MODULAR™ MAST SYSTEMS

an UPSHOT product

UPSHOT

PRODUCTS | SERVICES | SOLUTIONS

THE BROCHURE

A REVOLUTIONARY NEW MAST SOLUTION

"The world's first genuinely sustainable 'off-the-shelf' temporary and permanent modular mast design that offers a more cost-effective, flexible, robust, secure and environmentally friendly alternative to rip and replace."

temporary | permanent | high-security

WWW.MODULARMASTSYSTEMS.COM

A NEW APPROACH

FOCUSING ON SUSTAINABILITY

OUR MISSION

We are passionate about providing sustainable alternatives to legacy infrastructure and helping our clients improve their environmental legacy. Our Modular Mast Systems products solve problems we have witnessed in the industry for many years. They are pioneering and innovative, but also provide significant financial savings and benefits too.

Our brochure provides a comprehensive summary of our two systems, but for more detailed information we recommend contacting us to arrange a visit to our factory or one of our installations.

- All Terrains
- 100% Sustainability
- Fully Expandable
- Easily Maintainable
- Low Environmental Impact
- Can Be Surface Mounted
- Fully Re-Usable/ Reclaimable
- Sigificant Cost Savings

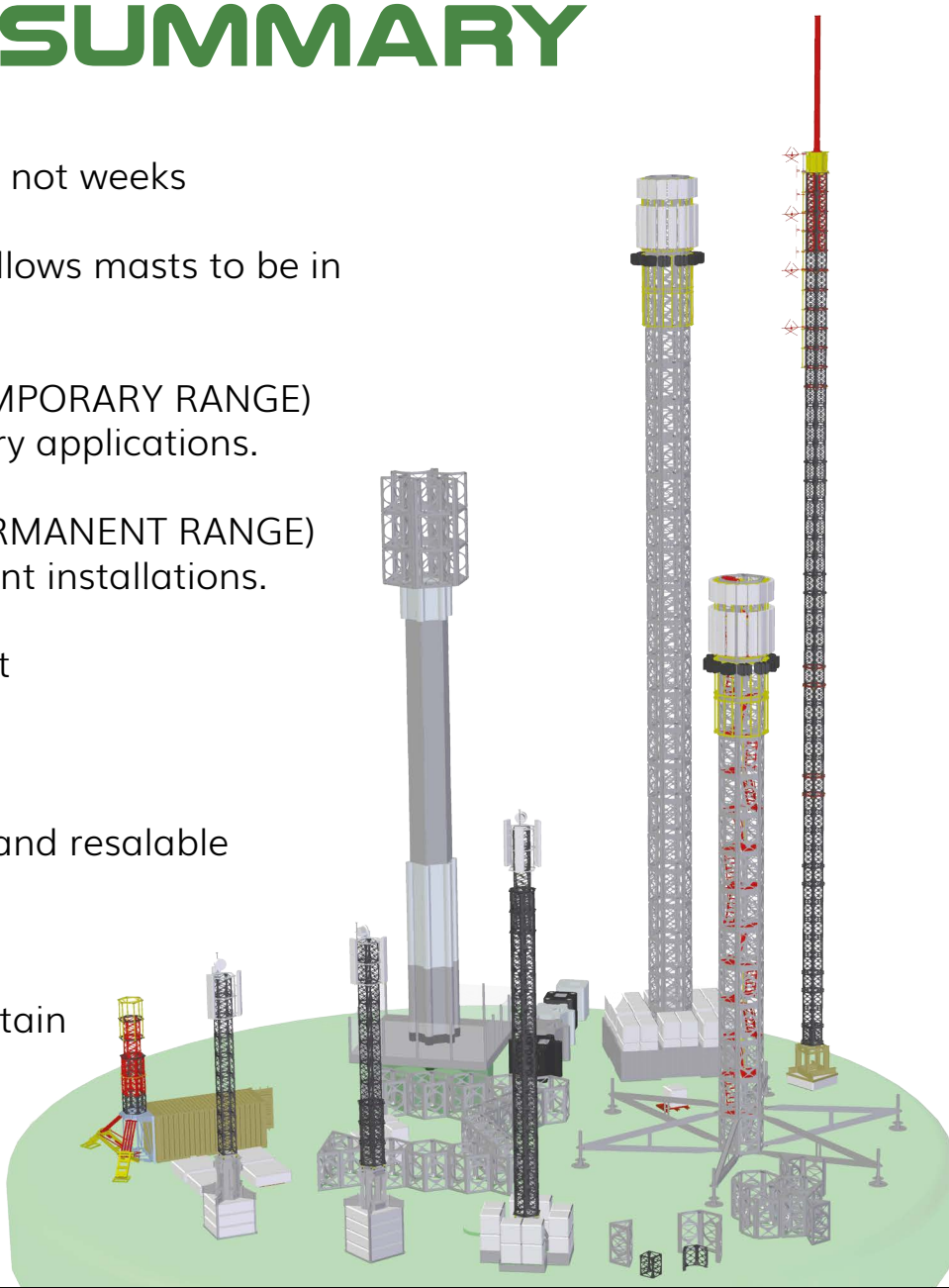
THE CONCEPT

With years of experience in the telecoms industry, Upshot UK Ltd. recognised a strong commercial and environmental need for a radical new mast design that required a generational leap in performance, whilst improving through-project costs and versatility.

Our modular mast system uses a limited number of components, at various scales, to provide an infinite number of configurations. These mast systems provide tonnes of headload capacity.

BENEFIT SUMMARY

- Orders facilitated in hours not weeks
- A Customer ready stock allows masts to be in transit in hours
- System-1 Masts (MMS TEMPORARY RANGE) are designed for temporary applications.
- System-2 Masts (MMS PERMANENT RANGE) are designed for permanent installations.
- Low environmental impact
- RFID tagged
- Reusable, reconfigurable and resalable
- Easy training & support
- Designed and made in Britain
- Low life-cycle cost



FOR OPERATORS

NEW ANSWERS TO THE OLD HEADACHES

Modular Mast Systems™ provide operators with a gamechanging array of advantages that solve many of the perennial problems our industry has faced for many years. Across ROI, Deployment and Environmental Impact, the advantages include but are not limited to the following:

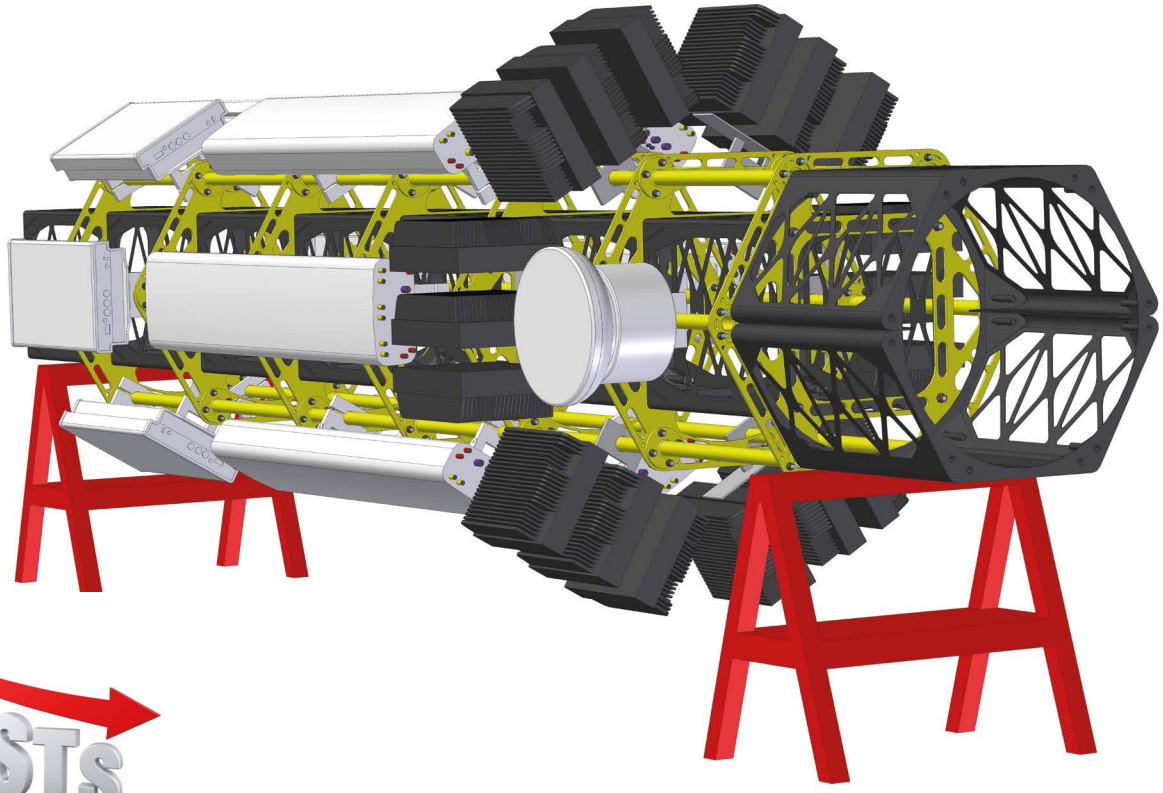
- The new web portal with automated mast calculation will enable unprecedented rapid mast design.
- Rapid pick list for immediate deployment.
- Options to assemble in sections assembled prior to deployment, or close to construction, or piece by piece.
- System-1 masts are climbable either internally or externally
- System-2 masts can have internal stairways or are climbable.
- Ease of training and handling with reduced part types and regular common connections.
- Ease of construction with pre-described and recorded torque settings when using OEM torque guns.
- Environmentally totally inert. Zero threat to wildlife or ecosystems throughout continuous re-use.
- Maintenance to OEM System-1 requirements provides companies with 100% sustainable development credentials.

