
Waterwall
Products
For The
Fire & Emergency
Services
Cintec International Limited

Waterwall Water Storage Units

Hexagon Water Dams

The hexagon water storage dams are designed To provide rapid storage capabilities for fire fighting appliances.

Due to the limited water storage of a fire appliance it is necessary to provide additional water to the appliance if a mains supply is not available. This storage unit allows a bowser or tanker to fill the unit and leave to refill ,while the fire appliance can draw the water from the storage unit.

The Waterwall dam is able to be used even on uneven ground and gentle slopes.

Waterwall dams are bespoke designs that can be made to suit the clients requirements and can vary in size and capacity.

The Waterwall dam comes flat packed in its own valise. It is then inflated using an air pump or a compressed air supply. As soon as the dam is inflated it is ready to receive water.

Specifications: 10,000 Litre Unit

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
1000mm	4346mm	3764mm	1000mm	4000mm	3464mm
39”	171”	148”	39”	157”	136”
Wall Thickness	**Water Volume**	**Weight Empty**	**Weight Full**	**Available Sizes**	
150mm	10,392 litres	58kg		3000, 5000, 7000, 10,000 lt & Custom	
6”	2745 US Gallons	127 lbs		792, 1320, 1849, 2641 USGal, Custom	

Waterwall

Cintec International limited

Water Dam Deployment Instructions

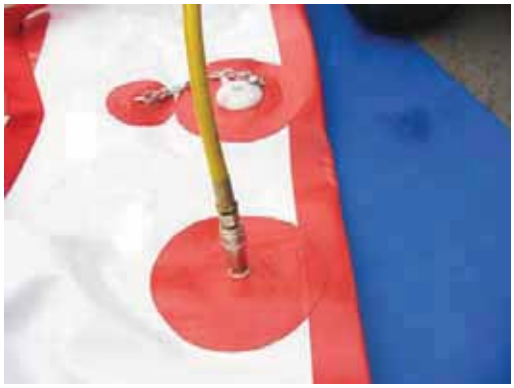
Inflation

Remove ground sheet from valise And lay out on floor in required position. Remove dam from valise

Lay out main unit, on ground sheet, in required position. Do not drag on floor

Insert and tighten the 3 A5 valves

Remove internal caps before inflation and hang over outside edge



Attach air line from cylinder to the high pressure fitting (OBAC) and inflate the unit.

The pressure relief valve will blow when the required pressure has been reached.

Operation

Unscrew protective caps from external male 4” fittings

Attach 4” female butterfly valves To each side of dam

Attach suction hoses as required

If two dams are to be deployed, join the two units with a short male-male suction hose

Tighten all connections with suction wrench

Open valves and fill dams

Emptying

All valves must be removed before the deflation process.

Allow the water to drain out completely before lifting the unit

After the unit has been used ensure as much water as possible has been drained..

Raise the unit and hold to drain more water out. Take care not to damage the outlet pipes.

Turn the unit on its side away from the outlet pipes. And then completely over to remove all the water.

Replace the internal plastic caps Before deflation.

Deflation

To deflate unit, remove grey protective cover from the B7 valve.

Push in the centre of the grey B7 Valve and turn anti-clockwise to release the initial pressure from the dam

Unscrew the 3 A5 valves to deflate the dam quicker.

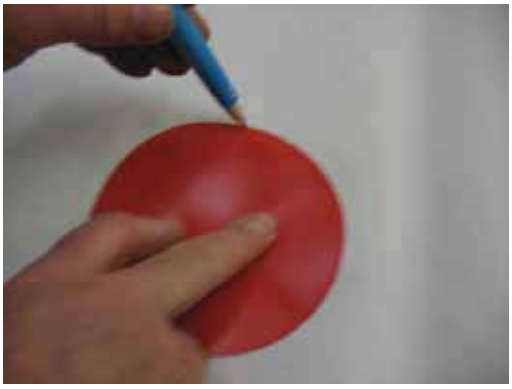
Fold each corner of the unit in the same direction and flatten the fold.

Fold the side of the unit into the centre

Fold the opposite side over the first fold and roll the unit up. Replace in valise.

Repairing

Thoroughly clean area around tear.

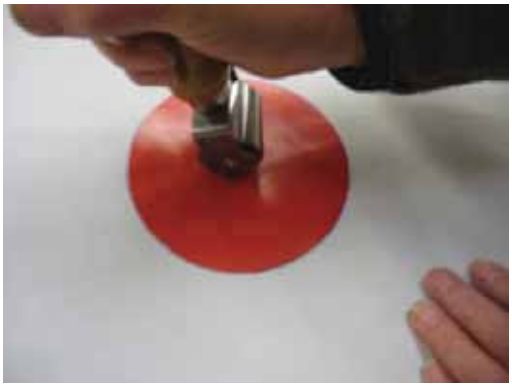


Place patch over tear and mark around with pen.

Apply glue within the marked area. Wait 20 minutes and apply second coat

Apply glue to the patch. Wait 20 minutes and apply second coat

Once the second coat has become touch dry (about 2 mins.) place over the tear.



Roll the patch firmly. Allow at least 24 hours before inflation and re-use.

Components

A5 Valve

B7 Valve

OBAC Valve

Pressure Relief Valve

CINTEC NORTH AMERICA

CANADA

38 AURIGA DRIVE SUITE 200
NEPEAN ON K2E 8A5

USA

510 McCORMICK DRIVE SUITE Q
GLEN BURNIE MD 21061

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Waterwall Robotic Deployment

Remote Deployment Vehicle

This is the first inexpensive robot dedicated to positioning and placing of Waterwall products over suspicious objects located in public areas. The robot is able to carry an un-inflated Waterwall on a portable jig through a standard door opening guided by video cameras that have day and night capability. The robot is able to turn on its tracks and climb a 40 degree pitch or stair way and lift.

Connected to the Waterwall is a standard un-inflated water hose or standard garden hose, depending on local source, that is towed behind from a hose reel under the control of an operator.

The robot also has a fire fighting movable spray nozzle

Once the robot is close to the object in question, the Waterwall is inflated with air and positioned over the object. As soon as it is in position water is pumped into the Waterwall under local water pressure until the pressure relief valves are activated indicating that the Waterwall is full.

Sensors can be fitted to the internal sides of the Waterwall to monitor the anticipated threat and relay any information back to the operator.

