

# Delivering global protection



Counter-IED | Countermeasures | Munitions | Pyrotechnics



Counter-IED



Countermeasures



Munitions



Pyrotechnics



# Chemring Group

## Innovating, defending and protecting

Chemring is a global group that specialises in the manufacture of energetic material products, countermeasures and counter-IED solutions.

We provide a range of high technology products for specific customer requirements in defence, security and safety markets in more than 80 countries. Chemring companies are involved in major defence development programmes around the world.

### Always ready to respond to the needs of today's armed forces and security services

Originally founded in 1905, Chemring Group now employs more than 4,000 people at operations in the UK, US, Belgium, France, Germany, Italy, Norway, Spain and Australia.

Due to the changing nature of global threats Chemring has always developed its volume manufacturing in line with the need to be flexible and respond rapidly. We have a long history of rapid response. Within weeks of the start of the Falklands Conflict, Chemring opened a new factory to provide aluminium glass chaff-countermeasures against sea skimming anti-ship missiles that were threatening the British fleet.

Chemring moved into IR decoys in 1986 by acquiring pyrotechnics specialists Pains Wessex and later Hayley & Weller. In 1991 Chemring was again able to respond with increased output for the first Gulf War.

With over 50% of the world market, Chemring Group is now the largest supplier of advanced expendable countermeasures in the world.

### Soldier, sailor, airman. They all deserve the best protection

Since 2005, Chemring has extended its technical capabilities in the field of energetic materials by targeted acquisitions which have built a lead in focused niches such as satellite deployment, aircrew egress, marine pyrotechnics, precision fuzing and energetic materials production. We have also added capabilities in adjacent niches including: IED detection and electronic warfare.

All require reliability in use, to work first-time, every time, and all require safety in transport, handling and storage.

Chemring is currently conducting "Insensitive Munitions (IM)" research and development across a range of products to ensure they meet the latest requirements for safe handling and use.

And our portfolio is constantly developing to counter emerging threat technologies, reflecting our commitment to meet new needs and situations. We are continually developing products that offer greater flexibility and portability to meet the demands of modern warfare.

We are the largest provider of decoys to the US Department of Defense and supply the majority of UK Ministry of Defence's countermeasures and military pyrotechnics.

### Protecting your assets with the best value

Long-standing customer relationships have been developed by close co-operation between our expert staff and customers - from the first point of contact through to delivery and after-sales support. As defence budgets are stretched we offer greater value through 'whole of life' support, in-service surveillance and life prediction.

### Chemring's core capabilities are in the development, test and manufacture of energetic material and force protection products

We apply these capabilities to the manufacture of base energetic materials, compositions, components, sub-systems and complete systems, ranging from tiny detonators to advanced Ground Penetrating Radar (GPR) for the detection of buried explosive threats. We also provide products and services across the full lifecycle of products from their inception through to final safe disposal.

As an innovative company, we continually invest in technology, people and research to provide state-of-the-art products that meet the needs of customers worldwide. Our philosophy is to establish centres-of-excellence for each of our strategic capabilities.

With an unparalleled capability in modelling and simulation we provide our clients with reliable, verifiable and quantitative information about their system performance and operating scenarios.

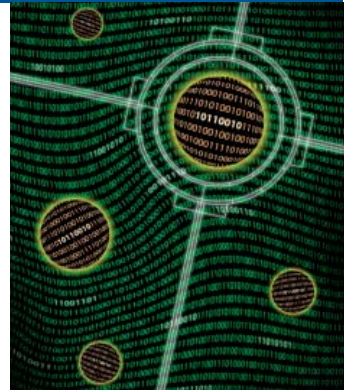
Our scientists and engineers work closely with government and other industry partners to research and develop facilities in the areas of:

- Expendable countermeasures
- Explosive technology services
- Pyrotechnics
- Concept demonstration
- Capability modelling and assessment
- Environmental test facilities
- Prototype engineering
- Performance assessment
- Test facilities and ranges
- Self Organising Networks (SON) prototyping



Husky HMDS checks a road for mines and IEDs in Afghanistan.

# COUNTER-IED



## Cyber-security, CBRNE, mine clearance, EOD and military demolition solutions.

Our aim is to become the world-leader in the global counter-IED market with high technology products to detect, disable and defeat the threat posed by either buried or surface IEDs.

With countermine and route clearance operations becoming increasingly important to enable modern peace-keeping, our mine and obstacle breaching systems are tailored around these threats. We are also a leading developer of robot and vehicle-mounted mine detection systems incorporating advanced Ground Penetrating Radar (GPR), metal technologies and algorithm technologies.