"I'm actually looking forward to our next annual Corporate Social Responsibility report instead of dreading it!"

EASY ASSEMBLY

SAMPLE GROUND LEVEL PRE-ASSEMBLY

- Pre-assembly at ground level offers safe access to install equipment and perform install quality assurance.
- Mast structures are strong enough to withstand both transport to site and raising via described lifting points to the vertical.
- The method requires external wiring or internal coil and drop. In the former case mast heads can be removed to ground, repaired or updated, then re-mounted, in a day.



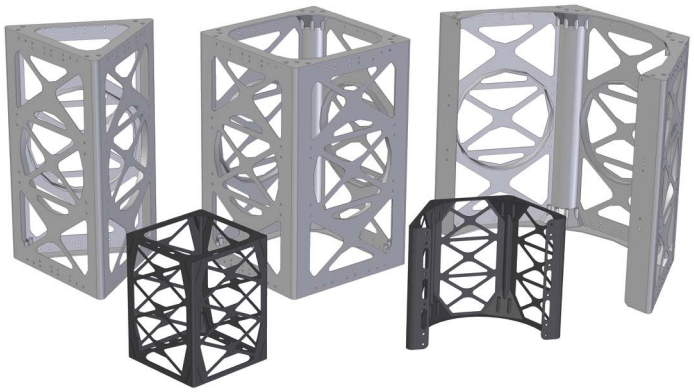
WHY MMS?

THE PRACTICAL & ECONOMIC ADVANTAGES

Upshot UK has developed a modular mast system, which is fully scalable and currently available in two system sizes. (Size is based on the Nominal Scale and refers to the height of the modular sections.)

Our clean sheet approach allowed us to develop these new products with full feedback from industry along the way. System-1 is marketed as our Temporary System and System-2 our Permanent System. Whilst there are qualities to each system that benefit temporary and permanent use respectively, both systems can be used for any task that code or specification permits.

MMS PERMANENT SYSTEMS - SYSTEM-2



MMS TEMPORARY SYSTEMS - SYSTEM-1

KEY DIFFERENCES IN THE MODULAR SCALES:

- System-1 comprises components of less than 50kg to be carried by two people, enabling maximum installation flexibility.
- System-1 can optionally be installed to a bespoke frame/cabin fitted to the end of a standard ISO container.
- System-1 components are uniquely RFID tagged, enabling quality identification through life. Every part can carry records of every key inspection, refurbishment and deployment, ensuring the end user full operational traceability.
- System-1 lifespan indefinite with OEM maintenance procedures. System-2 Lifespan a 25 year galvanised finish.

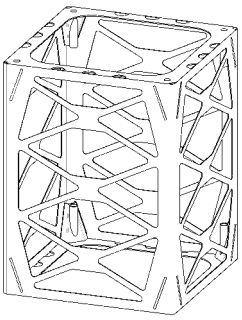
KEY COMMERCIAL BENEFITS DESIGNED IN:

- Versatile approach - one design adapts to all. - A limited number of components assemble to an infinite number of mast designs.
- Future growth of payloads/headloads. - Masts are easily adapted without full mast replacement.
- Simplification of deployment and construction. - The modular assembly simplifies calculation through to construction.
- Rapid deployment, with readiness to deploy reduced from short order weeks to around one hour.
- Climbable. System-1 has a lattice structure that presents foot rests at regular spacings that can be used inside or outside the mast.
- Minimal footprint. The MMS is a parallel, non-tapering mast system, which can concentrate base loading into smaller footprints.
- Reduced storage space between deployments. For example 1 kilometer height of System-1 cubes will store in 1000sq.ft. (93m^2)
- Re-useable, maintainable, trackable, scalable. Assured compliance in use and reassurance when buying and selling secondhand.
- Low lifecycle costs, as with any high quality and maintainance recorded product with a then high resale value.
- Minimal environmental impact. Zero through life component redundancy. All parts steel. Everything reclaimable by Mother Nature.
- Equipment poles are routinely 60.3mm diameter, suiting most equipment brackets and readily linkable to global scaffold systems..

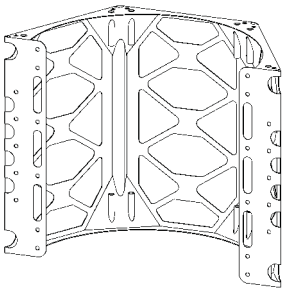
SYSTEM-1

DESIGNED FOR TEMPORARY INSTALLATIONS – MODULAR HEIGHT 1M

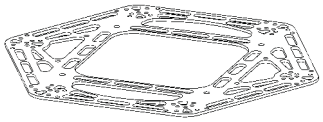
PRIMARY COMPONENTS:-



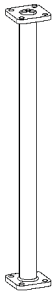
CUBE-1



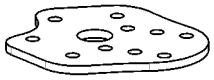
HALFHEX-1



INTERPLATE-1

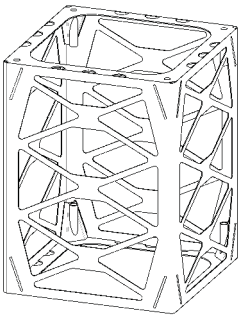


POLE-1

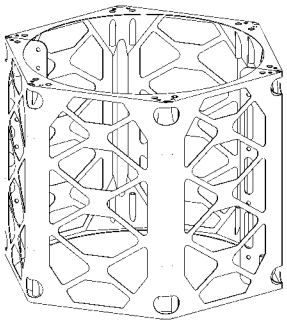


LINK PLATE-1

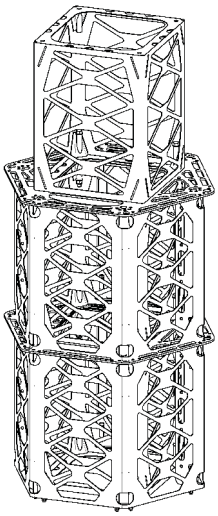
STRUCTURAL LAYERS:-



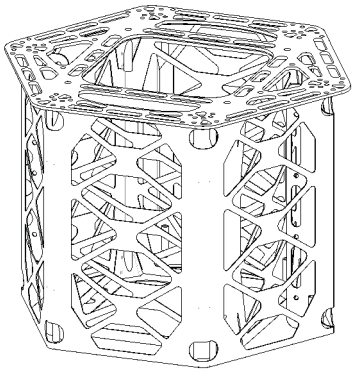
CUBE-1



HEX-1

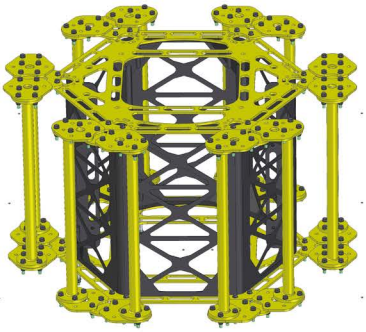


MERGE-1

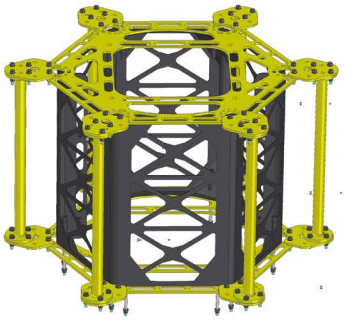


MAX-1

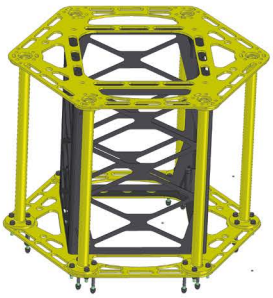
SYSTEM-1 SAMPLE ANTENNA CONFIGURATION LAYERS:-



