The ModuCon™ Modular Containment System

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Cover pictures show:
Left: site installation of ModuCon™ with large removable roof;
Centre: the control centre of the Nuvia NORM Descaling Facility at Winfrith where high pressure water jetting is used within a ModuCon™;
Right: operators processing tritiated lithium metal inside a ModuCon™ unit.
ModuCon™ Modular Containment System

The problems associated with temporary containment such as integrity and secondary waste arisings are largely overcome with the ModuCon™ system. The modular concept offers a versatile, robust containment with few technical or safety limitations.

Originally developed at the Winfrith Technology Centre, ModuCon™ has been employed for over 20 years in maintenance and decommissioning operations involving plutonium and other radioactive/toxic materials. During this time ModuCon™ has established an enviable track record.

In all cases the installations have proved an invaluable asset to the diverse tasks associated with decommissioning by providing a practical professional solution to each temporary containment problem. Many panels in use today are several years old and stand testimony not only to the durability and flexibility of the components but also to the concept of the re-usable system.

Integrated units for HEPA ventilation, waste ports, air locks, boot barriers and access, provide a complete system for contamination control and facilitate safe and productive working.

The ModuCon™ System

Why do you need ModuCon™?

Many industries have a need to control the release of toxic material from plant or processes. This is particularly true during maintenance or dismantling operations, when extra precautions are often required. There may also be a need to provide a dust free environment (clean room) for handling materials or delicate equipment to BS EN ISO14644 classification.

Problems can arise in dealing with:

- Radioactive materials
- Toxic chemicals
- Pharmaceuticals
- Asbestos
- Biologically active materials
- Malodorous materials
- Hazardous wastes

These days, plant operators have to comply with increasingly stringent regulations and the principles of ALARP or BATNEEC. Often the plant in question was not designed to meet today’s standards. The ModuCon™ Modular Containment System is an enclosure that is assembled from glass-reinforced plastic panels (GRP). It allows the user to construct a very effective containment around plant or equipment to prevent the spread of toxic material. Alternatively, the system can be used to form a modular clean room, allowing (for example) work to be carried out on delicate machinery within a dirty environment.

ModuCon™ minimises or eliminates production of secondary waste. By comparison single use tents can produce large volumes of waste.

The modular construction allows an enclosure of almost any size and shape to be assembled quickly and cheaply. After use, the system is easily cleaned, dismantled and stored flat, ready for re-use.

ModuCon™ offers benefits to all industries that handle hazardous materials. It offers:

- Wider scope of operation
- Increased safety and productivity
- Reduced waste arisings
Construction, Operation and Dismantling ModuCon™

Erection of the designed containment may be carried out by a Nuvia team or by customer staff; a combined team is often the best. First the floor is prepared, and the requirements for this vary. Existing substrates may be utilised or covered with a heavy duty strippable coating. However, a false plywood floor is often laid to provide a firm platform and working base. The false floor is overlaid with tough PVC and protective coatings. When wet operations are to be carried out an integrated steel bunded base can be provided.

Assembly is simple and quick using bolts through the flanged panels.

In preparation for radioactive or toxic operations the containment is sealed and protected by application of a pliable coherent coating (tie down coating) which can be easily removed later by physical stripping. The coating is applied by airless spray, for speed and efficiency, but it may also be applied by brush or roller in smaller units.

Air extraction is desirable and often mandatory to ensure controls are adequate to contain the hazardous material. Existing building extract systems can only occasionally be utilised and so mobile ventilation units are incorporated in the design to ensure that correct depression and flows are maintained. The extract systems vary in size and sophistication to suit the task in hand; for example a small containment handling wet, low toxicity wastes could use a considerably simpler extract plant than decommissioning glove boxes containing dry plutonium oxide.

For the control of wastes the ModuCon™ system incorporates purpose built waste ports to allow direct packing into drums outside the containment. This avoids repeated handling and contamination of the drum.