We can support rapid deployment of countermeasures against mines and Improvised Explosive Devices (IEDs) with exports to the defence and security sectors in over 60 countries worldwide.

Chemring has developed a complete capability in demolition stores to meet the needs of military users for conventional munitions disposal, field engineering and explosive ordnance disposal. We provide the full range of products across the explosive train, from electric and igniferous initiators to intermediaries, including cords and components, and main charges, both bulk explosive and cutting charges.

We are an industry-leading designer and manufacturer of low volume high reliability detonators and initiators for demolition and counter-IED.

Chemring offers our customers an advanced line of point and standoff chemical and biological agent detectors and standoff explosive detection systems.

Chemring is the largest supplier of chemical and biological detection equipment to the US Department of Defense.

### Our products and capabilities include:

#### Detect

- Vehicle-mounted detection systems
- Stand-off IED detectors
- Remote IED inspection equipment
- Under-vehicle surveillance systems
- Chemical and biological detection systems

#### Disable

- Electronic countermeasures

#### Defeat

- Remote initiators
- Detonators
- Explosive charges
- Minefield clearance systems
- Recoilless de-armers/disruptors

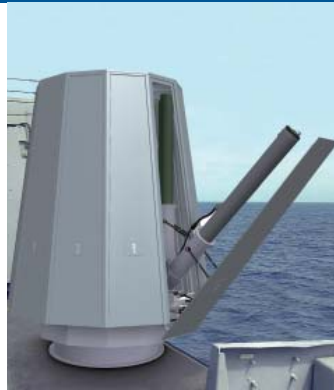
We also produce a range of technologies for counter-terrorism and cyber warfare, including the Vanguard system that provides a scalable modular lawful intercept product that is deployed on five continents.

World leader in counter-IED ground penetrating radar



USAF AC130 Gunships are protected by Kilgore Flares.

# COUNTERMEASURES



## Electronic and expendable countermeasures for land, sea and air systems

In modern warfare, air, land and naval operations are under constant threat from guided missile systems. So our assets, personnel and the missions they are conducting need constant protection by the most reliable and effective countermeasures available.

Chemring Group companies are the world leaders in the design, development and manufacture of advanced expendable countermeasures and countermeasure suites for protecting air, sea and land platforms against guided missile threats. We protect people, platforms and missions with our range of:

- Conventional and advanced flares
- Special material decoys
- BOL IR
- Chaff
- Naval countermeasures
- Naval decoy launchers
- Electronic intelligence equipment
- Offboard electronic RF countermeasures

### Support

We are proud to be a pioneer in the design and manufacture of passive RF expendable countermeasure materials and payloads. Chemring was the first expendable IR decoy flare manufacturer to introduce full automation to the decoy manufacturing process in a manner that delivers advances in safety and quality not seen before. This capability, coupled with our strict compliance to ISO9001:2000 requirements, rigorous Six Sigma quality techniques and the highest levels of personnel and equipment safety, assures customers of unprecedented quality and on-time delivery.

### Land

The demands placed on communications surveillance and attack systems have never been so complex. Electronic Warfare (EW) operations in today's battlespace require intuitive, lightweight and rapidly deployable systems to monitor the constantly changing communications environment. In today's contemporary operating environment there is a need to understand a potential threat and get inside the adversary's Observe, Orientate, Decide, Action (OODA) loop.

### Sea

Chemring is the world leader in "soft kill" protection against anti-ship missiles. We have unrivalled expertise in naval electromagnetic countermeasures, and we provide both radar-reflective and IR payloads and complete rounds for most current NATO compatible systems.

Chemring's latest naval countermeasure innovations, which are compatible with all 130mm launchers include a wide range of tailored payloads, extended frequency range chaff, multi-payloads including obscurants. These new capabilities are further optimised when deployed from Chemring's innovative, fully trainable 130mm launcher - CENTURION®, and offering the ultimate passive solution to counter current, emerging and future missile threats.

### Air

The comprehensive product range is based on proven 'Threat Driven Solutions' to protect all types of front-line strike, fighter and transport aircraft as well as Attack, Utility and Transport Helicopters. Our proprietary decoys have the unique properties of day and night visual covertness and in-band radiant output.

World leader in expendable countermeasures



British Army soldiers firing an 81mm mortar.