In most cases the suspicious object will not be an improvised explosive or dirty device and the object may be removed safely. However, should the object present a problem the situation will continued to be monitored until expert help arrives?

CINTEC

Firemote
&
Cylinder Isolation Unit

Remote Deployment
&
Firefighting

Waterwall

A joint venture between Cintec International Ltd and Ryland Engineering has produced a complimentary versatile combination of stand-alone fire fighting robot coupled with a blast mitigation product known as Waterwall.

The partnership has produced a robotic vehicle that is small enough to enter narrow entrances such as domestic or small workshop doorways, climb steps and thresholds and manoeuvre around obstacles. With the aid of a camera and/or thermal imager the robot can attack the seat of the fire using an articulated arm that can be elevated and traversed remotely. The water connection is at the rear of the robot and it passes through the body of the robot into the articulated arm at the front. The arm has an electronically controlled valve attached to the end of the arm that can give a variety of spray effects to fight the fire.

Once the fire is under control, the robot is able to search the area for any dangerous acetylene gas bottles that may have been in or adjacent to the fire or any other industrial hazards. Should an acetylene bottle be discovered, the robot identifies the site and position and notes any obstacles that may obstruct clear access to the cylinder. It then returns to the controller to have a quick attachment jig mounted on the front and main body of the robot. Should it be necessary for the robot to return to the cylinder to clear a access area around the cylinder it will be able to using the jig as a plough. When a clear area has been formed, the robot returns to the controller for the Waterwall cylinder isolation unit. The Waterwall cylinder isolation unit has been tested to destruction at the Royal College of Science testing range at COTEC West Lavington, Salisbury Plain, England. This test report is available on request.

The Waterwall is attached un-inflated to the front of the robot with water hose and air connections to the rear of the unit.

The controller guides the robot into the building and directly in front of the cylinder. Air is pumped into the isolator. The isolation unit is packed in such a way that it inflates to the correct profile and attitude that is needed to position it around the cylinder. When it forms its final shape the robot positions the unit to surround the cylinder on three sides. Usually, gas cylinders are attached to a wall or stand and an added door is not required. However, this can be provided if needed.

When the cylinder is totally encapsulated and the Waterwall is in its final position, water is pumped in displacing all the air in the bag. This is controlled using pressure relief valves positioned at the very top of the bag. When finally inflated the Waterwall surrounding the gas cylinder with 3900 litres or 1030 US gals of water which reduces the stand-off safe distance to less than five metres. The robot is then remotely detached from the unit and can continue to be deployed.






Length:1650mm（65 ”） *Width:* 685mm（27 ”） *Height:*1205mm（47 ”） *Weight*: 250kg（551lb）

Run Time: 2-4 hours, *Speed:* 0-6 mph, *Control Range:* 300 metres（328 yards）line of sight, on board charger

Water jet Reach: 30-45 metres（32-49 yards） *Supply Pressure:* 3-12 bar（45-175 psi）Variable spray nozzle

Radio Link: 458.6 MHz, *Video Camera:* Colour with IR lighting, Portable 3 axis joysticks control panel

Data Feedback: Video feed, battery voltage, monitor angle, spray pattern, water pressure, valve positions and temperature to PC GUI display

Optional Extras: Thermal Imaging camera, On-board camcorder, COFDM control and video system for non line of sight operation.

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Waterwall Isolation Units

Acetylene Isolator

The Acetylene Isolator was designed and tested to be deployed and inflated around an acetylene cylinder that has been accidentally heated and is considered unstable.

The 335 mm PVC coated and internally reinforced Waterwall comprises of three walls and a roof section with a separate door section that is added once the main structure is in position. All the panels are fitted with pressure relief valves to avoid over filling and indicating when full of water.

The product has been tested by the Royal College of Science test range in Wiltshire United Kingdom in 2008 when acetylene bottles were heated to destruction inside a standard Waterwall unit.

The Waterwall units can be configured to cover acetylene cylinders that are standing prone, laying horizontally or against a wall.

It is recommended that the Waterwall is positioned after the heat source has been removed using the Cintec robot that has been especially designed for the task.

Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
2035mm	1670mm	1470mm	1700mm	1000mm	800mm
80”	66”	58”	67”	39”	31”
Wall Thickness	**Water Volume**	**Weight Empty**	**Weight Full**	**Packed size in valise**	
335mm	3900 litres	44 kgs	3944 kgs		
13”	1030 US Gal	97 lbs	8695 lbs		

Waterwall

Acetylene Isolator

CONTENTS

1.0 The Problem.

Probably one of the most used compressed gas welding systems used throughout the country is a combination of oxygen and acetylene cylinders. They are able to produce the correct welding temperature and flame to carry out a myriad of welding, metal cutting and joining of steel components in a multitude of commercial applications.
Unfortunately, the very same advantages that the acetylene has of power and energy can be a problem if the cylinder is exposed to heat source generated in a fire or flash back due loss of pressure. Acetylene is a special case because it can undergo a self-sustaining internal decomposition reaction, producing heat, which may continue after the fire has been extinguished. See (BRITISH COMPRESSED GASES ASSOCIATION Guidance Note GN15 2004)

1.1 The care and storage and transportation of Acetylene.
Great care must be taken when using storing and transporting acetylene cylinders.
This was best reviewed in BRE report Acetylene Gas – Its Use and Transportation Phase 1 Report 15August 2006 Clients number 229118

2.0
Cintec launched its new product range called WATERWALL on the 17th May 2007 at the Institute of Mechanical Engineers. This was the culmination of nearly eight years of Research and Development into the rapid use of water as a blast mitigation system for improvised explosive Devices. The problem was how to make a liquid change its natural characteristics of wanting to remain at equilibrium in a horizontal plane into a vertical free standing position. This was achieved by carefully strengthening the internal chambers of the fabric so that the internal shear strength provided a near parallel structure that allowed the water to be retained in the desired shape and size. This unique feature has been Patented International with a number of interlocking patents.