Operations within ModuCon™

Safety cases have been prepared to permit a wide range of operations within ModuCon™. For example, plasma arc and other size reduction cutting methods are used in decommissioning work and ultra high pressure water jetting is currently deployed in descaling and other decontamination tasks. During work, entry and exit procedures must be strictly followed to prevent spread of toxic material. Often, a supplementary unit is attached to allow for change of personal protective equipment (PPE), washing or showering as the hazards dictate. A purpose built shower tunnel or air lock is necessary for highly toxic materials, but often a simple containment is adequate.

During dusty operations involving particularly toxic materials such as plutonium, asbestos or beryllium, successive tie down coatings may be applied to fix dusts and reduce airborne risks and recontamination. This is now routine housekeeping practice at many establishments and not only reduces risks but can reduce the PPE requirements as the job progresses, from full air suits to free breathing.

Dismantling and Re-Use

On completion of the work a final tie down coating is applied to the inside of the containment. This sandwiches contamination between layers. This is then removed by physically stripping the coating for safe disposal and producing minimal secondary waste. The panels are left clean and can be handled and transported without any special precautions. ModuCon™ panels have been re-used many times in different configurations and on different sites or facilities.
A Complete Service

The Modular Containment System has been used by Nuvia and its clients for many years. It was originally developed for the decommissioning of plant contaminated by plutonium. The system has an impressive track record of over 20 years reliable routine use with highly toxic and radioactive materials. It is now widely used in the nuclear industry for maintenance, decommissioning and waste handling purposes.

Our experience of users’ problems has shown that the system often provides the only solution that offers an acceptable combination of safety and economy.

The ModuCon™ system is tailored to suit the requirements of each user, and the enclosure can be as large or small, simple or complex as the job demands. The standard panels (900 mm wide) are easily handled and assembled. Non-standard panels are readily available and the enclosure may incorporate any of the following options:

- Entry/exit area with (optional) shower or wet swabbing area
- Ports for material “posting” and services
- Windows for viewing and lighting
- Mobile ventilation and filtration plant
- Lifting equipment

Support Services

Other services that can be supplied with ModuCon™ include:

- Consultancy and advice on potential applications of ModuCon™ design from experienced users.
- An efficient installation service.
- Training or advice in:
  - planning and estimating tasks employing ModuCon™
  - ModuCon™ working methods
  - pressurised suit working
  - use of associated equipment and decommissioning tools

ModuCon™ customers profit from Nuvia’s extensive experience in handling hazardous materials, and may contract with Nuvia for a complete decommissioning, decontamination and waste disposal service.

Nuvia is the UK’s largest independent provider of radiation safety services. A full Health Physics service can be provided if the tasks involve working with ionising radiation.

Nuvia can provide:

- Initial consultancy
- Operational advice
- Workplace monitoring and instrumentation
- Routine and emergency dosimetry & record keeping
- Radiation protection advice and safety training
- Reactor outage support to the nuclear industry
- 24 hr, 365 day availability
- Nuvia also has a training ModuCon™ and can provide ‘Certificated Training Courses’ in the use of PPE and operational procedures within a ModuCon™/PSA.

Benefits

- Resources of a highly qualified and experienced team of professionals and technicians.
- Economic and efficient services to businesses.
- Assurance that:
  - Workforce and public are adequately protected
  - Statutory requirements are being met

We have Radiation Safety teams based at our sites throughout the country.
**Track Record**

A good example of our track record and the flexibility and safety of the system in adapting to various situations relates to the decommissioning of over 60 glove boxes used for mixed oxide fuel fabrication for over 20 years.

This work was carried out ‘in situ’ at Winfrith Technology Centre; the proving ground for the system and associated procedures. The work involved progressively dismantling, decontaminating and packing a variety of small glove boxes and larger fixed installations including ball mills, a heavy press and several furnaces. The furnace, standing over 2m high, was enclosed in an MCS fitted with a waste port and shower tunnel and sealed with a strippable coating in preparation for decommissioning. The furnace was dismantled and size reduced by operators in full air-fed suits and the waste drummed for disposal. On completion the containment was cleared and sprayed with a final tie-down coating in readiness to accept a number of smaller glove boxes for size reduction and disposal.