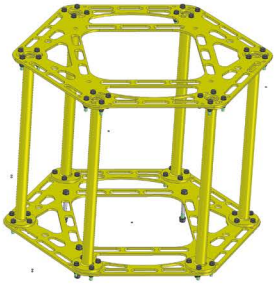
HEX-1 DOUBLE POLE ARRAY



HEX-1 SINGLE POLE ARRAY



CUBE-1 SINGLE POLE ARRAY

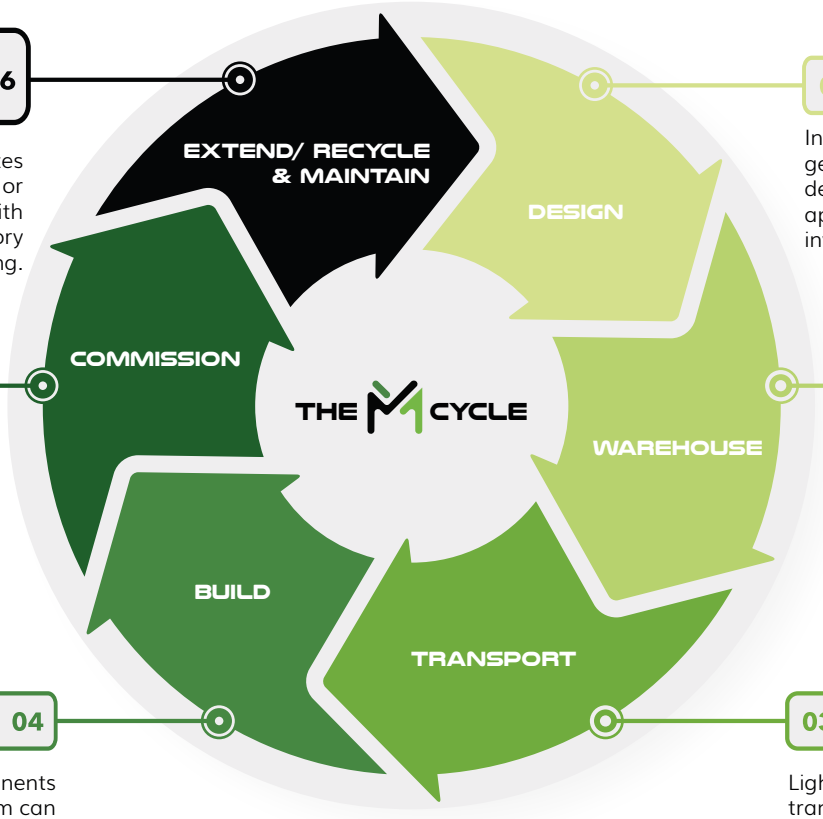


SIX POLE CAP

SYSTEM-1

360° SUSTAINABLE AND EFFICIENT PRODUCT LIFE-CYCLING

IMPROVING TIME TO DEPLOY AND REDUCING COSTS AT EVERY STEP



EXTEND/ RECYCLE & MAINTAIN | 06

Components can be added to sites when needed, swapped out or re-used at end of deployment with optional RFID based inventory tracking.

01 | DESIGN

Input the required height, array, geographic location into MMS design tool for customer approved design and component inventory.

COMMISSION | 05

Easy climb design, low downtime for operators

02 | WAREHOUSE

MMS stacks neatly in minimal warehouse space. 1km of mast cube sections store in 1000sq.ft x 6m high. Collate inventory for transport. Pre-assembly in warehouse can save time on site.

BUILD | 04

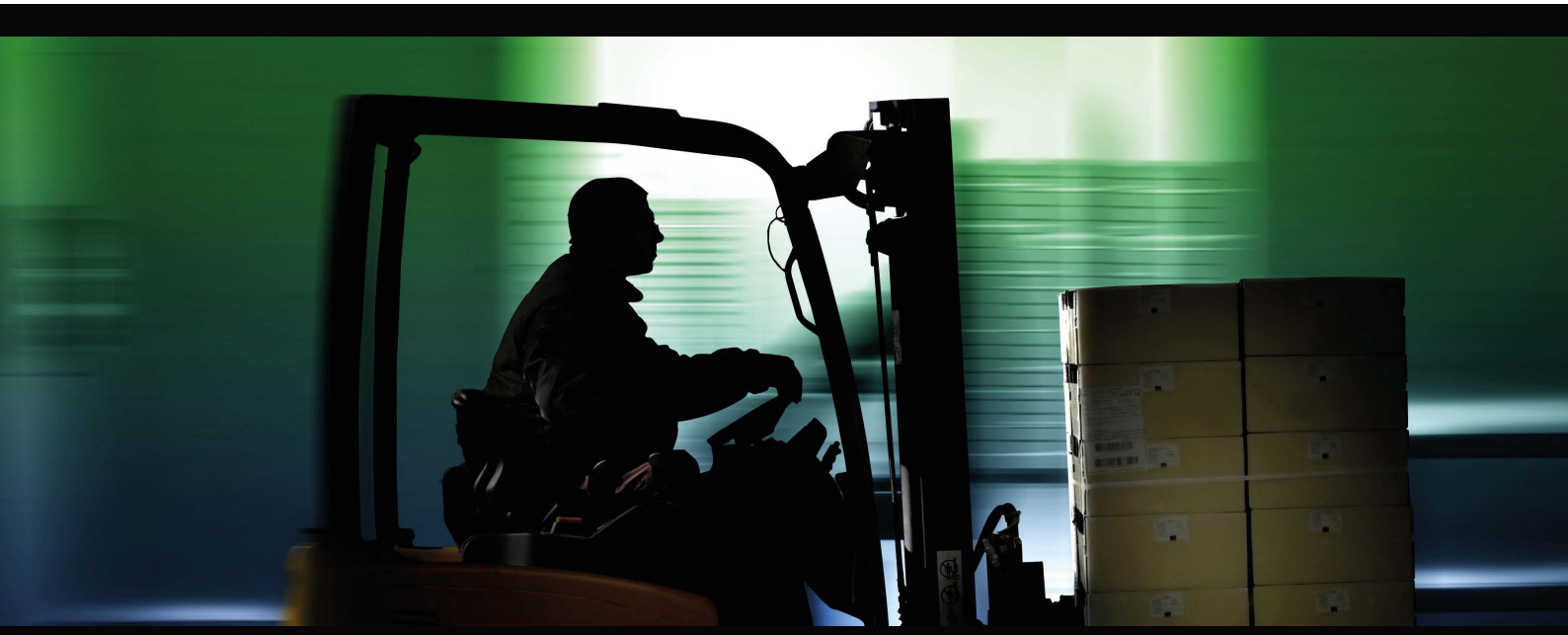
Lightweight standard components means a 2-3 person team can assemble quickly on site. Simple designs can be installed in a morning. Masts raised by suitable lorry-based crane (Hiab circa 34m limit)

03 | TRANSPORT

Lightweight, stackable, standard transport. 48m System-2 Cubes per lorry. 108m of System-1 Cubes per lorry.