2.1
In attendance at the official launching of WATERWALL were two senior fire officers from the London Fire Brigade who were very interested in the concepts of using WATERWALL as a mitigation method of reducing the problem of the explosive hazard of acetylene bottle when heated.
A follow up meeting was arranged on the 12th September 2007 with both the London and Welsh Fire Brigades to discuss the particular problems with the fire hazard and the possible use of WATERWALL as a mitigation system.
2.2

Cintec have been testing and working with various departments of the British Security Services over the last ten years testing both its hard reinforcing products and WATERWALL. The results of the previous tests indicated that with a little adaption the WATERWALL system could be used to mitigate the explosive effect of the cylinders and therefore reducing the stand-off range to single figures and maintain a cooling effect on the heated cylinder.

2.3
The problem was always one of how to induce and simulate an explosive event in a cylinder without damaging the WATERWALL fabric faced with PVC. In a live scenario it was anticipated that the fire would be extinguished and the cylinder and surrounds would be boundary cooled before deploying the WATERWALL product. Therefore the problem faced by Cintec was to create a live situation where a naked flame would heat the cylinder on one side and surround the remaining sides with the WATERWALL product. In addition there was the added problem of the cylinder rocketing when one end of it failed and in effect turned the cylinder into a flying missile.
Although this form of failure of the cylinder was a very rare occurrence it was still part of the testing requirements that this possibly should be considered in the mitigation trials.

2.4
At a meeting on 26th October 2007 at Moreton in Marsh the training Headquarters of the Fire Brigade between senior members of both the London and Welsh Fire Brigade and also the Chairman of the British Compressed Gas Association together with Michael Dean an engineer from Air Products and the Cintec Managing Director, the problem and a possible solution was discussed. It was resolved that a trial should take place at Cintec's cost and with acetylene cylinders being provided by Air Products free of charge. The test site was to be the COTEC range on Salisbury plain that had been used for many years by CINTEC and was a convenient location for all the interested parties.

3.0
COTEC is part of Cranfield University which is the testing facility of The Royal Military College of Science at Shrivingham. Located at Gore Cross, West Lavington Nr Devizes, Wiltshre. The range is a credited explosive range to EN ISO 9002 and is positioned on the Ministry of Defence ground at Salisbury Plain. With an elevation of 400 feet above sea level the site is extremely exposed and it can experience extremes of bad weather. The site is dominated by a mass concrete control tower that has hardened glass viewing areas that have a 360 degree visibility.

3.1
The problem regarding the test procedure was that one of conducting a test with 200 metres stand off. We had arranged to conduct two tests per day. If on the first test we were unable to induce an explosion in the cylinder we were in effect trapped in the control room and would be restricted from visiting the test cylinder for 24 hours. This was resolved by placing a Kalashnikov semi automatic gun set to fire single rounds positioned fifty feet from the exposed test cylinder and set to fire from a remote control device in the Control Tower.

3.2
1st Trial 21st January 2008

The first trial was in the middle of the winter on 21st January in a full gale with intermittent driving rain. The air temperature was hovering under 5 degrees centigrade and the wind speed was over 30 knots reducing the temperature to less than freezing on the test site. Cintec considered postponing the trial but the next range time was at lest another six weeks away and we need to see how the set up worked.
The trial took place some 220 meters from the control tower on a prepared concrete slab.
Firstly, a WATERWALL comprising of three sides and a roof with the internal dimensions of 1000mm x 1000mm x 1700mm high made from 335mm wall thickness was positioned facing the control tower so that all the attempts of exploding the cylinder could be seen. The water wall was then inflated with air to position the fabric ready to receive the water. The internal lining of the WATERWALL was pre lined with fire proof woven fabric (Tyglass 1000c) the internal size of the WATERWALL was made to accommodate a number of Cylinders that are usually stored on a mobile trolley.
A metal framed jig was made to house a single X 50 size acetylene bottle standing upright See drawing 1.
The front part of the jig was a pivoted and hinged metal frame that held three selves contained 340g gas bottles at 150mm intervals positioned so that when an attached weight was released at the rear of the jig the 340g cylinders would pivot and swing into position on the front of the cylinder thus providing a heat source to the acetylene cylinder. Similarly, a small gas burner was positioned on a tray immediately at the base of the cylinder so again with a counter weight would be released to move directly under the acetylene cylinder when released.
Control wires were attached to the counter weights and run out to 250 meters and staked down. These would be released after the WATERWALL was filled with approx. 4000 litres of water from a trailer.
The internal temperature of the acetylene cylinder was measured with five thermocouples positioned at the rear of cylinder (the reverse side of the 340g cylinders) and spaced equally from the top to the bottom of the cylinder.
To complete the set-up 6mm plywood witness screens were positioned five metres from the enclosed three sides of the WATERWALL to capture and witness and any fragmentation not retained by the

WATERWALL.
The weather was the biggest influence in the conduct of the test. Due to range safety only one person is allowed to be present lighting the 340g cylinders. It was therefore inevitable that not all the 340g gas cylinders were fully function in the prevailing weather conditions and not all the anticipated flame and heat was delivered to the acetylene cylinder.
At the onset of the trial it was decided that the test would conclude if

a. The acetylene cylinder exploded
b. The temperature of the bottle remained at a constant temperature and would not explode after 60 minutes of heating.

3.3
With all personnel clear of the test site, the range safety officer lit the burners and moved onto the 220 metre control wire position releasing the wires. This functioned effectively, however, the weather was and wind extinguished one of the vertical burners and probably negated the effect of the base burner.
In the control room the effects of the burners showed signs of slowly heating the acetylene cylinder. See graph 1
After one hour the temperature topped out at 127 centigrade and would not climb any higher. After several minutes this appeared too slowly start to fall and could not be maintained, the consensus by all present was that the heat loss due to the extreme weather and the insufficient heat generated by the burners would not induce an explosive event in the cylinder.
It was the decided that the rifle would be used to release the acetylene from the bottle so that the test rig could be inspected. See picture 1
3.4
The hole that was created in the acetylene cylinder caused the gas to vent out wards of 5 metres horizontally. The gas ignited when the wind blew the gas onto one of the still burning burners and developed into what can be described as a flame thrower.
The wind moved this burning jet around the out side of the WATERWALL and the whole rig caught fire and was burnt to the ground. See picture 2

4.0

The second trial was on 9th April 2008 at the same venue. The weather was dry and a bright, typical spring day with the air temperature above 10 degrees centigrade and the wind speed below 10 knots.
The same physical set up was maintained as in the first trial with the exception of the size and strength of the burners. These were upgraded to three 90kw output for the vertical burners in stead of the self contained 340 g burners and the lower ring burner was upgraded to a 70kw output burner. These were commercial grade burners that were not self contained but supplied from propane cylinders attached with rubber hoses to the nozzles. Each burner had its own dedicated propane cylinder house behind a wall of pendine concrete blocks adjacent to the right hand side of the WATERWALL. See picture 3
The spring mechanism was also changed from hang weights on pulleys to a commercial door closing mechanism that again was released by a control wire 220 metres from the test rig.
The witness screens were positioned in a semi-circle approximately 5 metres at the rear and side of the WATERWALL.
A total of 5 thermocouples were positioned as the first test to measure the temperature and xxx number of pressure sensors was positioned to measure the resultant pressure should the acetylene cylinder explode.
The WATERWALL was constructed the same as before, however, more attention was given to the fireproofing both inside and the outside of the WATERWALL that was in close proximity to the naked flames.