The two year programme was completed to time and cost. The containments were dismantled and cleaned ready for the final phase of work.

A containment was constructed adjacent to the laboratory pressurised suit area to fulfil two important functions:

1. Create a safe, sound working environment for decommissioning operations including:
   - decontamination using water jetting
   - size reduction using hand tools
   - packing wastes for disposal

2. Replace the building services during operations prior to demolition, this included the removal of:
   - active drains
   - HEPA ventilation system
   - water, air and electricity

The work was completed safely with ModuCon™ playing a key role in decontamination and decommissioning operations: providing a safe and productive environment for workers and machines alike. The area occupied by this lab is now a green field site.

**Quality**

Nuvia supplies ModuCon™ solutions to customers' individual requirements. The Company’s quality and environmental systems are certified by LRQA to BS EN ISO 9001:2000 and BS EN ISO 14001:2004 respectively.
ModuCon™ GRP Panel and Component Specification

ModuCon™ panels are designed with safety in mind and have been developed and improved over many years of successful use in a wide variety of applications.

The panels and their various features are constructed exclusively from chopped strand glass fibre matting as a base, with various grades of polyester resin to support the shape and performance capabilities of the components.

Normal inclusions will be:

- PU Foam Quadrant - Corner stiffening
- Coremat (sheeting) - Face stiffening
- Polycarbonate Panel Windows, Tool Port & Posting Port Windows
- Silicone Mastic - Window sealant & corner filleting
- Encapsulated Timber - Typically in doors etc
- Plexus - High performance adhesive for brackets etc

The resins used are those with fire retardant properties, and are certified to BS 467 Part 7 (1997) class 1.

Panel make up
Polyester gel-coat resin.
Glass fibre chopped strand mat.
Polyester laminating resin.
Polyester flow-coat resin.

Surface finish
High gloss finish (gel-coated) on one face.
A flow-coat resin is applied to give a smooth decontaminable surface to the other face.

Appearance
Panels are normally pigmented white.
Other colours and translucent panels are available if required.

Standard sizes
Standard panels are 900 mm wide and 900, 1800, 2400 or 2700 mm high or long.
Panels > 900 mm are fitted with stiffening ribs.
Thickness 4 mm (typical).

Non standard Panels
Manufactured to specific client dimensions with standard or tailored features.
Maximum dimensions 2950 mm x 1200 mm.

Standard features
Posting Ports, Glove Ports, Oval Accesses, Windows, Doors and emergency exits doors, boot barriers and tool ports.

Fixing
Panels are equipped with 75 mm flanges which are pre-drilled for bolting with M8 x 25 mm stainless steel bolts.

Approx Weight
10.5 kg/m².

Fire resistance
Fire retardant panels are manufactured from materials designed to meet BS 467 Part 7 (1997) surface spread of flame class 1.

Water and Chemical Resistance
The chemical resistance of the panels can be adjusted to suit particular requirements.

Enclosure sizes
Containments up to 8 m wide and 6 m high can be constructed using a simple support system. Larger containments can be constructed to suit customer requirements.
**Typical Containment Layout**

A typical MCS construction and features available.

![Diagram of containment layout](image)

**Panel Specifications**

**Wall and Roof Panels**

When using a wall or roof panel to form a corner the width of the panel is normally increased to 975mm. An inside corner is achieved by fitting a reverse flange to one of the corner panels.
Window Options

Designed for easy cleaning, window panels can be fitted into both the wall and roof.

Features of standard windows:

- Glazing material - Standard fitting clear polycarbonate sheet
  - Optional reinforced glass
- Glazed area - 700mm wide x 500mm high (or to customer requirements)
- Position in wall panel (W24, W27) - 1550mm from floor to window centre line
- Position in roof panel (R9, R27) - Central
- Position in roof panel (R18) - Off set to one end

- Add /VW to panel code and specify any non-standard features.
- Multiple windows can be provided in a roof or wall panel to customer requirement.
- Polycarbonate windows can be provided when impact protection is required.
- Reinforced glass can be provided when using ModuCon™ for processing pyrophoric materials.