WORKING PROUDLY TOWARDS THE UNSDG'S

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

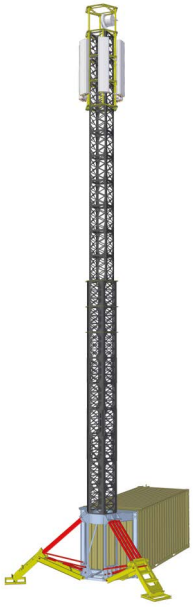


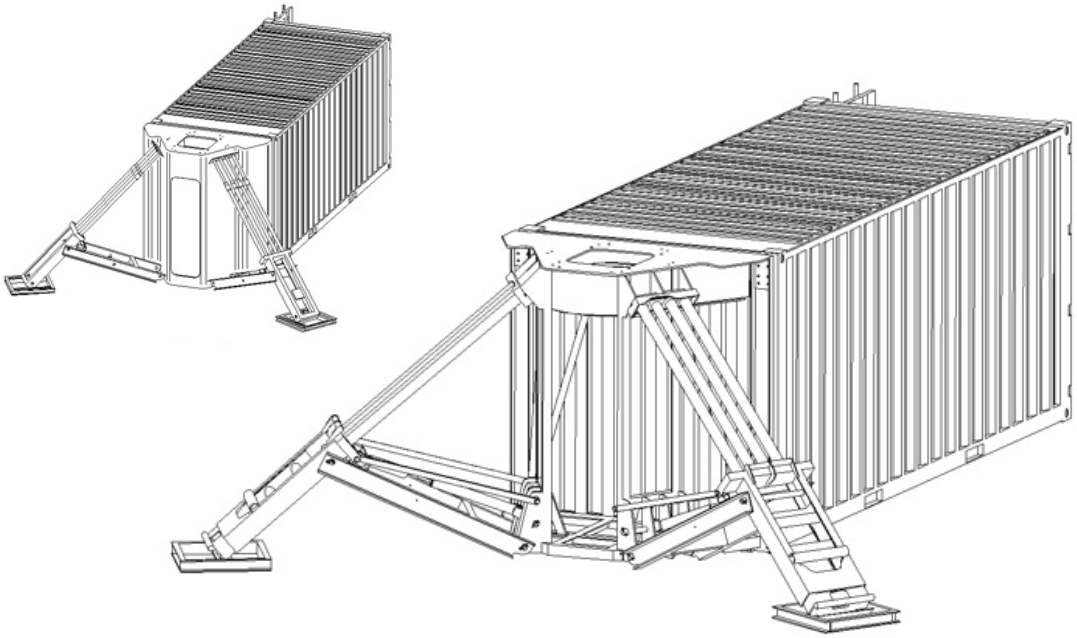
BASE OPTIONS

VARIOUS BASE OPTIONS INCLUDING LEGACY INTEGRATIONS

UPSHOT'S PRINCIPLE SYSTEM-1 BASE - CONTAINER END FRAME/CABIN:-

Upshot's System-1 (MMS TEMPORARY) product works with a full array of base types, from rock anchoring to screw piling and surface or buried weight. We have also developed purpose designed structural ends that fit to standard ISO containers. This enables the mast to be integrated with a mast delivery to site, that includes internal ballast and/or system equipment. Referred to as either a Container End Frame, or the enclosed Container End Cabin, both attach to the ISO container's Twistlock corners, in a way that still alows the container corners to be locked down and transported with the frame on.

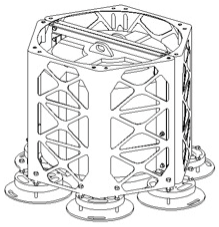




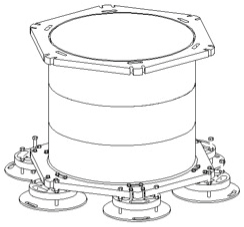
SAMPLE COMPONENT DERIVED BASES + WEIGHT:-

Secondary frames, installed in Hexes, form guides and restraints for the stackable 1.6T concrete weights. The frames prevent concrete damaging the finish of the hexes, whilst the 3.2T base is a stand alone unit that is vehicle impact resistant, can also be stacked, and can form the base to smaller hex masts.

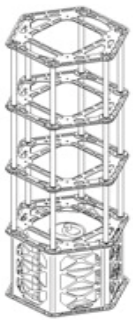
1.6 TONNE CONCRETE WEIGHT



2 TONNE HEX BASE
TIPPING MOMENT 13.5kNm

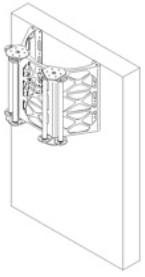


3.2 TONNE BASE/GUY ANCHOR
TIPPING MOMENT - 22kNm

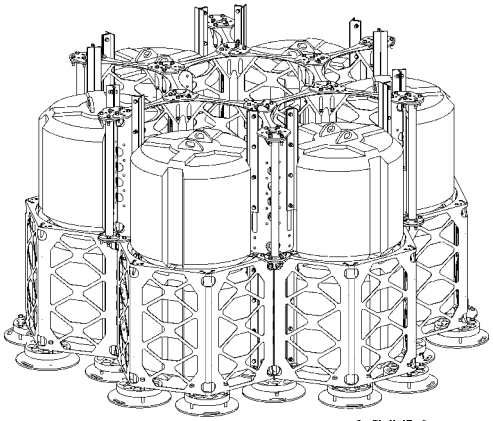


Sample Masts II

Sample Roof/ Low-Height Masts



Sample Wall-Mount

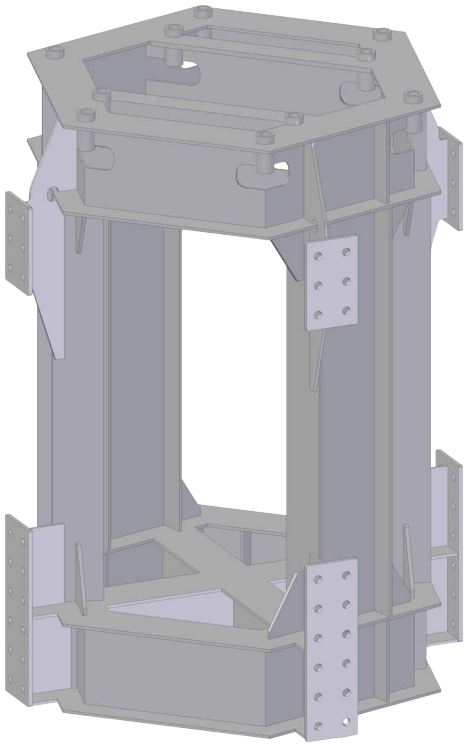


23.5 TONNE 3.75m DIA BASE
TIPPING MOMENT - 368kNm
GROUND PRESSURE - 2.2kPa/T

SYSTEM-1

MAST BASE CORE

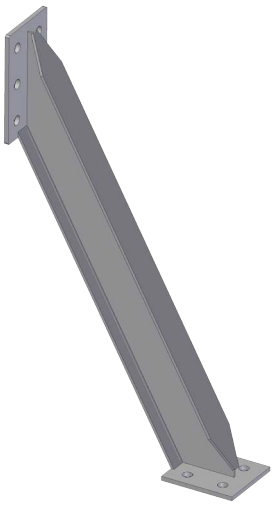
PRIMARY COMPONENTS:-



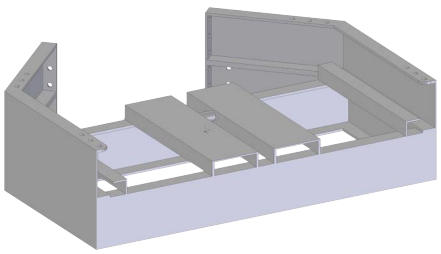
SYSTEM-1 BASE CORE

- System-1 Bases centre around this design
- Either Cube-1 or Hex-1 Modules Can Be Attached
- Easy access to climb through for cables & climbing

