ET Enterprises electron tubes

ADIT

catch the light

COMPANY PROFILE

See us in a new light

ET Enterprises Limited is a new UK company which manufactures and supplies the long established Electron Tubes brand of photomultipliers and associated signal processsing hardware and electronics to meet the needs of low light level detector users in industry and research around the world.

ET Enterprises Limited is a newly formed company which acquired the photomultiplier and accessories business of Electron Tubes Limited at the beginning of May 2007 and will continue to manufacture, market and develop the Electron Tubes brand product range.

Although a new company, its history can be traced back to the 1930s when, as part of EMI, it first became involved with light detection technologies. Specialisation in the development and manufacture of photomultipliers started in the late 1940s, and the company continued to grow to become a major international supplier of low-level light detection devices and systems.

Now a subsidiary of Ludlum Measurements Inc, ET Enterprises Limited has the benefit of the combined resources of the production facilities of ADIT, a US based producer of photomultipliers, and ET Enterprises' UK based development facilities and experience in a wide range of different photomultiplier applications worldwide.

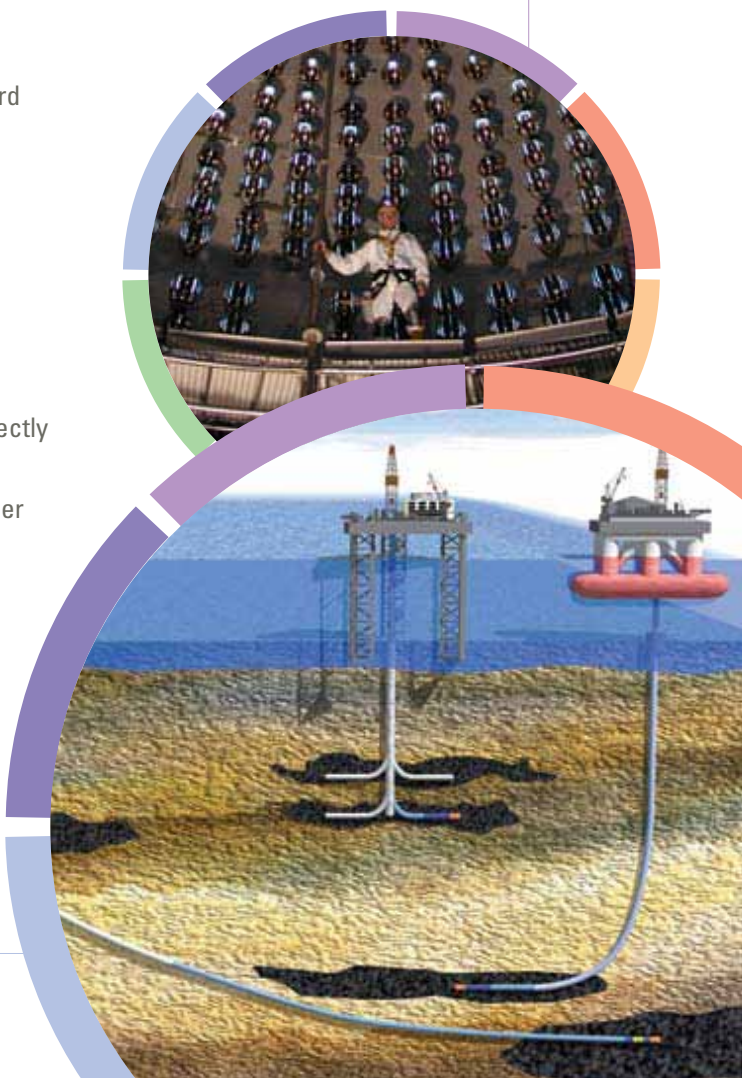
A comprehensive approach

We offer a wide choice of high quality products, both standard and customised, together with unparalleled technical and application support, and competitive prices.

Why use a photomultiplier

The photomultiplier is an extremely sensitive light detector providing a current output proportional to light intensity. Photomultipliers are used to measure any process which directly or indirectly emits light. Large area light detection, high gain and the ability to detect single photons give the photomultiplier distinct advantages over other light detectors.

Photomultipliers for the Borexino project at LNGS, Italy
Courtesy of INFN Rome



Photomultipliers for oil exploration
Courtesy of Haliburton

Leading the way in light detection for over 60 years

1930s As part of EMI, developed light sensing techniques for use in the first electronic high definition television systems.