Access Port Options

The tool port allows work to be performed on equipment from the clean side of the containment.
A cabinet with storage shelves is provided.
The waste port enables waste material to be posted out from the containment into a nominal size 200L drum. A waste chute is provided which guides waste material into the drum. A bagging lip is provided which allows the port to be connected to the waste drum and sealed. Hot weld cutting of the PVC bag allows simple sealed drum changes.

Oval Access Port allows for personnel entry through W24 and W27 wall panels.

It is often fitted with a PVC 50% overlap clear strip curtain.

It can also be used to connect two ModuCon™ units together via a flexible sleeve.

Add / OP to panel code and specify curtain requirements.

Standard UPVC doors are set into a 900mm panel and have a small threshold; wider doors can be manufactured to customer requirements. It presents a smooth internal surface for easy decontamination. The standard door has a multipoint locking system complete with a mortise lock. However, it can be provided as an emergency door with a handle on one side and no lock. The doors can be hinged either left or right and can be inward or outward opening.
Standard double doors are set inside an 1800mm section giving an opening aperture of 1300mm wide.

The double door has no threshold allowing easy access for large items. Various door sizes, designs and fittings are available to suit particular requirements for access, security and sealing. The door surrounds other than the bottom edge are sealed using a soft rubber strip. The bottom edge can be manufactured with a 20mm gap in order to maintain a continuous air flow. Alternatively it can be fitted with a flexible neoprene flap or brush seal.

If there is only an occasional requirement for movement of large items in and out of the ModuCon™, the removal of a wall panel is a simple alternative to a door.

**Shower Unit**

Washing protective suits prior to leaving the ModuCon™ reduces the spread of contamination and the need to dispose of protective clothing, thus reducing the amount of potential waste.

**Features:**

- Assembly on site, or delivered pre-assembled.
- All plumbing and electrical components mounted on an accessible service panel.
- Normally supplied as a single shower unit, however a double shower can be formed by connecting two units to provide a rinsing stage (connections supplied).
- Designed to maintain air velocity of 1 m/s (specified by AECP 1054).
- Standard dimensions per unit (mm): 2355 high x 1200 wide x 1200 deep. (Units to other dimensions can be supplied).
- This is a fully self contained unit and does not require any connection to a drain. When the water in the base holding tank needs renewing it can be pumped into a carboy using its own circulating pump.

**Swabbing Tray**

For many tasks a swabbing tray is a more than adequate alternative to a shower. The swabbing tray is designed to fit neatly into an entry/exit module and can be supplied with an externally fed shower head and drain connection.
Flooring Arrangements

Typical flooring arrangements are illustrated below; other types of floor configurations can be supplied to suit particular applications.

Services and Service Connection Panel

Nuvia can advise on and supply all services. Typically these include:

- Mains or process water for standard cleaning operations or ultra high pressure water for jetting processes.
- Compressed air supply for running portable tools etc. or breathing air quality for pressurised suit work. Nuvia can also provide the pressurised suits/blouses if required.
- Electrical supply for portable tools/process machinery or containment lighting including lighting units both standard and battery back-up (emergency lighting). The electrical supply can be either 110V or 240V depending on requirements.
- Intercommunications for use with pressurised suits/blouses, can be provided as a wired or wireless system.

Service connection panels for electrical, pneumatic, hydraulic, breathing air and other services to the containment, may be mounted on any ModuCon™ panel. Nuvia will fabricate suitable service panels or bulkhead fittings to meet requirements.

Lifting Equipment

Health and Safety requirements, backed by increasingly stringent regulations, require serious consideration to be given to all lifting operations. Standard lifting devices may be installed within the ModuCon™.