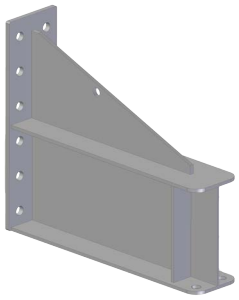
LEGS, BRACES & CRADLES:-



BALLAST BASE BRACE



CRADLE

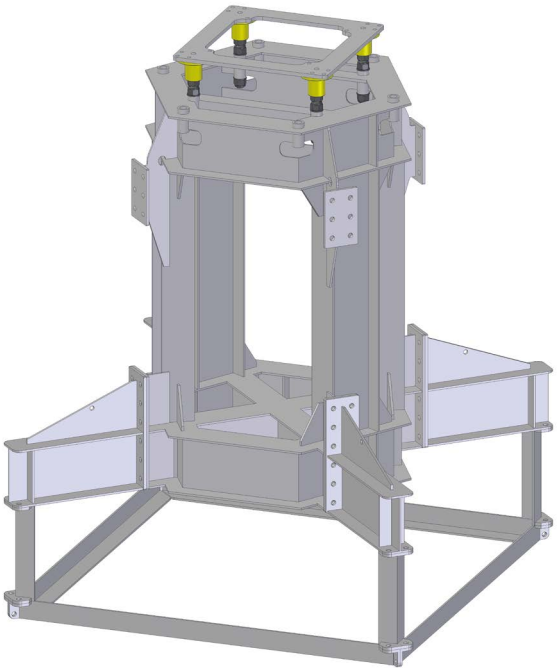


WEIGHTED BASE LEG

SYSTEM-1

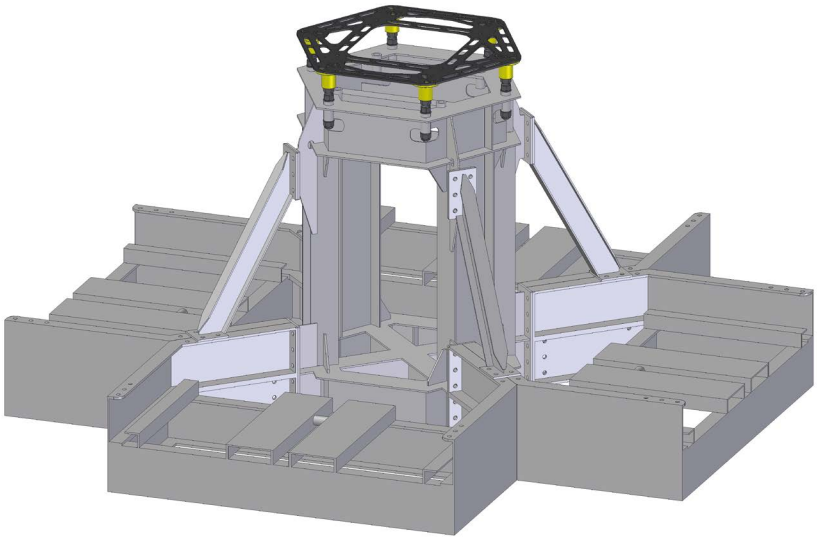
BASE CONFIGURATIONS

WEIGHTED & BALLAST BASES:-



WEIGHTED BASE

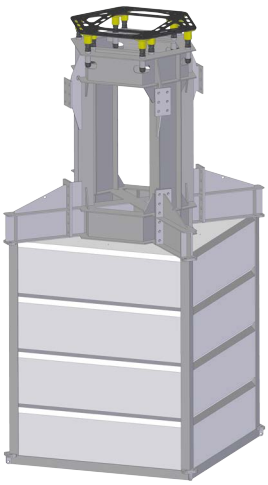
- Assembled as a Weighted Base, the framework can be selected to contain between 1 and 4 concrete blocks, or ommited in favour of a bespoke fabrication to re-use existing foundations.



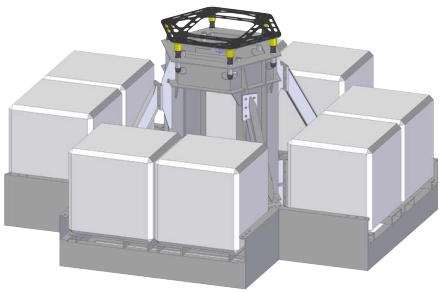
BALLAST BASE

- Assembled as a Ballast Base, the maximum capacity of the System-1 masts can be supported by this base once fully loaded with two layers of concrete blocks as shown.

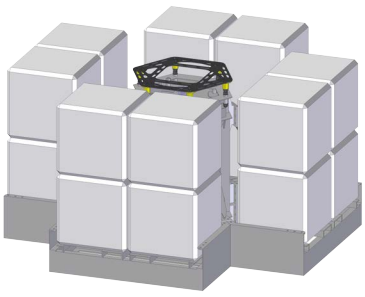
OPTIONS:-



WEIGHTED 2.1 x 2.1



BALLAST BASE 4.3 x 4.3 (23tn)

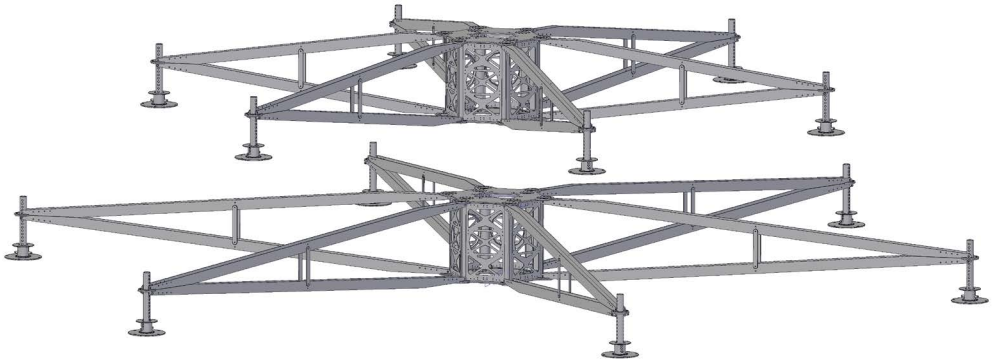


BALLAST BASE 4.3 x 4.3 (42tn)

SURFACE BASES

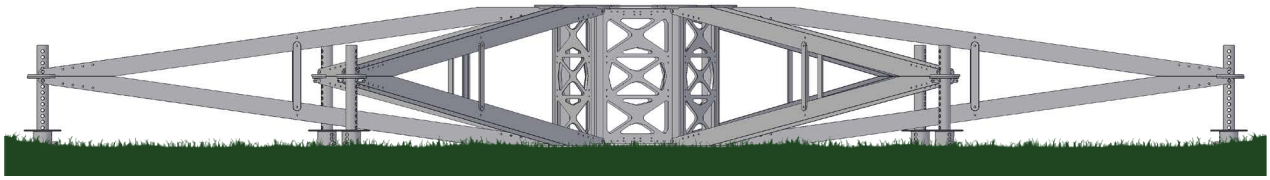
SYSTEM-1 & SYSTEM-2 'SPIDER MAST FOUNDATION'

LOW ENVIROMENTAL IMPACT AND EASY INSTALLATIONS:-



Operating at radii of 8.8m and 12.5m, these two mast foundations are designed to support towers or masts to 30m and remain operational in 40m/s wind speeds.

Although designed as a System-2 level component, System-1 masts mount readily, plus stay attachment points are provided at the end of each supporting leg. System-2 Masts ordinarily do not require stays to 30m height.



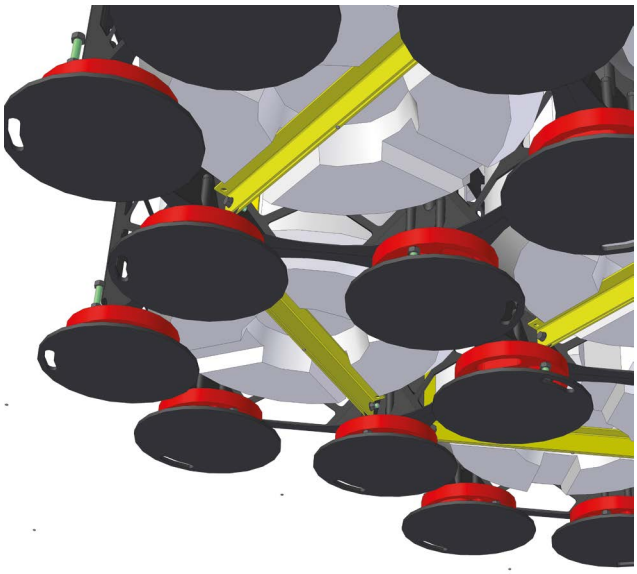
- Level Stabilised Legs
- Centre Piece Supported as shown
- Supports Both Systems
- Multiple Options

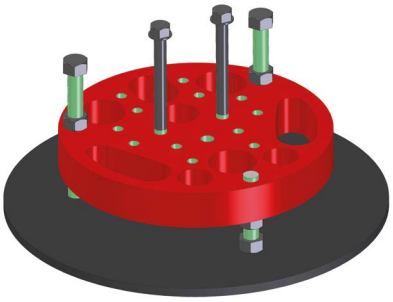
HEAVY DUTY

SYSTEM-1 SECONDARY PARTS

ADJUSTABLE HEAVY DUTY BASE PLATE:-

The System-1 Base Plate is two plates with jacking bolts capable of precise levelling adjustment. The amount of adjustment depends on the length of the bolts, but, at a nominal maximum of 70mm, provides ample levelling adjustment over most aged foundations such as store car parks, or solid bases scraped clear of top soil by an excavator bucket.

