INTERNATIONAL Expertise in innovative road and rail infrastructure The worlds No.1 in counter-balanced technology
Crown International Ltd was established in 1991 as a specialist designer and fabricator of road and rail infrastructure products.

Common to what we do is the desire to produce innovative designs which solve problems in a cost effective way using our knowledge and expertise gained over the last 20 years.

Selling into markets across the globe, we continue to supply the world’s leading companies with road safety and enforcement equipment. To date over 6000 of our systems have been installed and are in use worldwide. We have recently introduced the Crown SmartPole™ as an evolutionary product and the first of these have been installed in the UK during 2010. Whilst this maintains the advantages of the original, the enhanced counter balanced system has enabled us to make the product more aesthetically pleasing and less susceptible to vandalism.

A unique feature of our products is the counter-balanced mechanism. This allows equipment be lowered by a single operator for maintenance purposes, who can then complete his task working at ground level. This both reduces the cost of maintenance and provides a major health and safety benefit.

Taking this thinking forward we have created 2 new innovative designs, the Crown VMC™ and Slip Road™ Poles. Both of these were deployed during 2010 on the M4 in Wales, creating significant savings versus other solutions and delivering major health and safety benefits. The design of the VMC™ has been recognised by its winning of awards from the CIHT, Highways Magazine and the Intertraffic 2010 Innovation Award.

We are committed to innovation and continue to extend our designs into other roadside projects such as CCTV and mobile units.

Our rail-side products are equally recognised as both innovative and cost effective. We have worked closely with Network Rail to design a gantry mounted system, which provides for a clearer sighting of the signal for drivers. Over 300 of these systems were installed on the West Coast Line during its recent upgrade.

As well as our unique product and the expertise in metal fabrication built up over many years, we have created an in house design capability. This continues to produce interesting and one-off designs for our customers and to provide us with vision for future developments. We have extended our thinking to designing new products for the renewable energy sector.

We are ISO 9001 Certified and manufacture to the highest possible local and international standards. We work with customers such as Atkins, Balfour Beatty, Siemens, Network Rail, Welsh Assembly Group, Serco, JenOptik, Truvelo, Redflex, Redspeed International and Gatso.

Justly proud of our heritage and our new products Crown continues to offer its customers world leading quality solutions in road and rail infrastructure.
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DESIGN SERVICES

Crown International has a highly skilled, multi-disciplinary work force that is able to take any project from concept to reality. Our in-house design staff can design and visualise concepts using sketches and computer renderings then working closely with the client, use our knowledge and experience to develop the project until the desired product is ready for manufacture. Using the latest CAD software we are able to reduce the cost of development, whilst maintaining accuracy and quality. With our unique development process projects are managed efficiently, optimising our productivity and thus reducing development times.

CONCEPT GENERATION

At Crown International we work closely with our clients to outline a detailed product specification. When this has been obtained the project will enter the idea generation phase.

Using a diverse range of idea generation techniques our design team will produce a wide range of concepts. We communicate our concepts to the client using sketches, sketch renderings and quick CAD models. Our ability to produce these quick sketches and CAD models allows us to liaise efficiently with our clients during this highly iterative process.

DESIGN DEVELOPMENT

Our highly skilled design team use the latest 3D software to digitally prototype the concept into a production ready product. We can use the system to analyse part interaction, weight, centre of gravity, strength and its overall design aesthetics helping us reduce development times considerably.

We also offer FEA (Finite Element Analysis): this software gives an in-depth analysis of kinds of stresses and strains the product may experience, it helps rule out structural failure of a product or part at the early stages of the development.
We are a British manufacturer who takes pride in the quality of our products, using the latest technology to produce precision engineered components. We manufacture and assemble our products on site; our team has a combined experience of over 200 years. This experience combined with a flexibility of mind and approach means they are able and willing to take on even the toughest of projects.

In the past we have worked on a wide range of custom products within the road and rail industry. In addition to our bespoke speed camera cabinets and poles we have worked on cabinets for automated vehicle occupancy detection, trailers for speed camera equipment and speed cameras with built in variable message signs. We also offer high quality custom designed ground mounted cabinets at very competitive prices. However though we have vast experience in road and rail products, our design and manufacturing teams have the capability and experience to problem solve regardless of the industry or field of work.