1940s Development and introduction of the world's first photon counting system for use in optical astronomy give a step function increase in sensitivity.

Photomultiplier development commenced.

1950s Invented and introduced a completely new series of photomultiplier designs.

First commercial production of photomultipliers at Ruislip in North West London, aimed mainly at the nuclear radiation detector market.

1960s Developed and introduced photomultipler interface hardware and electronics to support a wide range of end-user applications.

1970s Developed and introduced the world's first hemispherical photomultiplier to meet the need for wide-angle, large surface area light detection in cosmic ray and neutrino physics research experiments.

1980s Range extended to include versions with low background glass to enable the detection of very low signal event rates in high energy physics and astro-physics applications.

1990s Range further extended by the addition of a series of rugged, high temperature photomultipliers for use in oil exploration.

Supplied space qualified photomultipliers for the HIPPARCOS Project.

Achieved ISO9001 certification.

Supplied space qualified photomultipliers for the INTEGRAL Project.

Developed and introduced the first 25mm diameter hemispherical photomultiplier for use in first MAGIC high resolution cosmic shower telescope.

Introduced a series of photomultipliers with ultra low background glass, pushing the boundaries of low signal detection even further, aimed at Dark Matter experiments.

First major order received for 200 mm (8 inch) diameter hemispherical photomultipliers for the Borexino Project at Laboratori Nazionali del Gran Sasso at L'Aquila, Italy.

Supplied space qualified photomultipliers for the NASA Gamma Ray Observatory and SOHO Projects.

1994 Electron Tubes Limited formed following a management buy-out from Thorn EMI.

1995 Modular photon counting systems added to range.

2000 Development and introduction of photomultipliers for low temperature applications, such as immersion in liquid Argon scintillator.

2005 Expansion of the range of application-specific photomultiplier signal processing electronics.

2007 ET Enterprises Ltd formed following the acquisition of the photomultiplier business of Electron Tubes Ltd by Ludlum Measurements Inc, Sweetwater, Texas. This gives ET Enterprises access to LMI's ADIT photomultiplier facility to significantly increase the production base for volume manufacture.

2008 UK operation re-located to Uxbridge in West London, after over 50 years in Ruislip.

2010 Further expansion of the photomultiplier and electronics development resources at Uxbridge. Photomultiplier product range extended in response to new opportunities identified following the withdrawal of Photonis from the market in 2009.

2011 Acquisition by ET Enterprises Ltd of the Uxbridge site in West London as a consolidation of the company's position for the future.

2012 Glass manufacturing business and assets of Plowden and Thompson Ltd acquired by ET Enterprises Ltd to secure the long-term availability of the specialist glasses used in the production of photomultipliers.

ET Enterprises electron tubes

Our customers' business is important to us

We welcome visitors to our site near to London Heathrow airport and are always pleased to meet existing and new customers at the various exhibitions in which we participate.

We believe in being as accessible as possible to customers, users and associate sales offices regardless of their location.

We have a sales office in Sweetwater, Texas, USA, and a network of distributors covering most other parts of the world.

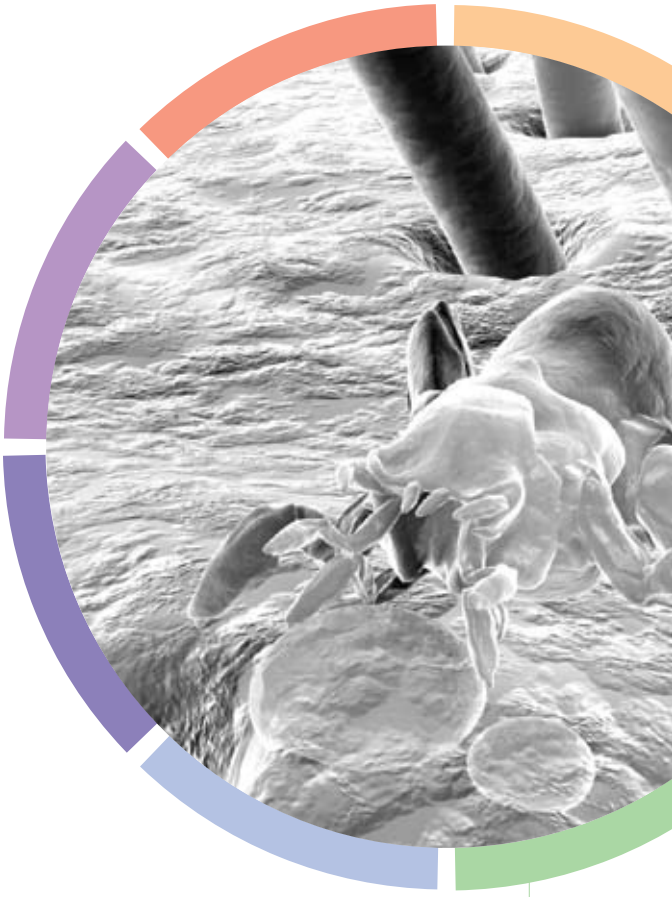
Unique expertise and the latest technology