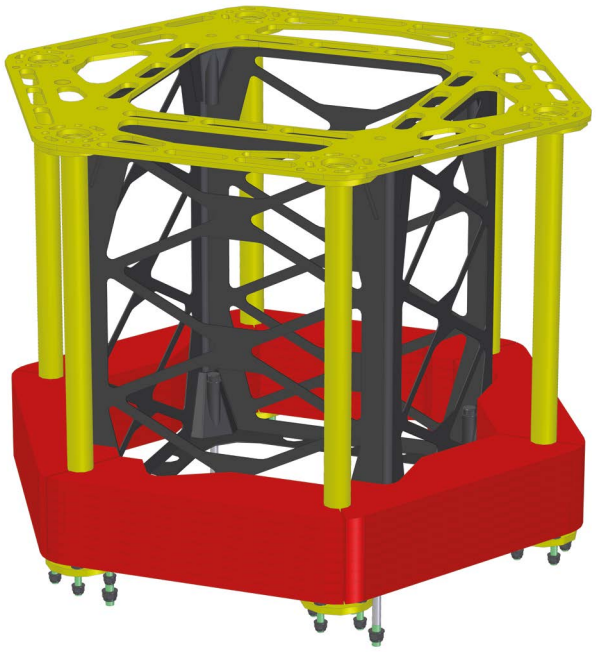


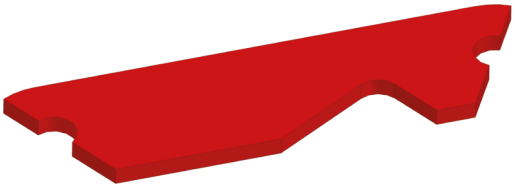


The basic plate configuration is a ground plate to spread load, then the jacking bolts supporting the heavy duty base plate. The threaded bolt pattern (green) seen on top of the base plate matches the pattern used throughout the system. This allows the install arrangements such as is shown in the image to the left.

20KG STEEL WEIGHTS:-

System concrete weights are useful, theft resistant ways of applying significant yet cost effective weight in larger increments. To address situations such as roof installs and walk in only mast installations, a system of 20kg weights was developed. Based exclusively around the 6 Pole array, that can be constructed anywhere in a mast or mast base, the weights carry to position and slot between adjacent poles. This is a very space efficient weight solution, albeit one requiring security from the weight being stollen for scrap.





The individual weight would form a parallel sided plate ring except for a large notch to allow fitment when a Cube is installed also.

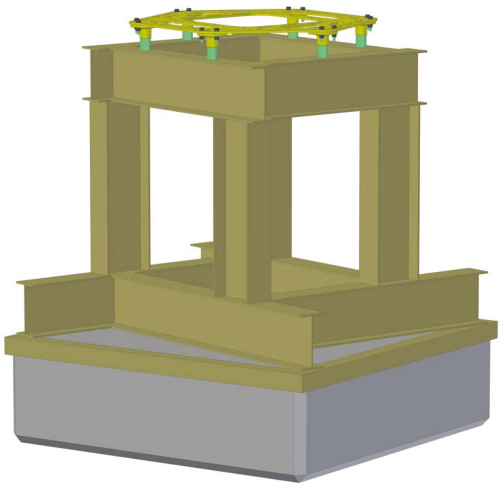
The eight layers of 120kg each place 960kg of weight in 200mm height overall. This means the array to the left can accommodate up to 4 tonnes of weight, dependent ultimately on the ability to tip the last weight up and in between the posts.

There is, here, the opportunity to deploy masts designed for a fair weather wind loading, that can be visited and extra weight added should the weather turn against expectation. A frame is in design to transport and apply large collective weights in one unit.

MONOPOLE BASE

SYSTEM-1 SECONDARY PARTS CONTINUED

HEAVY DUTY MONOPOLE MAST BASE:-



Being of simple beam construction, this System-1 monopole base fits to the commercially available 2m square concrete block to distribute ground pressures at acceptable levels on virtually all ground conditions.

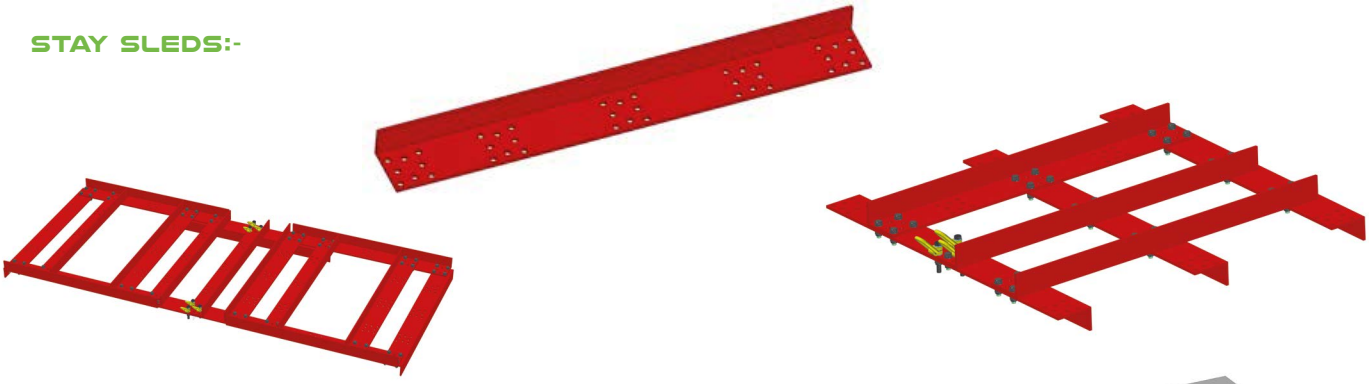
This elevated height version provides access into the base of the mast for both human access and feeder ways.

During rapid deployments of emergency replacement masts, a hastily prepared location, to a reasonably level state, can permit the base to be installed immediately. Any remaining minor levelling is then achieved with adjustment to the top mounted Interplate.

BESPOKE BASES:-

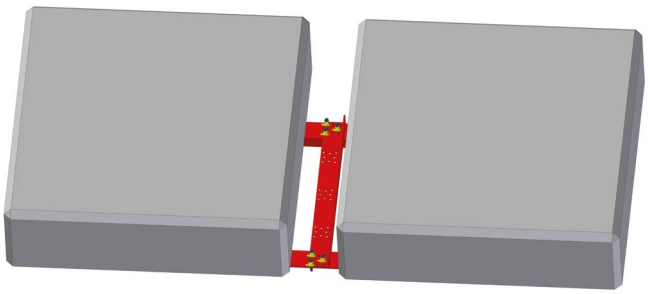
Bespoke base frames can always be supplied. Whether of bespoke surface mounting to a ground anchor arrangement, or devised to be encased on reinforced concrete, arrangements can always be made.

STAY SLEDS:-

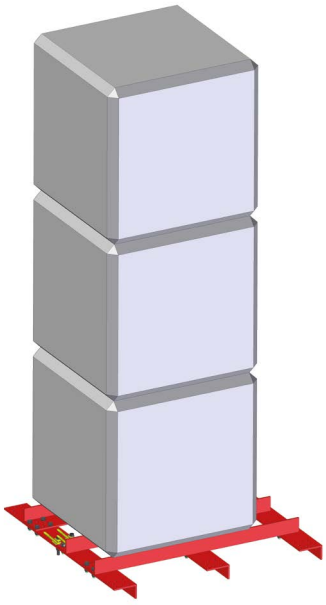


Where stay anchoring is required, Upshot UK Ltd has devised a simple beam element, weight 23.5kg, that can be walked to any location in numbers, to be bolted together into single or double bank sleds. This allows sled patterns to be arranged either in remote locations for hand carried weight application, or ahead of affording delivery and placement of concrete weights.

the beam elements store extremely compactly between uses.



2x 5.76T PER LAYER STAY ANCHOR WEIGHTS - 11.5T ILLUSTRATED



2.4T or 4.8T or 7.2T STAY ANCHOR WEIGHTS

SYSTEM-2

PERMANENT MASTS COMMISSIONING PROCESS

ENQUIRY
Identify information to be shared

ENVIRONMENTAL
Outline environmental responsibilities

SPECIFICATION
Agree the install specification

UPCALC
Our mast design and stock report is generated

APPROVAL
Time for you The Customer, to approve the report

STOCK LIST
Identify items to ship to site

BESPOKE ADDITIONS
Design and fabricate unique requirements

TEST
Test bespoke fit to stock mast components

OEM MANUAL
A Bespoke MMS OEM Manual is created for you with all relevant information

DELIVERY
All product is carefully packaged and sent to your site as per requirements

ERECTION
We offer as much support as required for the on-site erection of your mast

ESTABLISHED SERVICE
The integration of our streamlined services repeatedly satisfies your demands for mast solutions of industry leading due diligence and environmental responsibility.