# MUNITIONS



## Medium-to-large calibre ammunition for artillery, mortars and missiles.

Based on our advanced technologies in proximity fuzing, energetic materials, warhead design and propulsion, we are leaders in key niches including naval, medium and large calibre ammunition and 40mm grenades.

Chemring also supplies energetic components to ammunition and missile prime contractors including ignition cartridges (such as primers used in 120mm tank ammunition), illuminating cartridges (such as the MK-4 used in aerial practice bombs), and a variety of grenades.

As a major defence contractor, we have been involved in high volume military program types such as:

- Torpedo projects
- Fuze programmes
- Aerial delivery and recovery systems
- Artillery and mortar fuzes
- Bomb fuzes
- Demolition programmes
- Missile development

### Sea

Chemring subsidiary, Simmel Difesa is the leading manufacturer of naval ammunition and advanced fuzing in 40mm, 76mm and 127mm calibres.

### Land

We are a specialist manufacturer of medium and large calibre ammunition (25 to 155mm for various models of conventional and new generation weapon systems), rockets and illumination mortar rounds for a substantial number of NATO and non-NATO armed force

Chemring produce a family of 40mm traditional LV and HV rounds and our revolutionary Mercury Extended Range (ER) LV rounds for under-slung infantry rifle grenade launchers which doubles the effective indirect-firing range. Mercury transforms the capability of in-service low velocity grenade launchers by offering double the effective range of conventional low velocity ammunition. The round is designed to be fired from current in-service, under-slung grenade launchers carried on standard infantry rifles and deployable from both multi-shot and single-shot standalone weapons. Mercury provides the dismounted soldier with an increased indirect firepower capability at ranges out to 800m and the ability to accurately engage targets in direct fire to ranges over 100m.

Chemring has a purpose built facility that was selected and designed to perform melt pour, x-ray explosive pressing, and load, assemble and pack (LAP) of all associated products to support customers' short-term manufacturing shortfall or handle customer-brand needs across a full range of calibres and projectile types.

We have in-house facilities available for explosive loading, propelling powder manufacture, integration lines for ammunition and rockets, and assembly and testing of mechanical and electronic fuzes. We provide a "whole of life" munitions solution to prime contractors and end-users including conducting in-service surveillance and life prediction.

World leader in naval ammunition



Hawk trainers are fitted with Chemring Energetics canopy cutters.

# PYROTECHNICS



## High quality pyrotechnics and pyromechanisms for military, security and space applications

When military or civilian lives are endangered, their last resort cannot let them down. Whether they be from armed forces, rescue services, merchant shipping, fishing fleets or recreational sailors, around the world personnel and civilians put their trust in products made by Chemring. Pains Wessex and Comet, the leading brand names in Marine Distress Signals, offer a full range of SOLAS/MED approved marine pyrotechnics that includes distress flares, line-throwing devices, floating smokes, life-raft signals and man-overboard markers.

These products are trusted for their reliability and superiority.

In the military field, realistic training is important to prepare troops for combat - our products bring battlefield or urban warfare conditions to life with realistic simulators to help your personnel be as prepared as possible when they go into areas of conflict.

In modern asymmetric warfare, the ability to see without being seen, as well as the ability to rapidly conceal oneself are critical. Chemring's advanced military pyrotechnics provide:

- Multi-spectral screening smokes and obscurants in the infra-red as well as visual wavelengths.
- Battlefield illumination in visible and infra-red (IR) wavelengths for use in search and rescue, identification, illumination and perimeter defence.

Chemring is a leading developer and manufacturer of high quality military and marine pyrotechnics to meet the demanding requirements of defence and internal security operators and civilians all over the world with:

### Smoke and illumination

- Signalling - smokes, flares and IR markers
- Screening and obscuring
- Illumination
- Training and simulation
- Law enforcement and crowd control
- Pyrotechnic rounds
- Pyrotechnic payloads for munitions

### Air and Space

In aircraft and space applications where safety and reliability are critical, we manufacture a range of pyromechanisms. These products include rocket motors, pyrotechnic transmission cords, actuators, valves and sequencers, separation nuts and bolts, low shock pyrotechnic satellite separation systems, space-qualified initiators and canopy cutting charges and cartridges, and aircraft weapon ejector systems. These safety-critical applications require the highest standards of product reliability and safety, underpinned by rigorous manufacturing and quality control processes.

### Our products include:

#### Space and satellite launch

- Power cartridges
- Initiators
- Separation sub-systems
- Thrusters and actuators

#### Safety systems

- Rocket motors
- Canopy cutting charges
- Cartridge actuated devices

Leading military and marine pyrotechnics

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