4.1

After running all the safety checks and clearing the site of personnel the range safety officer lit the

burners and retired to the 220 meter point to release the spring loaded burners.
After 12 minutes see graph 2 the flames at the lowest end of the acetylene cylinder started to show sign of erupting due to the escape of the acetylene from the wall of the steel cylinder. This grew in intensity until the flames ballooned out of the front of the cylinder with such strength that the cylinder started to rock and rotate in the metal jig. The pace of the exploding gases and fire ball grew until the cylinder exploded rocketing the acetylene cylinder to the rear of the test rig and into the rear wall of the WATERWALL. At the final destruction of the acetylene cylinder it was observed that the fire ball on the unprotected face of the WATERWALL expanded to approximately 25 metres in circumference whist at the rear of the WATERWALL there was no evidence of any fire ball or damage to the witness screen 5 meters away from the explosion. See picture 4
At the end of the trial the following results of the thermocouples and pressure sensor were as indicated……

5.0

After the successful completion of the trial, Cintec wanted to undertake a final test to prove that a WATERWALL could successfully contain an exploding acetylene cylinder. A meeting was called on the 8th May 2008 at the Headquarters of the Welsh Fire Brigade in Cardiff with all the interested parties in attendance. see…. attendance list Photographs and videos of the previous tests were shown and discussed. The condition known as "Rocketing " was discussed, it would appear that at a recent cylinder explosion of an acetylene cylinder a policemen had observed that part of the cylinder took off like a rocket and had landed some 70 metres away from the explosion. Cintec were confident that this phenomenon could be controlled and showed a video of the latest test they had under taken at the Transport Research Laboratory where in conjunction with the CNPI when they stopped a 1.5 ton car travelling at 50 kph in less than a metre and had achieved a PAS 68 British Standard for ram protection. It was resolved at that meeting that a further test should be undertaken by Cintec. This time with the front door attached as it would be finally deployed in the fields and with special consideration on the problem of "Rocketing".

6.0

The third trial was undertaken on Monday 9th June 2008.

Typical of a fresh summer's day the weather was good with temperatures at 18 degrees centigrade and a wind of light airs.
This test was the most difficult to undertake. We had to have the acetylene cylinder totally covered with the WATERWALL and still put a naked flame on the base section of the cylinder.
This was achieved by mounting the entire WATERWALL on concrete pendine blocks that were formed in the shape of foundations of the walls of the WATERWALL. The dimensions were the same as before but this time two 100mm diameter pipes were inserted at the top of the WATERWALL door to vent any smoke or products of combustion inside the bag section.
The acetylene cylinder was fixed in the centre of the WATERWALL on a jig that exposed the bottom section of the cylinder to an opening left between the central blocks. See picture 5.
The base of the cylinder again was heated by the same burner used in test number 2 for the base and in addition a single side burner was attached to the very bottom of the cylinder. Both of these were set in position as before described in test number 2. See picture 6.
In this trail a great deal more fire proofing was necessary to stop the burners from damaging the WATERWALL. This was achieved again with Tyglass fabric and also Rockwool 50 mm mineral wool slabs positioned around the jig and on the concrete slabs.
The spring mechanism was a commercial door closing mechanism that again was released by a control wire 220 metres from the test rig.
The witness screens were position in a semi-circle approximately 5 metres at the rear and side of the

WATERWALL.
A total of 5 thermocouples were positioned as in the first test to measure the temperature and xxx number of pressure sensors was positioned to measure the resultant pressure should the acetylene cylinder explode. See picture 7.
The WATERWALL was constructed the same as before, however, more attention was given to the fireproofing both inside and the outside of the WATERWALL that was in close proximity to the naked flames.