Nuvia has experience of using a variety of lifting devices within ModuCon™ including fixed monorail, girder cranes, portable cranes and pedestrian stackers. Lifting equipment can also be installed above the ModuCon™ supported by building structures or an “A” frame for example, and operated through the roof via a sealed connection or brush-strip slot. Nuvia will be pleased to provide advice on lifting operations within ModuCon™.

Ventilation

For operations involving toxic or otherwise hazardous substances, the normal practice is to connect the ModuCon™ to a filtered HEPA ventilation system. This is achieved via a spigot formed in one panel of the ModuCon™ and suitable connecting ducting.

Compact mobile ventilation and filtration plant suitable for use with ModuCon™ containments are available. Nuvia has considerable experience in the use of this plant as well as installation of fixed ventilation ductwork systems.

Heavy Duty Peelable Floor Coating

Sealing Tape

PVC

Marine Ply Base

ModuCon™ Panel

Aluminium Sheet Floor

Heavy Duty Peelable Floor Coating
Safe Working Practices and Protective Clothing

The ventilation system, together with suitable protective clothing and breathing equipment, allows operations with toxic materials to be conducted in a safe and controlled manner.

Nuvia has wide experience in the specification of protective clothing, breathing equipment and training in working practices with toxic material and would be pleased to provide advice. We can also provide training in the erection and operating of ModuCon™.

ModuCon™ is designed with safety in mind; however it will always be the responsibility of the operations engineer carrying out the work to ensure that the system being used is fit for his purpose. Nuvia can advise with the preparation of safety cases.

Weather Proofing

For out-door use it is recommended that the ModuCon™ is installed inside a standard portable industrial shelter, or under scaffolding clad with weather-proof sheets. This arrangement provides weather protection for the ModuCon™ plus useful additional working and storage space. Water should not be allowed to collect on the roof of a standard indoor ModuCon™.

If this method is not practicable, an outdoor ModuCon™ with a weatherproof apex roof and external flanges to allow insulation/cladding of the unit can be supplied.
Cleaning and Decontamination

During manufacture, particular attention is paid to the internal faces of the ModuCon™ panels to ensure that they are smooth and unblemished in order to facilitate decontamination. The method of decontamination depends on the nature and extent of the contamination. For mild contamination, simple methods such as wiping with a damp swab will suffice.

Where more severe contamination is anticipated the following technique employing strippable coating has proven highly successful:

- After assembling the ModuCon™, seal the panel joints with self-adhesive PVC tape.
- Apply one or two layers of strippable coating (by brush, roller or spray) to the interior.
- Carry out the planned work within the containment.
- Apply a further layer of strippable coating to trap the contamination in a sandwich.
- Peel off the strippable coating
- Check no contamination remains
- Dismantle the ModuCon™

The strippable coating compresses to a small volume of waste and the ModuCon™ is left completely clean, ready for re-use. Nuvia can supply the strippable coating in 25 litre containers.
How to Order

An order for panels and panel options can be drawn up from the following panel code tables. To assist with ordering, please discuss your requirements with a member of the ModuCon™ Team first. A simple concept design can be produced from which a panel specification and ModuCon™ costing is more easily developed.

Contact the ModuCon™ team via:
E  ModuCon@nuvia.co.uk
T  01305 755264
M  07968 707309
F  01305 755287

Or write to: Jerry Nash
ModuCon™ Product Manager
Nuvia Limited
A31 Winfrith Technology Centre
Dorchester Dorset DT2 8DH