SYSTEM-2

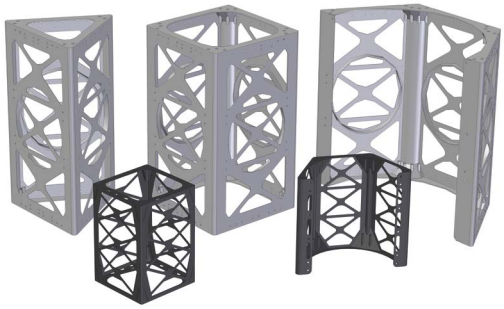
DESIGNED FOR PERMANENT INSTALLATIONS – MODULAR HEIGHT 2M

EUROCODE STANDARDS FOR PERMANENT USE:-

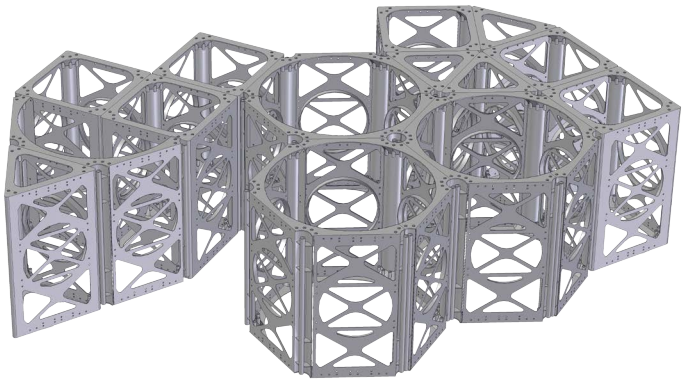
Upshot's System-2 Modular Mast System elevates all of the innovative design solutions in the System-1 Modular Mast System to satisfy Eurocode requirements necessary for permanent use.

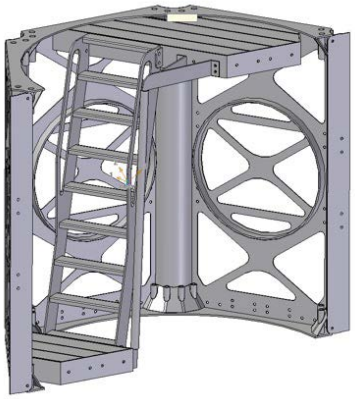
The System-1 modules, coloured black in the image to the right, are scaled by two and redesigned for movement by crane. These are the grey coloured modules.

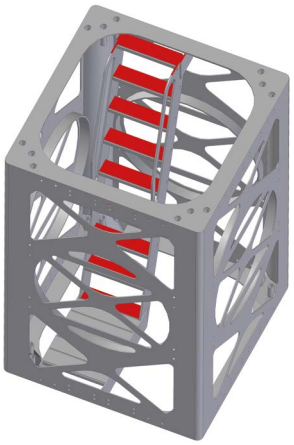
The System-2 modules are constructed of side panels of equal dimension, affording this permanent system increased operational flexibility at every build elevation. At the largest scale mast requirements, multiple modular masts can be deployed as one massive conjoined column or as separated legs supporting a massive table top headspace.



The System-2 modules have man access panels in every face. The default state is closed off as shown. Other options are open for step through access or the same but with a lockable closure panel.





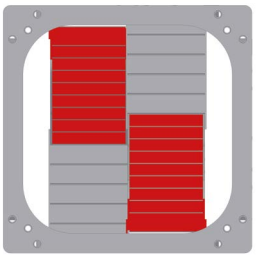


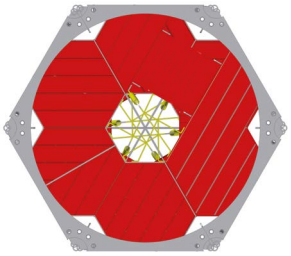
Above is an example of a System-2 HalfHex-2 module with internal kit bolted into it. The adjoining half would be floor grating only. Each level stacks 60 degrees anticlockwise to the level below, generating a spiral staircase.

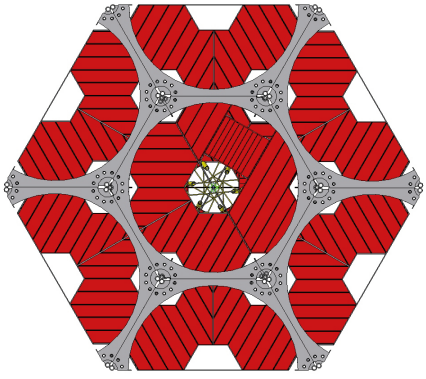
To the left in the similar single unit, the permanent Cube section is fitted with a stair case.

These lower three images show the distributions of stairs, platforms and cable ways.

Provision is made for high numbers of cables to pass both horizontally and vertically through the constructions, with discrimination between power and signal cables always possible.





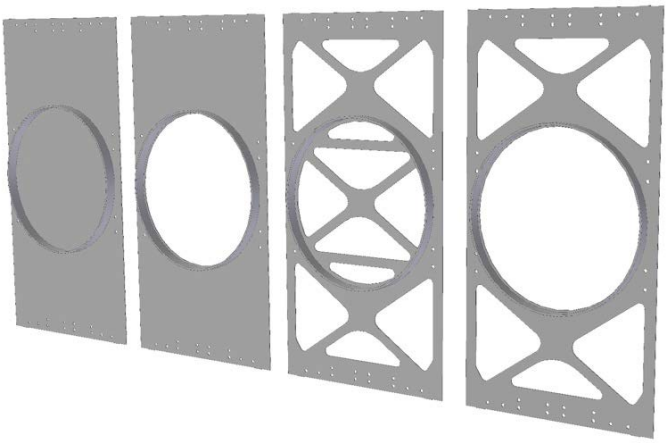


PANELS & CORNERS

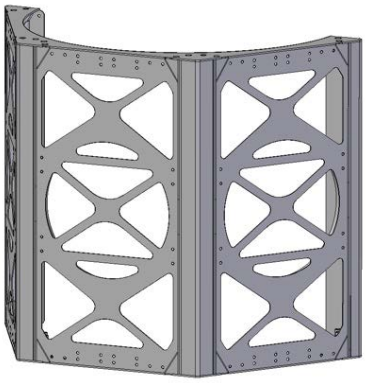
SYSTEM-2 – PANEL AND CORNER SELECTION

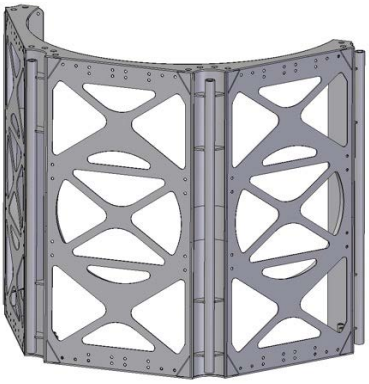
TOTALLY FLEXIBLE BESPOKE OPTIONS:-

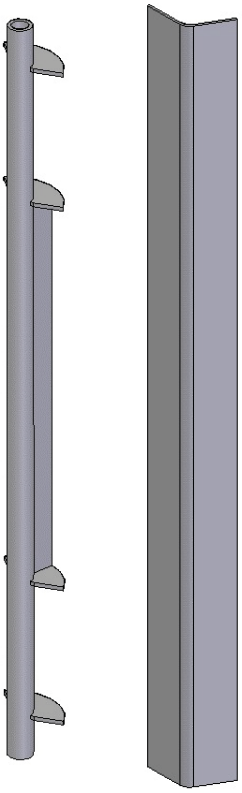
Every panel of every System-2 module can be selected from the panels illustrated here, depending on the application requirements at particular positions in a mast design. This interchangeability also means any bespoke requirement can be incorporated with ease. The open circular apertures can have locking closures fitted. Notice the bolt holes ready for fitment.



CLOSED PANEL OR CORNER POST:-







As well as selection of panel type, vertical edges can be either closed panel or corner post. The closure panel serves to provide cleaner lines to the finish and a slight improvement in compression loading.

The corner posts perform several duties:

1. Lifting Points

The gap between the end two gusset brackets to allow lifting strops to be passed through. These can be used at any attitude and do not require lift certification as they are structural members.