Photomultipliers:

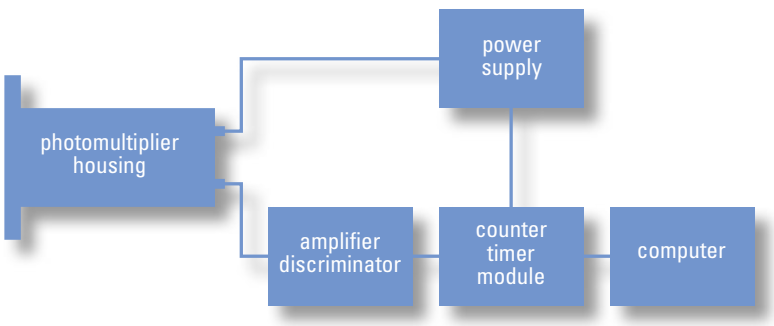
- For operation at high and low temperatures
- For harsh environments
- Spectral ranges from the vacuum-UV to near infra-red
- Photon counting from a few photons/s to >50 M photons/s. Higher light levels in pulsed and dc mode
- Effective detection sizes from 2.5mm diameter to almost 200mm diameter
- Gains from 10^3 to 10^9

Associated hardware

- Sockets and shields
- Voltage dividers
- Ready-to-use, demountable light-tight housings
- High voltage power supplies
- Digital and analogue electronic signal processing modules and systems
- Photon counting systems



Photomultipliers for electron microscopy
Courtesy of Waters



A wide knowledge across varying applications

Applications involving the detection of low light levels have been around for many years but new ones are still evolving because light is central to many physical processes which form the basis of analytical techniques. Some examples:

Radiation Monitoring

The photomultiplier is coupled to a scintillator which then becomes a very sensitive detector of nuclear radiation and X-Rays. This enables the radioactive dose level to be measured and the isotope to be identified. Variants of this application are becoming increasingly important in the field of homeland security.

Astro- and Cosmic-Ray Physics

Relatively high light level requiring photomultipliers with high current capability.

High Energy Physics

Neutrino detectors requiring photomultipliers with large detection area, high speed, high sensitivity and low background.

Dark Matter Experiments

Requiring photomultiplier with low background, large area, and ability to withstand low temperatures.

Life Sciences

Requiring photomultipliers with high sensitivity, high stability and low dark current.

Pollution Monitoring

A typical application would be the detection of chemiluminescence light which results from the combination of a gas sample with ozone, from which the concentration of NOx can be determined.

Bio Technology

Requiring photon counting grade photomultipliers with high sensitivity, low dark count and wide dynamic range.

General Research Applications

Choose from the wide range of sizes, spectral response, gain whether for analogue, photon counting or special operating modes.

Oil exploration

Need to withstand high temperature, severe shock and vibration environments.

Space exploration

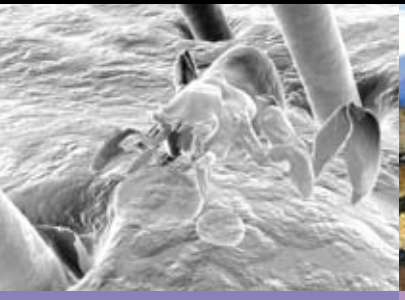
Space qualified designs requiring very high quality standards.

Industrial Process Control

A photomultiplier and scintillator are used with a radioactive source to determine the amount of liquid or powder in a container. This technique can also be used to measure the thickness of sheet material, even when moving at high speed in a production plant.

Electron Spectroscopy

The electron beam in a scanning electron microscope is detected by a photomultiplier coupled to a phosphorescence material. This allows a very high magnification image to be obtained of objects which cannot be seen using optical techniques.

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