



**MPE**  
Quality, Reliability, Performance

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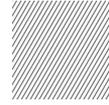
## Overview Brochure



Overview



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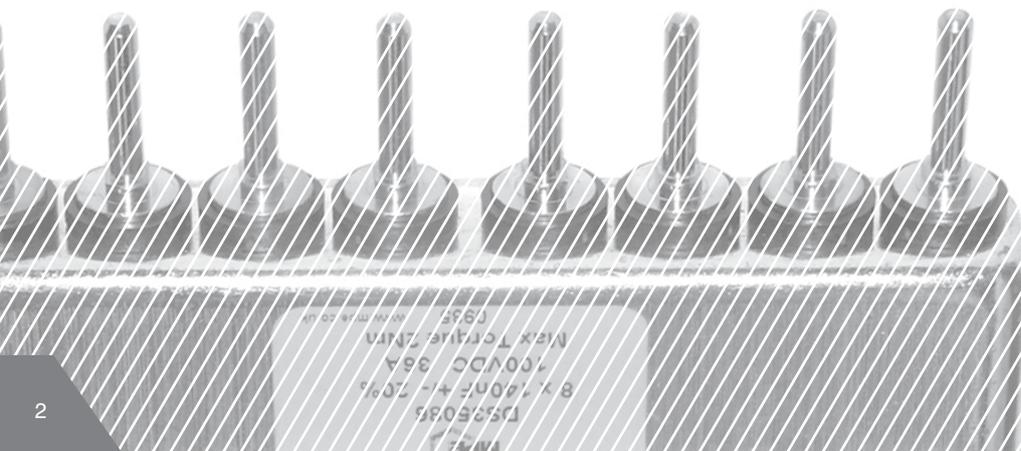


MPE Limited is a world leading manufacturer of high performance EMC/EMP filters and capacitor solutions for supply to the defence, ICT, specialist automotive and other professional industries.

Our history, spanning over 8 decades, is a testament to our unrelenting commitment to

**Quality,  
Reliability &  
Performance.**

Capacitors



Formed in 1925, MPE have the longest standing and proven heritage of design, development and manufacture of high performance EMC/EMP filters and capacitors within the industry. Throughout this heritage, MPE have gained a reputation for providing the highest levels of quality and reliability and this legacy ensures that MPE are able to offer an unparalleled range of solutions to the market place.

MPE's comprehensive standard suite of core products spans high performance feedthrough capacitors, high current power, telephone, data & control line filters, through to the latest HEMP range of protection filters. Outside of this core range, MPE have a catalogue in excess of 20,000 designs that can be drawn upon to fulfil more 'specialist' requirements. In addition, MPE's ability for rapid development and prototyping ensure that any new design requirements can be fully met.

MPE are an established member of both the EMCIA and EEF organisations, hold numerous product and industry accreditations and are ISO9001 certified.

MPE have been wholly privately owned since 2002 and are based in Liverpool, UK. With a continued growth throughout the past 10 years, MPE are a multi-million pound turnover company and employ in excess of 50 staff. MPE have a well-established, global customer base, with 50% of manufactured product being exported to many territories and markets.

Our mission

**To be the number one choice for high performance EMC/EMP filter solutions.**

## Experience



## Company Milestones

1925

Formed as Dubilier Condenser Co (London)

1947

Relocated manufacturing to Knowsley, Liverpool

1980

Transferred manufacturing to the current site in Knowsley, Liverpool

1981

Renamed as MPE Limited

2002

MPE becomes privately owned





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With a steadily growing multi-million pound turnover, MPE provides solutions to many markets both within the UK and around the globe. Core to this steady growth has been MPE's ability to develop a well-established and loyal customer base, soundly based on a proven track record of delivering quality products.

Historically, this proven track record was established within the UK defence industry with MPE supplying varied products to many sectors within this market. However, over the past 20 years, MPE has expanded its supply to many other markets and also many export territories.

Currently, whilst the defence sector remains core, MPE have established customers within the specialist automotive, mass transportation, medical, telecoms and EMC test markets. Further to this, approximately 50% of products manufactured are now exported outside the UK. Territories served include most of Europe; the Far East; India; parts of Africa and the USA with new markets continually coming on line.

