the east.

The **International Microwave Symposium (IMS)** in the USA is always an important event for TMD, and we were very impressed with **IMS 2010** held in Anaheim in May last year - so much so that we were keen to further



Guy Howard (Sales Manager, Military Comms, left) and Richard Patrick (Business Development Manager) eagerly awaiting our customers before the start of IMS 2010!

raise our profile, and booked a double stand for the Baltimore venue in June this year! The focus of this year's show for TMD will be on our Ku band TWTs and MPMs.



Nigel Hann, TMD's Assistant Sales Director, at Farnborough Air Show, with probably the most advanced helicopter in the world - one of TMD's product platforms.

As a member of the trade organisation A|D|S, we were very pleased to participate in their stand at the **Farnborough Airshow 2010** last July. TMD had an excellent position, which contributed significantly to our success at the show. Said TMD's Sales Director, Graham Brown: "We were extremely busy the whole time, engaged

with existing and new customers from all over the world. It's very important that we have a presence at Farnborough and we were very pleased with the help and facilities provided by A|D|S."

As part of our business development in Eastern Europe, we travelled to Poland for the **MSPO** exhibition in Kielce, in September, where some very useful contacts were made for future growth in this area.

At **EMCUK 2010**, in October at Newbury Racecourse, UK we again shared a stand with our antenna partners Q-par Angus. This is proving to be a very fruitful collaboration, and the event continued to be a great success for us in terms of the many enquiries and the new and existing customers that visited the stand.

A highlight in our exhibition calendar was a major product launch at the recent **ATC Global 2011** exhibition in Amsterdam this March, where TMD introduced its ATC radar solution (see front page of this issue). As a result of discussions at the show several ATC radar projects are in progress with new customers.

For details of future exhibitions that TMD will be attending in 2011/12 please go to our website www.tmd.co.uk

'Going Green' Efficiently (contd from page 3)

to automatically generate electronic documents such as Purchase Orders, Invoices, Delivery Notes, Goods Received Notes, Statements and Remittances in full colour, to an extremely high professional standard.

These documents are automatically emailed or faxed to their recipients. Thus they are delivered by the fastest means available whilst avoiding expensive postage and pre-printed stationery, as well as eliminating the time and effort otherwise involved in printing, loading envelopes and stamping - plus walking to the post room!

Implementation is now complete in Purchasing, Sales and Accounts and is an overwhelming success. Paulette Brown, Sales Administrator said: "The new

system is saving a great deal of the time that previously had to be spent running to and from the photocopier. It's also helping Stores because when a product is ready for shipment they automatically receive the delivery note by email and are therefore prepared in advance. In Customer Services it is helping to improve delivery times and the overall service to customers, whilst in Purchasing the new system is streamlining the sending out of orders to suppliers and cutting down on paperwork too."

Summing up, Clive Thompson, IT Programme Manager, said: "Each operation is separately programmed so that the relevant people always receive the documents they need automatically. This increases our efficiency and reduces the possibility of error, saving time and



Clive Thompson: "...saving time and money".

money - particularly in postage, print and labour costs. The implementation of the software is evolving continually, as more useful applications are being found. A further benefit is that the software is capable of producing a barcode at any position on any document. When implemented later this year, the processing of materials and labour recording will also become far more cost effective."

TMD

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TMD the power in microwaves!