<table>
<thead>
<tr>
<th>Standard Wall Panels</th>
<th>Dimension A (mm)</th>
<th>Dimension B (mm)</th>
<th>Panel Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Panel - Basic 900</td>
<td>900</td>
<td>900</td>
<td>W9</td>
</tr>
<tr>
<td>Wall Panel - Corner Fixing</td>
<td>900</td>
<td>975</td>
<td>W9C (L) or (R)</td>
</tr>
<tr>
<td>Wall Panel - 2 Corner Fixing</td>
<td>900</td>
<td>1050</td>
<td>W9CC</td>
</tr>
<tr>
<td>Wall Panel - Inside Corner</td>
<td>900</td>
<td>900</td>
<td>W9I</td>
</tr>
<tr>
<td>Wall Panel - Basic 1800</td>
<td>1800</td>
<td>900</td>
<td>W18</td>
</tr>
<tr>
<td>Wall Panel - Corner Fixing</td>
<td>1800</td>
<td>975</td>
<td>W18C (L) or (R)</td>
</tr>
<tr>
<td>Wall Panel - 2 Corner Fixing</td>
<td>1800</td>
<td>1050</td>
<td>W18CC</td>
</tr>
<tr>
<td>Wall Panel - Inside Corner</td>
<td>1800</td>
<td>900</td>
<td>W18I</td>
</tr>
<tr>
<td>Wall Panel - Basic 2400</td>
<td>2400</td>
<td>900</td>
<td>W24</td>
</tr>
<tr>
<td>Wall Panel - Corner Fixing</td>
<td>2400</td>
<td>975</td>
<td>W24C (L) or (R)</td>
</tr>
<tr>
<td>Wall Panel - 2 Corner Fixing</td>
<td>2400</td>
<td>1050</td>
<td>W24CC</td>
</tr>
<tr>
<td>Wall Panel - Inside Corner</td>
<td>2400</td>
<td>900</td>
<td>W24I</td>
</tr>
<tr>
<td>Wall Panel - Basic 2700</td>
<td>2700</td>
<td>900</td>
<td>W27</td>
</tr>
<tr>
<td>Wall Panel - Corner Fixing</td>
<td>2700</td>
<td>975</td>
<td>W27C (L) or (R)</td>
</tr>
<tr>
<td>Wall Panel - 2 Corner Fixing</td>
<td>2700</td>
<td>1050</td>
<td>W27CC</td>
</tr>
<tr>
<td>Wall Panel - Inside Corner</td>
<td>2700</td>
<td>900</td>
<td>W27I</td>
</tr>
</tbody>
</table>

Note: Non-standard panels up to maximum dimensions of 2950 mm x 1100 mm are available. Please specify dimensions A and B required.

Panels designed for a single corner fixing (e.g. W27C) are “handed” according to the convention shown below. Add (L) or (R) to the panel code.