As a result of this, MPE have an established and knowledgeable distributor network in many territories to ensure that design requests and product requirements are met with maximum efficiency.

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## Defence

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Defence represents MPE's longest standing market and MPE have worked and continue to work closely with many users, manufacturers and compliance authorities within this sector. MPE have a broad range of established solutions which have been designed and manufactured specifically for this market and comply with the required military standards.

Many applications have been addressed, including mobile & tactical shelters; control & command centres; along with high profile airborne and naval platforms. More recently, upon request and to meet the ever changing nature of this market, MPE have developed and manufactured a full range of HEMP protection filters all independently tested and compliant to MIL-STD-188-125.

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## Military Vehicle

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MPE have been supplying the needs of the military vehicle market for over 40 years. This wealth of experience has enabled MPE to establish a range of MOTS (military-off-the-shelf) filters to meet the suppression requirements specific to these applications. Many designs have been developed in

conjunction with the users and manufacturers of these vehicles and meet the requirements of many military specifications, such as DEF STAN 59-411 and MIL-STD-461.

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## ICT

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MPE have a wealth of experience and an established track record of providing bespoke product within this sector. Product has been supplied to address many disparate applications including: mobile network base stations, high end server applications; satellite ground stations and antenna arrays both within

the UK and overseas. MPE continues to supply product to many blue-chip applications with particular focus given to the repeatability and high volume nature of the designs.



### Medical



Whilst the Medical sector is probably the most disparate from MPE's defence origins and the meeting of performance criteria of the upmost importance, niches within this market, have been and continue to be addressed by MPE solutions. Prime examples are MRI or other hospital scanning departments where any level of EMC interference cannot be tolerated.

### Specialist Automotive



A market with many specific requirements, not least those of size, weight and cost-effectiveness. MPE has manufactured and supplied many suppression products to address specific inference problems established at either the vehicle trial or post launch phase. Inherently, this often means

that whilst MPE's designs must be compliant, they are also developed to fit constrained envelopes, where no allowance has been originally made for filtering and also in a form that is fit for manufacture, in high volumes.

### EMC Test



MPE work closely with the EMC test communities that operate within all of the previously mentioned sectors. MPE have particularly strong relationships with the leading test houses here in the UK as well as in the USA and the emerging Far Eastern markets. MPE have acted and continue to act both in

a customer supply capacity, providing shielded room filter products and in a collaborative capacity to explore solutions to new problems arising during test phases.

### Mass Transportation



Whilst a continually changing market, many of the identified needs are similar in nature to those MPE has encountered and met within other more established sectors. MPE has been able to employ the knowledge and experience gained within other sectors to deliver product to meet the bespoke interference

problems arising within both the mobile and infrastructure aspects of this sector.

**MPE have an established and knowledgeable distributor network to ensure that design requests and product requirements are met with maximum efficiency.**

Markets



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MPE's unparalleled range of product offering encompasses in excess of 20,000 established designs to meet a wealth of application requirements. From this catalogue, a smaller core product subset comprising the most commonly required and versatile products are available as standard, with other designs outside this core range available to utilise if applications necessitate.

### Power Line Filters

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**Overview:**

Broad range including:  
High performance,  
standard range, very high  
current and extended  
performance options  
Single and three phase  
ranges  
AC/DC  
Multi-line  
Low leakage & 400Hz designs.



Current Rating: 5A to 2400A

Voltage Rating: 250V DC/115 – 440V AC

Applications: Shielded rooms, tactical & mobile shelters,  
computer suites, EMC,  
EMP protection systems and  
TEMPEST applications

Design Benefits: High insertion loss of 100dB to >10GHz  
Low heat dissipation  
Ultra small footprint  
Cost effective  
Self-healing plastic film capacitors utilised  
Variety of cable entry options available