Building a prototype allows us and our clients to get hands on with the product; it enables us to spot any ergonomic and physical issues that may have been difficult to see on a digital model. We can then go back to our digital model solve any issues we may have found and fine tune it for full scale manufacture. We can build both full size and scaled prototypes for our clients; these often then go on to be used at exhibitions and for IP testing.

PROTOTYPING

MANUFACTURE

EXAMPLES
Crown International Ltd is consistently looking to improve our existing product set and introduce innovation to our customers.

This year we have launched four new designs into the market, three of which are featured on the following pages. The third is on trial in the market and represents a remodelling of an existing design to make it more applicable to developing markets.

In addition we are pursuing ideas in new designs for cabinets, cabinet internals and CCTV poles as well as contributing to some new thinking for highways maintenance equipment. In all of this we are led by our close relationships with our customers and our knowledge of the problems they face.

We are also keen to examine possible application of new materials and combine existing materials into new ideas, where this will provide a distinct advantage to the end customer.

At the heart of this philosophy is the desire to extend our expertise in counter balance technology into resolving the issues of maintenance cost whilst ensuring the safety of operatives and the public. We are also keen to produce something which has a true aesthetic appeal and which adds to the environment and which distinguishes us from some of our competitors.

**Lightweight Twin VMC™**
A twin armed, lightweight version of the VMC Pole™. Benefiting from the rotation and lowering mechanism to easily access the equipment at ground level.

**Lightweight VMC™**
A lighter weight version of the VMC Pole™. Still with both the rotation and lowering features it has been designed to hold lighter weight equipment such as traffic signals, ANPR and CCTV cameras over larger spans.

**Lowering CCTV Pole**
The Lowering CCTV pole is a counter balanced pole that has been designed to lower CCTV cameras down to ground level for safe maintenance and repair.
The Slip Road Pole™ is based on our already proven CESS Pole. It allows the user to lower a variable message motorway sign down to ground level for maintenance. It is mounted at the side of the carriageway and is commonly used on slip roads in conjunction with our VMC Pole™ on the main motorway. The pole can lower the sign down to ground level, once at ground level it can be rotated around so that the operator can gain access to the back of the sign for maintenance.

It delivers significant cost savings over fixed posts, removing the need for ladders and additional safety and access equipment when maintenance is required. The pole’s first implementation will be on a managed motorway scheme in the UK.

Designed to fulfil a number of functions the Slip Road Pole™ will be used for mounting motorway sign equipment as well as traffic monitoring and enforcement equipment. However, the design can be extended to other applications and can be both upscaled and downscaled depending on need.

**BENEFITS AND FEATURES:**
- Functional design
- Reduced equipment maintenance costs
- Safe ground level access to the mounted equipment
- Multiple Applications - Matrix Signs, CCTV, Tolling, ANPR
- Bespoke lengths & heights available on request

**OPERATION GUIDE:**
- Unlock the pole and open the door handle
- Release the support arm lock
- Disengage the support arm
- Now open the door
- Pull down the “T” bar handle
- Release the “T” bar from the saddle of the handle
- Use the “T” bar to effortlessly lower the equipment
- Release the rotation locking pin
- Rotate the sign to a convenient angle
- Maintain your equipment
- Reverse the above steps to close the pole
**VMC POLE™**

**BENEFITS AND FEATURES**

- Contemporary and functional design
- Safe ground level access to the mounted equipment
- Reduced equipment maintenance costs
- Failsafe operating procedure (cannot be lowered into the highway)
- Multiple Applications - Matrix Signs, CCTV, Tolling, ANPR
- Bespoke lengths & heights available on request
- Single person hand driven operation
The VMC Pole™ is a rotating and lowering counter balanced cantilevered pole. Supporting sign or surveillance equipment it will be mounted by side of the carriageway. The pole can be rotated off carriageway and then lowered for access to the equipment mounted on it to allow for repairs and regular maintenance. The inbuilt safety features ensure the pole must be fully rotated before the lowering mechanism can be driven.