(Viewed from above)
<table>
<thead>
<tr>
<th>Standard Roof Panels</th>
<th>Dimension A (mm)</th>
<th>Dimension B (mm)</th>
<th>Panel Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Panel - Basic 900</td>
<td>900</td>
<td>900</td>
<td>R9</td>
</tr>
<tr>
<td>Roof Panel - Side (or End) Fixing</td>
<td>900</td>
<td>975</td>
<td>R9S</td>
</tr>
<tr>
<td>Roof Panel - 2 Side (or 2 End) Fixing</td>
<td>900</td>
<td>1050</td>
<td>R9SS</td>
</tr>
<tr>
<td>Roof Panel - End and Side Fixing</td>
<td>975</td>
<td>975</td>
<td>R9ES (L or R)</td>
</tr>
<tr>
<td>Roof Panel - 2 End + Side Fixing</td>
<td>1050</td>
<td>975</td>
<td>R9EES</td>
</tr>
<tr>
<td>Roof Panel - 2 End + 2 Side Fixing</td>
<td>1050</td>
<td>1050</td>
<td>R9EESS</td>
</tr>
<tr>
<td>Roof Panel - Basic 1800</td>
<td>1800</td>
<td>900</td>
<td>R18</td>
</tr>
<tr>
<td>Roof Panel - Side Fixing</td>
<td>1800</td>
<td>975</td>
<td>R18S</td>
</tr>
<tr>
<td>Roof Panel - End Fixing</td>
<td>1875</td>
<td>900</td>
<td>R18E</td>
</tr>
<tr>
<td>Roof Panel - 2 Side Fixing</td>
<td>1800</td>
<td>1050</td>
<td>R18SS</td>
</tr>
<tr>
<td>Roof Panel - 2 End Fixing</td>
<td>1950</td>
<td>900</td>
<td>R18EE</td>
</tr>
<tr>
<td>Roof Panel - End + Side</td>
<td>1875</td>
<td>975</td>
<td>R18ES (L) or (R)</td>
</tr>
<tr>
<td>Roof Panel - End + 2 Side Fixing</td>
<td>1875</td>
<td>1050</td>
<td>R18ESS</td>
</tr>
<tr>
<td>Roof Panel - Basic 2700</td>
<td>2700</td>
<td>900</td>
<td>R27</td>
</tr>
<tr>
<td>Roof Panel - Side Fixing</td>
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<td>975</td>
<td>R27S</td>
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<tr>
<td>Roof Panel - End Fixing</td>
<td>2775</td>
<td>900</td>
<td>R27E</td>
</tr>
<tr>
<td>Roof Panel - 2 Side Fixing</td>
<td>2700</td>
<td>1050</td>
<td>R27SS</td>
</tr>
<tr>
<td>Roof Panel - 2 End Fixing</td>
<td>2850</td>
<td>900</td>
<td>R27EE</td>
</tr>
<tr>
<td>Roof Panel - End + Side</td>
<td>2775</td>
<td>975</td>
<td>R27ES (L) or (R)</td>
</tr>
<tr>
<td>Roof Panel - End + 2 Side Fixing</td>
<td>2775</td>
<td>1050</td>
<td>R27ESS</td>
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<tr>
<td>Roof Panel - 2 End + Side Fixing</td>
<td>2850</td>
<td>975</td>
<td>R27EES</td>
</tr>
<tr>
<td>Roof Panel - 2 End + 2 Side Fixing</td>
<td>2850</td>
<td>1050</td>
<td>R27EESS</td>
</tr>
</tbody>
</table>

Roof panels designed for End + Side fixing (e.g. R18ES) are “handed” according to the convention shown below. Add (L) or (R) to the panel code.
Panel Options

Specify panel options by adding the code for the option (see table below) to the panel code. For example, for an oval access port in a basic 2400 mm wall panel, specify W24/OP. Add additional information, dimensions, etc. where necessary.

<table>
<thead>
<tr>
<th>Panel Options Specified</th>
<th>Code</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viewing/Lighting Window</td>
<td>/VW</td>
<td>Position and size if non-standard</td>
</tr>
<tr>
<td>Maintenance Tool Port</td>
<td>/TP</td>
<td></td>
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<tr>
<td>Glove Ports (pair)</td>
<td>/GP</td>
<td></td>
</tr>
<tr>
<td>Spigot</td>
<td>/SP</td>
<td>Dimensions</td>
</tr>
<tr>
<td>Oval Access Port</td>
<td>/OP</td>
<td></td>
</tr>
<tr>
<td>Waste Posting Facility</td>
<td>/WP</td>
<td>Size of waste drum</td>
</tr>
<tr>
<td>UPVC Door</td>
<td></td>
<td>Aperture Clearance</td>
</tr>
<tr>
<td>GRP Double Doors</td>
<td></td>
<td>Aperture Clearance</td>
</tr>
</tbody>
</table>

The following items and services may also be specified:

- Single shower unit
- Double shower unit
- Service connection panel
- Swabbing tray
- Weather proofing
- Ventilation plant
- Advice on selection of equipment, protective clothing and working practices

Innovation and Continuous Improvement

We are continually improving our range of panels and panel options, e.g., removable roof systems, tool-ports, upgraded posting systems, external storage system for emergency PPE and associated equipment and integrated boot barriers.