### Clean Power Filters

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**Overview:**

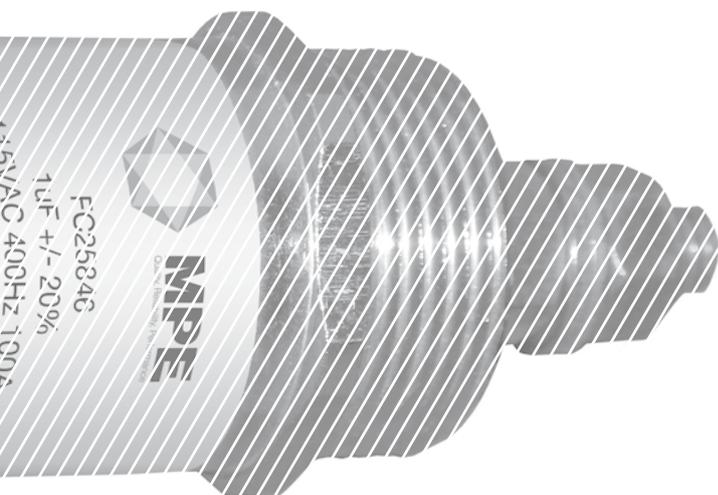
Cost effective range of single  
and three phase power filters

Current Rating: 6A to 160A

Voltage Rating: 250V  
DC/440V AC

Applications: Power &  
equipment cabinets,  
shielded rooms, computer installations

Design Benefits: Maximum cost effectiveness  
High insertion loss of 100dB, to >1GHz  
Compact size  
Enclosed terminals  
Stainless steel enclosure  
Bulkhead or chassis mounting  
Self-healing plastic film capacitors utilised





### Telephone Line Filters

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Overview:  
Options from 2 line through to 240 lines; high and extended performance designs available



Current Rating: 125mA to 300mA

Voltage Rating: 95V to 250V AC/DC

Applications: Shielded rooms, communications hubs, signal lines, EMP protection systems and TEMPEST applications

Design Benefits: Low pass circuits  
300/600 ohm & complex impedance circuits  
Self-healing plastic film capacitors utilised  
Matched pairs  
Transient protection options  
BT approved

### Control Line Filters

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Overview:  
Single-line feedthrough & multi-line AC/DC control line filter range



Current Rating: 1A to 10A AC/DC

Voltage Rating: 250V AC (600V DC), 28V DC to 100V DC

Applications: Shielded rooms, low current power lines, fire & intruder systems, control indicator applications, EMP protection systems and TEMPEST applications

Design Benefits: Optimum performance  
Ultra small footprint  
Up to 200 line designs available  
Transient protection options  
EMP protection options  
Self-healing plastic film capacitors utilised  
Variety of cable entry options available

**An unparalleled product offering, encompassing over 20,000 designs to meet a wealth of application requirements.**





### Data Line Filters

**Overview:**  
High performance range for digital and analogue circuits

**Current Rating:**  
100mA

**Voltage Rating:**  
100V AC/DC

**Applications:** Shielded rooms, data security, computer hubs, signal lines, EMP protection systems and TEMPEST applications

**Design Benefits:** Various data rate options available to suit different data protocols  
Very high performance  
Transient protection options  
Self-healing plastic film capacitors utilised  
Variety of package styles available



### Feedthrough Capacitors & Filters

**Overview:**  
AC/DC, various performance options, high current, Y2 & Y4 options, single-line and multi-line options available

**Current Rating:**  
Up to 1000A

**Voltage Rating:** Up to 300V AC & 1000V DC

**Applications:** Telecoms, base stations, IT equipment, servers, medical, process control, defence, power supplies, military vehicles

**Design Benefits:** Minimal footprint  
Self-healing plastic film capacitors utilised  
Threaded terminals for bulkhead or chassis mounting  
High capacitance value  
Cost effectiveness



### Equipment Filters

**Overview:**  
High performance, general purpose, single and three phase designs

**Current Rating:**  
1A to 100A

**Voltage Rating:**  
250V AC, 100V DC

**Applications:** Switched mode power supplies, communications systems

**Design Benefits:** Very wide frequency performance range  
Self-healing plastic film capacitors utilised  
Bulkhead or chassis mounting  
Feedthrough capacitors utilised for high frequency performance