Designed to fulfil a number of functions the VMC Pole™ will be used for mounting VMS equipment as well as traffic monitoring and enforcement equipment. However the design can be extended to other applications and can be both upscaled and downscaled depending on need. Development on VMC Poles™ to mount CCTV cameras and traffic signals are currently underway.

The VMC Pole™ delivers huge safety benefits by eliminating the requirement of set out for lane closures. Removing the need for set out reduces the exposure of operatives and road workers to a live carriageway, decreasing the risk of serious injury or fatality. It also provides significant cost savings over fixed posts, removing the need for lane possession and additional safety and access equipment when maintenance is required.

A new and innovative design, already winning three industry awards. The pole’s first implementation is on a managed motorway scheme on the M4 in the UK.

OPERATION GUIDE:
1. Unlock the pole
2. Release rotation locking pin
3. Wind the handle to rotate the pole
4. Once the pole has rotate through a minimum of 90 degrees the lowering locking bar will be able to be released (the pole has been designed so that it is not possible to release this handle until the pole has rotated a minimum of 90 degrees)
5. Release the lowering locking bar, once this is released the pole can now be lowered
6. Wind the lowering handle to lower the arm to ground level
7. Lock the arm in the desired position (can be locked at any height)
8. Maintain your equipment
9. Unlock the arm again and wind the arm back up into position
10. Engage the lowering locking bar (this can only be engage when the arm is in its up most position and until it is engaged the pole will not rotate back over the road)
11. Once the pole is back over the road the rotation locking pin can be engaged
12. The pole can now be locked
SMART POLE™

These designs have adopted the visual language of contemporary street furniture. They are the next generation of roadside safety and enforcement equipment. By keeping the renowned counter-balanced CrownPole™ system and improving on vandal protection, a quality product has been produced. The unique ability to lower the client’s equipment to ground level makes the Crown SmartPole™ the perfect choice for low cost and safe maintenance.

GROUND LEVEL ACCESS

The Smart Poles™ clever lowering mechanism is both easy and safe to use. A single person can operate the system without the need for a ladder or any lifting equipment. There is a lowering handle provided that is stored inside the door. This locates into the throat section of the cabinet and is used to pull the equipment down to ground level. It is then secured in the lower position and the equipment is fully accessible to the user.
Ground level access for safe and easy maintenance of equipment
2 Modern cutting edge design
3 High precision self-lubricating linear guides & other component parts 304 S/S
4 IGP Korroprime Zinc Rich Powder Coated to EN ISO 2360:199 – 10-15 year warranty (terms and conditions apply)
5 High security MUL-T-LOCK locking mechanism & keys
6 Manufactured to BS EN ISO9001 standards to ensure quality & reliability
7 Reduced vandalism opportunities
8 Separate lower compartment for secure storage of electronic equipment

Crown International have spent the last two years developing their innovative new range of Crown SmartPole™ products. They work closely with each specific client to ensure that their bespoke design meets their aspirations both aesthetically and technically.

**REDFLEX**
Redflex Traffic Systems Pty. Ltd is a major force in vehicle monitoring and enforcement services globally. They were the first to get the Crown SmartPole to market and are having worldwide success with the product.

**JENOPTIK/SIEMENS**
Robot has grown over the last 75 years, from a manufacturer of cameras for the photo amateur, to a world leader of digital camera technology for the purpose of traffic monitoring. We currently supply them with two types of cabinet, one for the home market and another for the international market.

**TRUVELO**
Truvelo UK is an affiliate of Truvelo Manufacturers (Pty) Ltd of South Africa who have been involved in law enforcement products for over 40 years. Truvelo use our Elliptical SmartPole to mount their Bi-directional digital cameras.