6.1

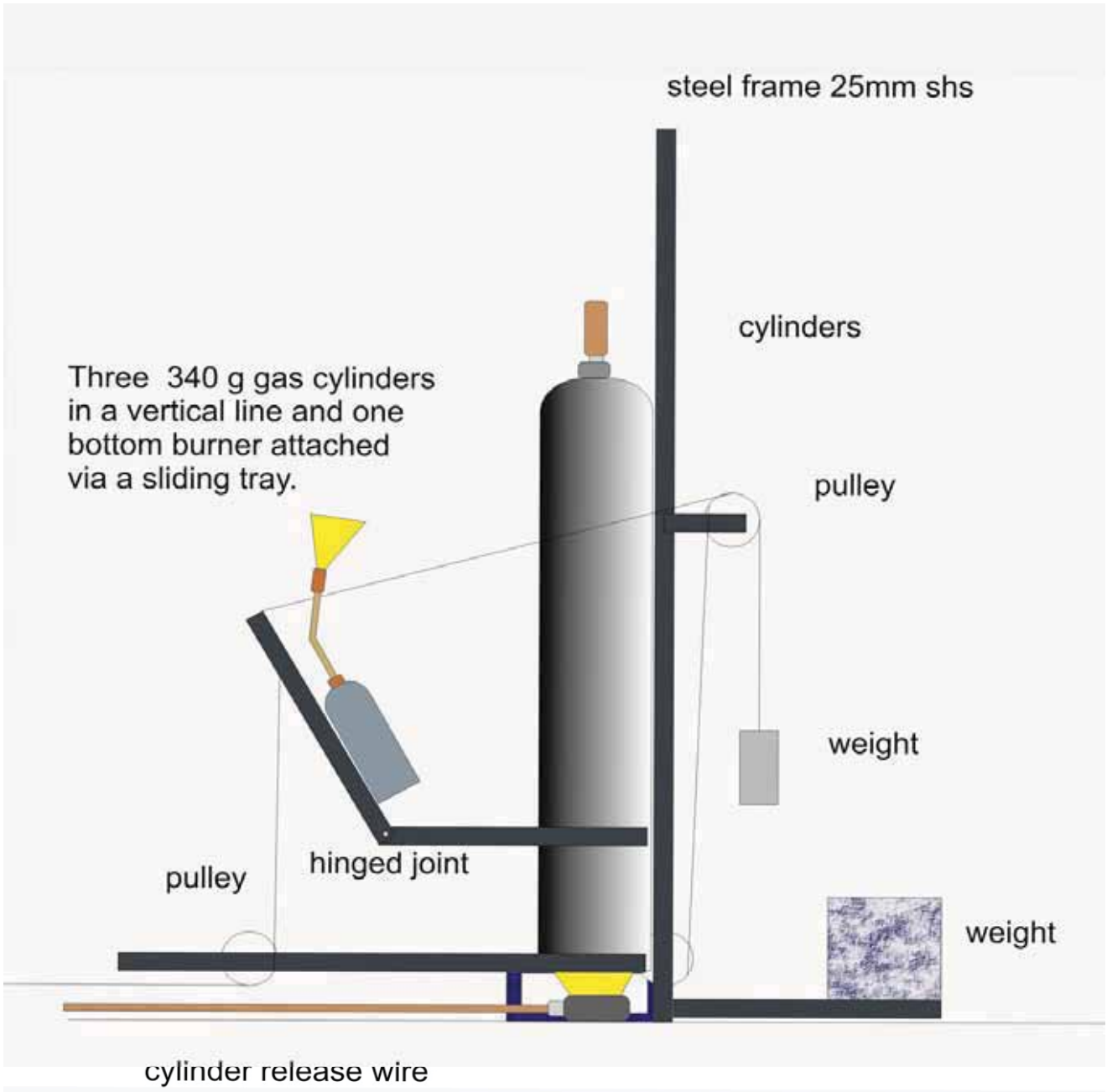
After running all the safety checks and clearing the site of personnel the range safety officer lit the burners and retired to the 220 meter point to release the spring loaded burners.
After one minute see graph 3 smoke was seen to be vented both below the jig and through the vent pipes set at high level in the door. This increased with time until the acetylene cylinder exploded after nine minutes. The result was the total mitigation of the acetylene cylinder explosion. The WATERWALL contained both the explosion and any rocketing.
Evidence of the cylinder "rocketing" was found on an indentation found on the fire blanket. A broken section 1500mm from the base of the fire blanket matched exactly the shape of the cylinder valve guard and the cylinder holding rig was rotated some 45 degrees. Following the explosion the acetylene that escaped from the cylinder was still burning at the base of the rig fuelled by the propane torch that was still burning.
On examination of the cylinder after the event it was found that the acetylene cylinder had failed in precisely the position heated by the propane burners. See picture 8.

7.0
At the conclusion of the test we were invited by the Fire Brigade to visit Qinetiq, a company who were developing robotic solutions to the identification and handling the problem of heated acetylene cylinders. We are confident that we can provide a self inflating WATERWALL that is capable of being positioned and inflated robotically in a live scenario.

8.0

The use of WATERWALL as a blast mitigation system cannot be described as one silver bullet that can be used in all situations. Careful planning should be used to mitigate the potential blast in various scenarios

a. The best situation would be total protection on all open sides totally surrounding the acetylene cylinder.
b. The use of a three sided and top to militate against an acetylene cylinder placed or located next to a wall.
c. The shaping or directing the blast using the three sided and top to direct the blast into to the lest dangerous direction i.e. away from domestic residences, pathway of vehicle or a industrial area etc.
d. This scenario would also benefit from using WATERWALL in a different shape such as an adjoining " A" frames that could give protection up to 3.5 metres high as at straight wall of water in the event of difficult access to the rogue cylinder.


steel frame 25mm shs
cylinders
Three 340 g gas cylinders in a vertical line and one bottom burner attached via a sliding tray.
pulley
weight
pulley
hinged joint
weight
cylinder release wire