In accordance with our policy of continuous improvement, we reserve the right to make changes in the design and specification of the ModuCon™ components. All changes, wherever possible, are made compatible with current construction and design.
## Recent ModuCon™ Contracts

<table>
<thead>
<tr>
<th>Customer</th>
<th>Description</th>
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<tbody>
<tr>
<td>AWE Aldermaston</td>
<td>Large ModuCon™ with Internal Crane System and large removable roof section</td>
</tr>
<tr>
<td>AWE Aldermaston</td>
<td>Design Consultancy and Supply of 6 Large ModuCon™ units for Glove box decommissioning.</td>
</tr>
<tr>
<td>BNFL Sellafield</td>
<td>Large ModuCon™ with slotted roof for overhead crane for annual filter changing: Design, Supply and Install.</td>
</tr>
<tr>
<td>BNFL Sellafield</td>
<td>Change Area ModuCon™ Design, Supply and install.</td>
</tr>
<tr>
<td>BNG Magnox - Sizewell A</td>
<td>Decontamination ModuCon™ workshop with opening roof.</td>
</tr>
<tr>
<td>BNG Magnox - Sizewell A</td>
<td>ModuCon™ with variable build configurations: Supply and install.</td>
</tr>
<tr>
<td>BNG Sellafield</td>
<td>Thermal Dentration Plant, construction of a ModuCon™ GRP containment system for radiological containment with a steel fabricated access platform to allow access to equipment directly above the ModuCon™ unit.</td>
</tr>
<tr>
<td>BNG Sellafield</td>
<td>ModuCon™ Safety Shower - including electrical control and filtered recirculation system, air actuated safe control system.</td>
</tr>
<tr>
<td>BP Wytch Farm</td>
<td>Naturally Occurring Radioactive Material (NORM) UHP water decontamination facility: Design, Supply and install.</td>
</tr>
<tr>
<td>British Energy - Sizewell B</td>
<td>Small ModuCon™ for HEPA filter size reduction work.</td>
</tr>
<tr>
<td>Magnox Electric Ltd - Hunterston A</td>
<td>Large MCS enclosing a pond area to be used for decommissioning trials - The MCS has two large removable roof sections for access.</td>
</tr>
<tr>
<td>Nicolson Engineering Ltd</td>
<td>ModuCon™ unit used for Liquor Treatment Enclosure for PFR UKAEA DNE.</td>
</tr>
<tr>
<td>Nuvia Winfrith</td>
<td>Training and demonstration ModuCon™ unit with ventilation extraction.</td>
</tr>
<tr>
<td>Rolls Royce</td>
<td>Design, supply and install Large ModuCon™ with Removable Roof, (as illustrated).</td>
</tr>
<tr>
<td>RTS Innovation</td>
<td>ModuCon™ for UHP water jetting facility at Hinkley, MCS and steel segmental bund.</td>
</tr>
<tr>
<td>Studsvik UK Ltd</td>
<td>ModuCon™ unit with integral lifting beam and multi glove ports used for decommissioning of a carbonisation tower for Hunterston A. All operations conducted externally.</td>
</tr>
<tr>
<td>UKAEA Culham JET</td>
<td>Supply of ModuCon™ panels installed into a steel frame module used on the JET Stillage Transfer project.</td>
</tr>
<tr>
<td>UKAEA Dounreay</td>
<td>Multi build ModuCon™ unit for Cell Platform Containment.</td>
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<tr>
<td>UKAEA Dounreay</td>
<td>Mobile ModuCon™ unit for external decommissioning activities with integral crane system.</td>
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<tr>
<td>UKAEA Dounreay</td>
<td>Special waste posting ModuCon™ assembly incorporating a sliding gate valve for waste transfer.</td>
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<tr>
<td>UKAEA Dounreay</td>
<td>Multi Build ModuCon™ for glove box decommissioning. Design, Supply and Installation of 1st unit.</td>
</tr>
<tr>
<td>UKAEA Harwell</td>
<td>Design and Supply DU Swarf Sorting ModuCon™ with Internal furnishings and supply of HEPA ventilation extract system.</td>
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<tr>
<td>UKAEA Harwell</td>
<td>Design and Supply of ModuCon™ with internal gantry crane, breathing air and electrical services.</td>
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<tr>
<td>UKAEA Winfrith</td>
<td>ModuCon™ unit used for Plasma cutting size reduction and decontamination works.</td>
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