### EMP EMI Tempest Filters

**Overview:**  
Very high performance, EMP pulse protection, power, data telephone & control line variants available

**Current Rating:** 1A to 2400A

**Voltage Rating:** 250V AC, DC to 440V

**Applications:** Lightning, MP, Nuclear and high power microwave EMP, TEMPEST shelters, shielded rooms, public service utilities, homeland security applications

**Design Benefits:** Multi-stage  
Full frequency spectrum protection  
High pulse energy capability  
Self-healing plastic film capacitors utilised  
Enclosed terminals  
Corrosion resistant  
Tested with NATO standard EMP pulses





## HEMP Filters

### Overview:

High performance range of single phase & three phase power, telephone and control line filters, designed for pulse performance and fully compliant to MIL-STD-188-125



**Current Rating:** 6A to 1200A (power)  
1A (control)  
100mA (telephone)

**Voltage Rating:** Up to 277V AC, 250V DC

**Applications:** Any military, homeland security, public service utility or commercial applications where HEMP protection is a requirement

**Design Benefits:** Designed for pulse performance  
Compact footprint  
Minimal weight  
Modular designs available  
No paralleling

## Military Vehicle Filters

### Overview:

Standard 2 line, multi-line filters & high current feedthrough capacitors

**Current Rating:** 3A to 300A

**Voltage Rating:** 28V DC to 1000V DC

**Applications:** Military vehicle equipment where compliance to DEF STAN 59-41 & MIL-STD-461 EMC is required

**Design Benefits:** Multi-line variants available  
Integral screened flying leads  
Ultra compact enclosures  
Self-healing plastic film capacitors utilised  
Screw and bulkhead mounting



**An unparalleled product offering, encompassing over 20,000 designs to meet a wealth of application requirements.**



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A programme of continuous investment in a 40,000 sq ft manufacturing facility, specialist test equipment and design software enables MPE to manufacture and supply products that satisfy the most demanding customer requirements, often in harsh environments. MPE manufacture all critical components in house ensuring quality of the highest standard is achieved and maintained.

MPE's precision engineering capabilities range from unique capacitor designs to complex EMC/EMI filter products for ground, naval and airborne applications.

The Company is certified to ISO9001:2008 and employs in excess of 50 people, including 5 experienced design engineers with over 100 combined design years' experience.

## Engineering

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MPE has been designing high performance EMC filters and specialist capacitors for more than 50 years.

All designs are carried out using bespoke software and strict design rules to ensure quality, reliability and maximum production efficiencies. Latest materials and techniques are continually evaluated and optimised to provide the best practical performance and deliver the greatest purchase economy benefits to the customer.

Metallised plastic film was adopted by MPE as a standard capacitor technology more than 30 years ago due to its many significant advantages over more traditional oil filled paper designs. This plastic film technology is well proven in the field and is now accepted as the industry preferred technology largely due to its superior longevity and reliability coupled with its increased safety.

MPE specialise in the design and manufacture of feedthrough capacitors which are essential component parts of filters required to operate at a frequency above a few tens of MHz. These are incorporated into many state of the art filter designs used to satisfy the latest high performance HEMP and TEMPEST requirements.

All design is carried out in house at MPE which permits prototypes to be developed and produced rapidly and with great flexibility. Custom designs form a significant part of the MPE capability and with over 20,000 designs on file, a wealth of experience can be called upon when addressing new and challenging requirements.

MPE's design laboratory has a number of specialist test capabilities to allow in house evaluations of new designs. Tests which can be carried out at MPE include: EMC pre-compliance; pulse injection; insertion loss DC – 4GHz; shielding effectiveness and high current.



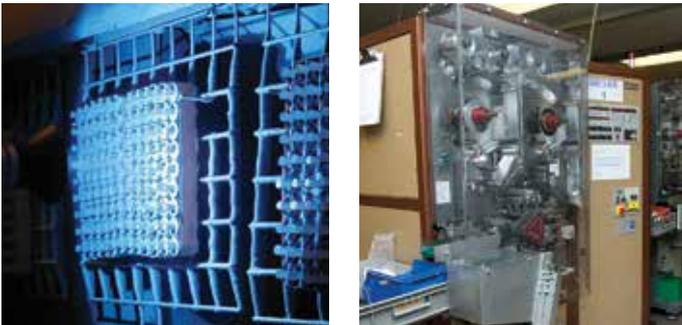
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## Manufacturing

MPE embraces and fully utilises current processes and techniques to enhance the quality of our manufactured products whilst optimising cost efficiency.