Drawing 1

Picture 1

Picture 2


COTEC 08/049
WATER WALL TESTS
FIRING 1
APRIL 2008


COTEC 08/049
WATER WALL TESTS
FIRING 1
APRIL 2008

Picture 3


COTEC 08/049
WATER WALL TESTS
FIRING 1
APRIL 2008

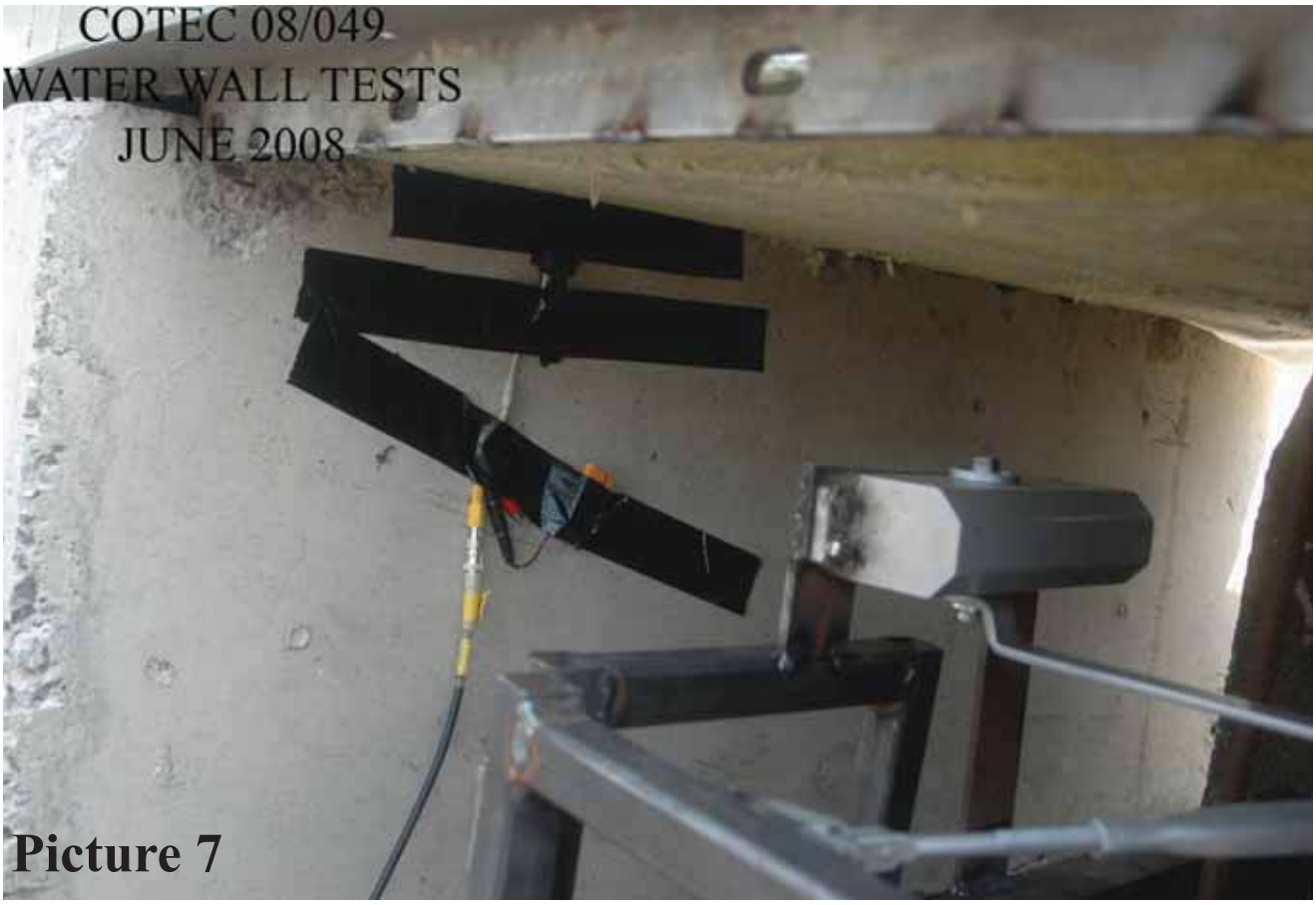

COTEC 08/049
WATER WALL TESTS
FIRING 1
APRIL 2008

Picture 4

COTEC 08/049
WATER WALL TESTS
JUNE 2008

Picture 5

Picture 6



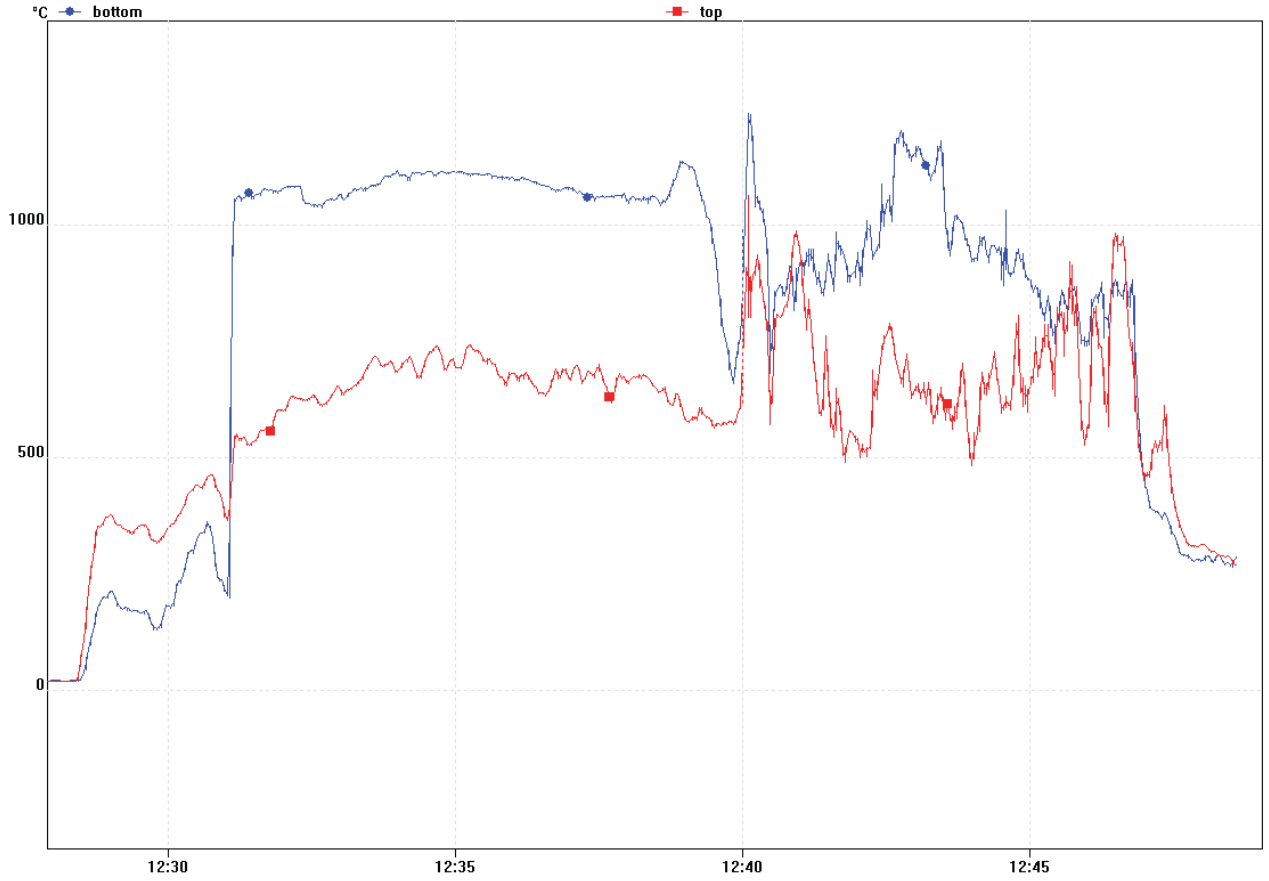
Picture 7


COTEC 08/049
WATER WALL TESTS
JUNE 2008

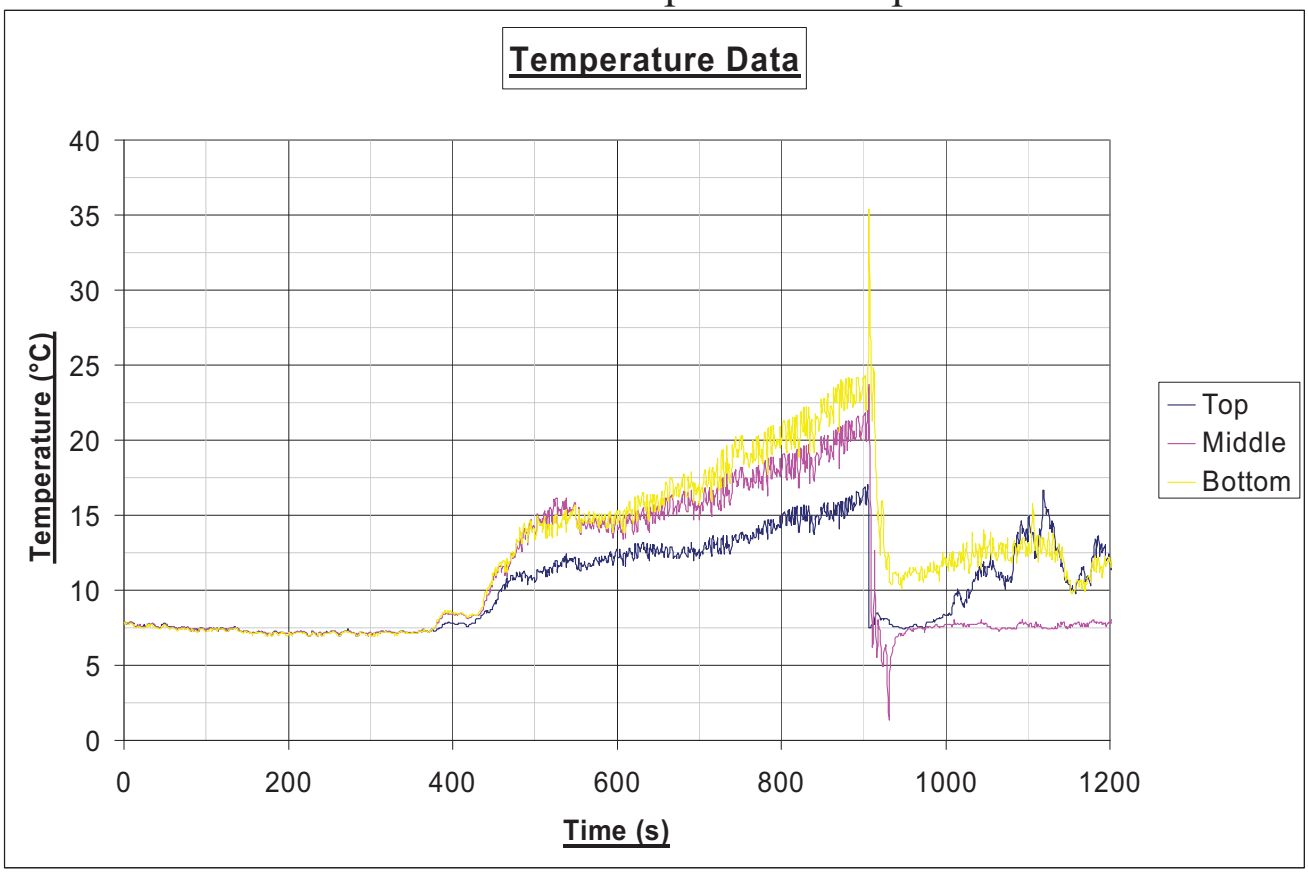

COTEC 08/049
WATER WALL TESTS
JUNE 2008

Picture 8

3rd Test—Temperature Graph