**SERCO/GATSO**
Gatsometer BV have been using Crown poles since they began installing roadside enforcement systems in the UK. Serco have been Gatso’s UK agent since 1984 and have been working closely with us to develop a bespoke cabinet for the Crown SmartPole.
The Crown Pole™ uses a counter-balance system to lower the client’s equipment to ground level for effortless and safe maintenance. This simple mechanism is still operational on installations over 15 years old. Crown International has installed thousands of these poles worldwide. The Crown Poles™ have become synonymous with road safety. Unique design features have made the CrownPole™ the most successful roadside safety camera enclosure, both in the UK and worldwide. With over 6000 installations it established Crown International as a world leader in the design and manufacture of both poles and cabinets for the roadside safety market. We supply all major speed camera vendors with the CrownPole™ along with client specific cabinets, including Gatso/Serco, Truvelo, Redflex and Robot.

This product is one of the only poles we design/manufacture which excludes the requirement for the lowering of equipment to ground level. Currently used by Redspeed International throughout Europe, with many hundreds of installations in the London area alone.
Crown International has been designing and manufacturing cabinets for over 15 years using materials such as stainless steel, aluminium and mild steel. They are offered in a wide range of finished including metal sprayed, galvanised or painted to any colour in the RAL or BS4800 range.

All the cabinets can be fitted with high security MUL-T-LOCK locking mechanisms and any cabinets containing a power supply can be fitted with fireman access locks.

We have a range of standard cabinets that are available including sizes suitable for use with 19” racking equipment. Alternatively we have the in house capabilities to design and manufacture bespoke cabinets to your exact requirements or cabinets can be produced to a supplied set of drawings.

We offer extremely competitive prices by using the latest design software & manufacturing techniques including laser cutting and CNC bending.

**BENEFITS AND FEATURES:**
- Functional design
- Available in standards sizes
- Bespoke sizes on request
- High security MUL-T-LOCK locking mechanism on request
- IP65 rated
- Available in any RAL or BS4800 colour or Galvanised finish
- Stainless steel, Aluminium or Mild Steel construction
- Option of extraction fans and extra ventilation slots
- Internal fire-proofing also offered

**PRODUCT APPLICATIONS:**
- Roadside cabinets
- Railside cabinets
- Internal electrical enclosures
- Portable electrical enclosures
- Roadside pillars
- Telecoms cabinets

The Crown Tripod is used by police for mobile speed enforcement.

This portable product has been designed to be extremely sturdy to ensure that the mobile equipment can be accurately calibrated.

Its three legs are fully adjustable to allow for complete stability during use.

The tripod has multiple access doors to allow full access to the enclosed equipment.

The tripod enclosure is IP55 rated to ensure that the enclosed equipment stays dry during use on rainy days.
The Crown counter-balance Cess Pole is permanently installed at trackside on a concrete or pile foundation. They are available in heights to suit the specific location and signal requirements. Adopted from the Roadside CrownPoleTM this design features a variable counter-balance lowering mechanism which enables ground level access operated by a single engineer.

The Crown Cess Post is positioned to attain equal distance between the centre-line of the signal head and track and the centre-line of the post and track. The design provides robust support for various combinations of signal head equipment. The function of the post is to provide improved safe access to the signal head equipment for maintenance purposes. The post is relatively maintenance-free and incorporates a number of “duplicated” safety features to safeguard personnel and equipment when carrying out maintenance activities.

Designed to comply with British Standards, BD51/98 Portal and Cantilever Sign and Signal Structures, and relevant Railway Group and Company Standards.
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**PRODUCT DESIGN AND OPERATION OVERVIEW:**

1. The gantry post signal head equipment, mounted on a signal head platform (moveable carriage) is connected, via a chain and sprocket mechanism, to a moveable and adjustable counter-balance weight carriage.
2. The signal head carriage is fitted with a wheel-block (roller) assembly that runs in guide rail channels formed by the post structure.
3. The chain and sprocket mechanism and counter-balance weights ensure that minimum effort is required to raise or lower the signal head into position.
4. The chain and sprocket mechanism and counter-balance carriage are located inside the post which has a lockable door. The door allows access to the counter-balance mechanism and, when fully closed and locked, ensures the signal head remains in its fully lowered operating position.
5. Two dampers, located at the top of the post, one mounted inside the post parallel to raise/lower hand-wheel, and the other just below the post end cap, cushion the signal head from a hard impact when it is raised or lowered to the full extent of its travel.