MPE's assembly and test team operate in a cell based structure with dedicated areas for feedthrough capacitor manufacture; coil winding; fabrication; machining; resin encapsulation; paint finishing and high voltage testing. Collectively these teams have many hundreds of years' experience of manufacturing complex, high reliability, bespoke components and products to the exacting performance and environmental requirements of the military marketplace. All MPE products are 100% tested prior to despatch.



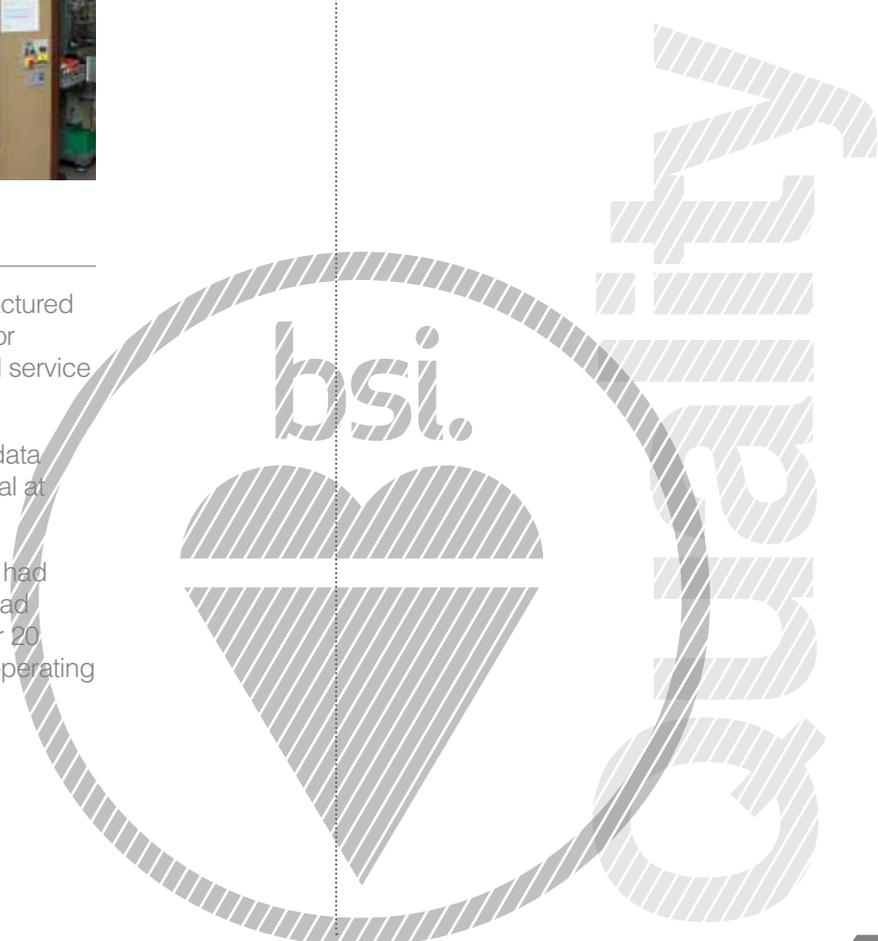
## Reliability

During the last 30 years, MPE has designed manufactured and shipped in excess of 8 million filter and capacitor products. Many of these products have been in field service for over 20 years.

Having interrogated and analysed customer return data of power line filters, the product return level is minimal at 0.012%.

During 2011, following an installation upgrade, MPE had the opportunity to analyse 40 power line filters that had remained in continuous service with the UK MOD for 20 years. Following test, all 40 filters were found to be operating within their original specification.

**All our critical components are manufactured in house, ensuring quality of the highest standard.**





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