2nd Test—Temperature Graph



FORTRESS™

Flood Defence System

Initial trials

CINTEC

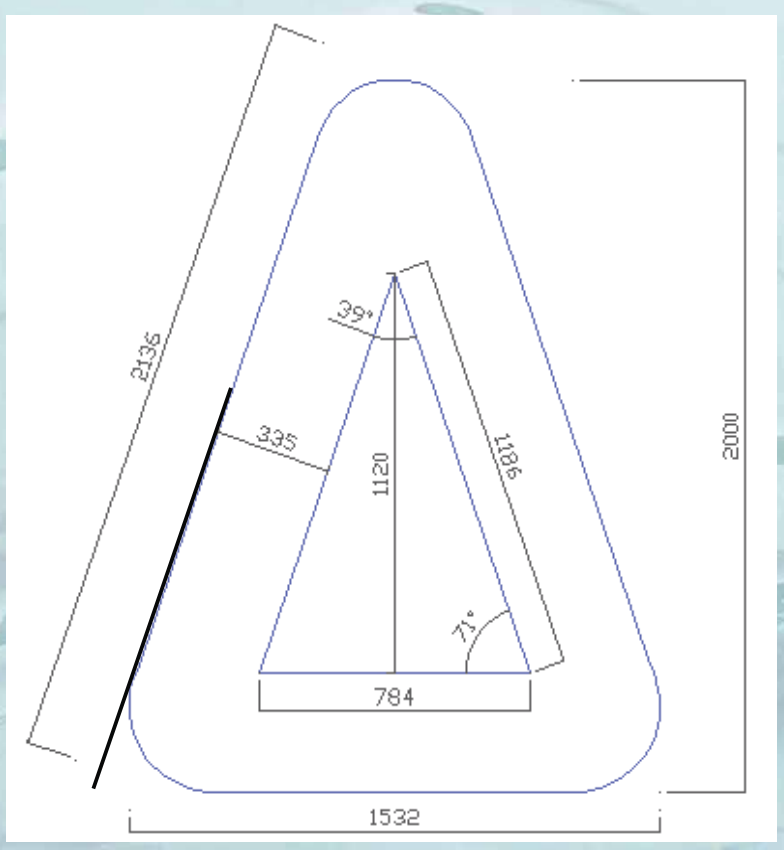
The illustrations show the first Test of the product at Maindee Fire Station on 12th March 2009. The test was achieved by forming the units into an unbroken rectangle to enable water to be introduced into the preformed enclosure that would be sufficiently water tight to enable the barriers to work successfully. The entire exercise took two and a half hours, demonstrating the speed of erection and ease of assembly. The product is very quickly dismantled and stored for future use.

The modular system of ‘A’ frames which are inflated with air are positioned next to each other across the low lying area, the joins are sealed with PVC strips which are attached to each unit. The bottom edge is fitted with a PVC skirt which spreads in front of the units to form a seal with the ground. Once in position the units are filled with water, displacing the air from the units through pressure relief valves, which maintains the shape during filling.

FORTRESS™

Cintec International Ltd. Have extended its pneumatic and fabric technology to produce a bespoke, novel, temporary flood barrier known as Fortress.

The newly patented system is designed to create internal shear into fabric walls using internal reinforcement that allows water to form walls of the desired shape and size. The individual wall sections come flat packed in a valise and are quickly inflated to the desired shape using an air pump. Once the walls have been erected they are joined together to form a wall similar to a castle fortress. This can be in a straight line or in the shape of a coffer dam or any other configuration that may be required. Once in position the units are individually pumped with water, displacing the air through relief valves and providing a solid structure that is capable of withstanding water pressure to a height of 60 ”. If additional support is required, the inner triangle section can also be air or water filled to give additional strength and support. The construction joints are waterproofed using PVC flaps attached to the Waterwalls using velcro strips at both sides and the base of each unit, covering ‘ T ’ shaped PVC profiles.



Each unit measures 79 ” high x 60 ” deep x 61 ” wide and holds 449 US gallons of water, which forms a solid wall of water able to withstand water to a height of 60 ”. Each unit weighs 71 lbs and can be easily transported and erected. The units can be formed into a straight wall or, using the shaped corner units, be placed completely around a building or structure, to create a dry area within.

Waterwall Rescue Units

Pathway

This enhanced pathway with increased stability, can be used in unstable conditions such as waterways, mud and ice. The two runners below the unit are simultaneously inflated with the main unit. This increases the stiffness and stability in the pathway. The external netting provides grab points along the pathway and reduces the slip hazard. The unit can be fitted with a built in air cartridge for inflation if required. The standard unit uses a quick release fitting to enable filling from an air bottle.

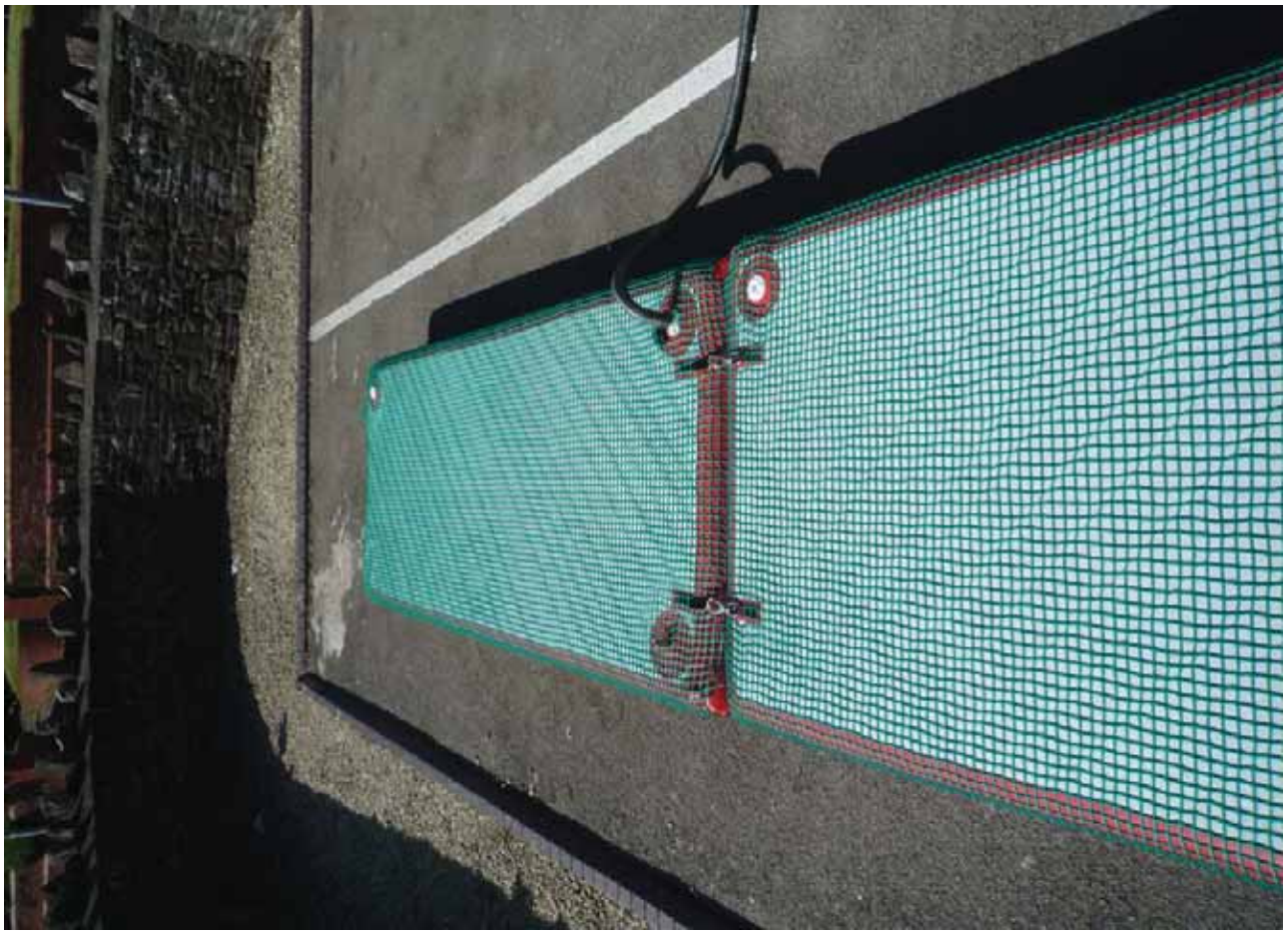
The unit comes rolled up in its own carry valise and can be secured at one end, if required, then inflated over the hazard. The next unit is then attached to the first unit using the built in clips and then inflated. Additional units can be attached and inflated in this manner to bridge most hazards. The units can also be joined side ways as a stable platform.

An optional add on will allow a small outboard motor to be attached.

Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
300mm	1200mm	3000mm	NA	NA	NA

Wall Thickness	Air Volume	Weight Empty	Weight Full	Packed size in valise
150mm	810 Litres	22kgs	NA	

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