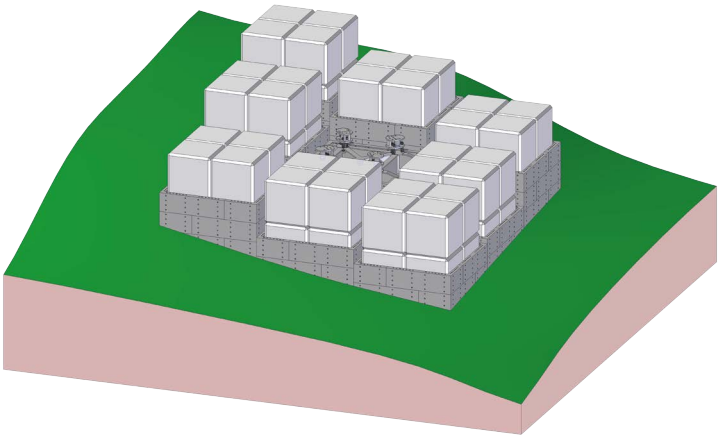
2. Equipment Frame Mounts

For ease of installation of equipment, frames pre-assembled with installed and fully tested equipment can be delivered to site and craned into position in large frames. These frames hook over the tops of the corner posts, then to be bolted into position further once the crane is released of duty.

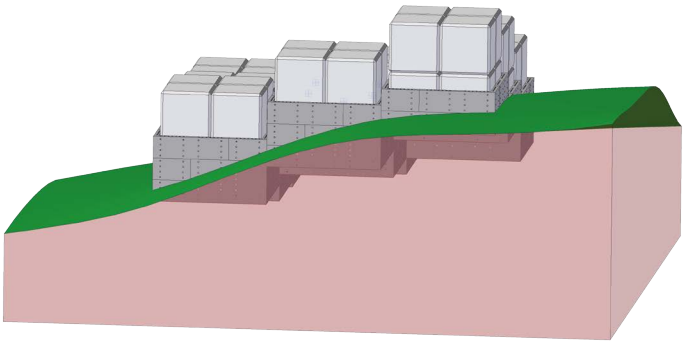
SYSTEM-2

ECO INSTALL WEIGHTED CELL BASE

LOW ENVIRONMENTAL FOOTPRINT:-



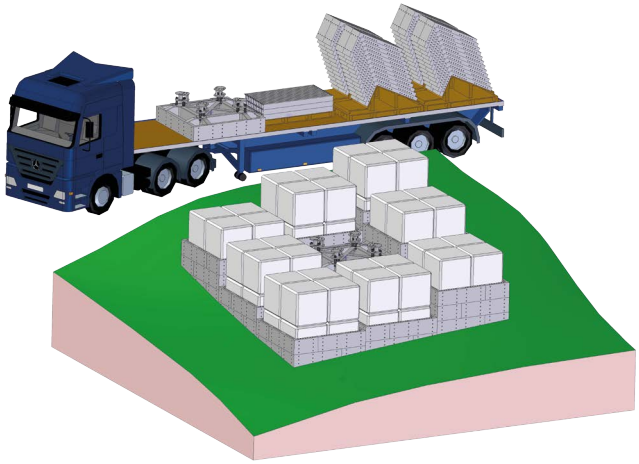
- Minimal & temporary damage to site
- Greatly reduced excavation
- Transport to and from site halved

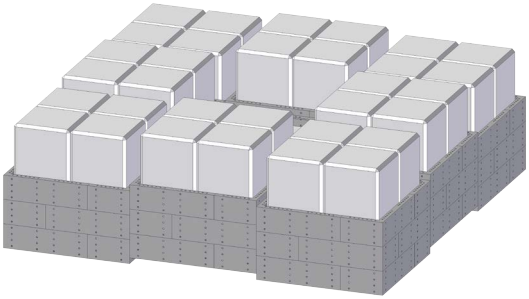


- Excavation by garden excavator
- Compact, cost-effective tarnsport to site
- Install by all-terrain Telehandler

EASY TRANSPORT:-

- For temporary or permanent installations
- Suitable for masts in excess of 50m
- Suitable for use on embankments
- Completely removable and re-usable in a few days





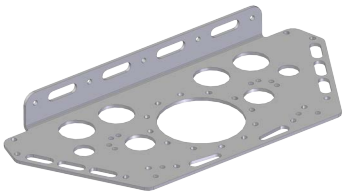
SYSTEM-3

PIONEERING ROOF TOP SOLUTION

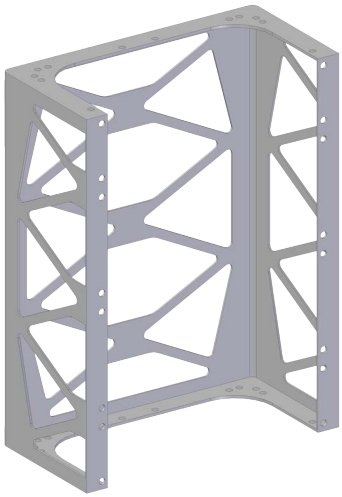
THE CORE COMPONENTS:-

3 POLE FLANGE RING

BASE WEB-3

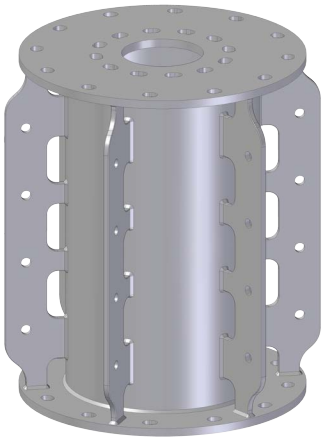


HALF HEX WALL BRACKET-3

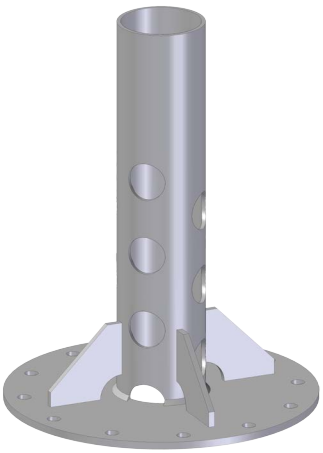


HALF CUBE-3

QUARTER HEX-3



BASE COLUMN-3



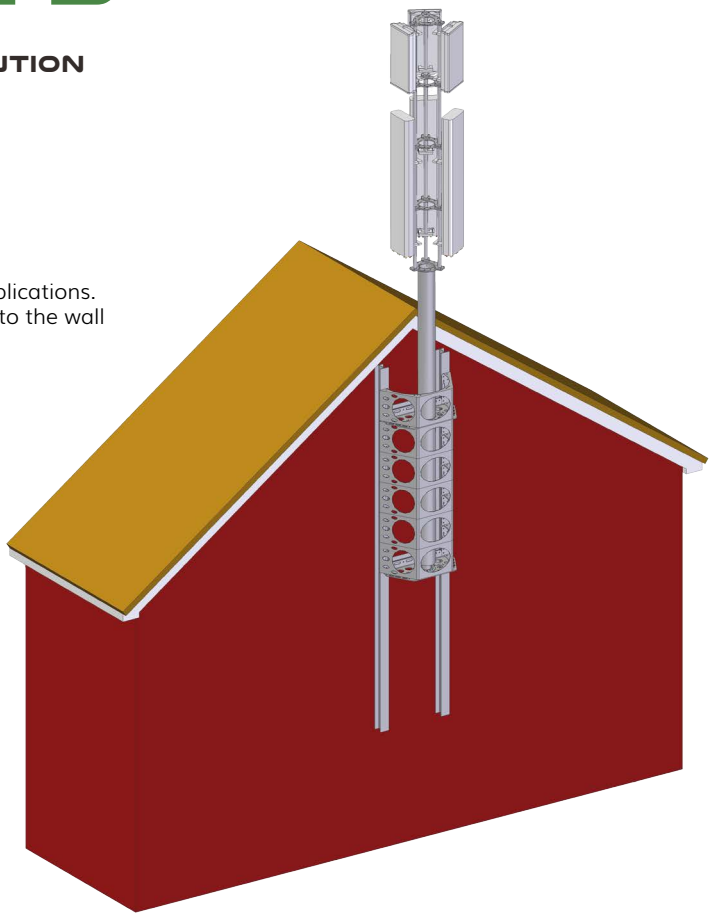
BASE LEG-3

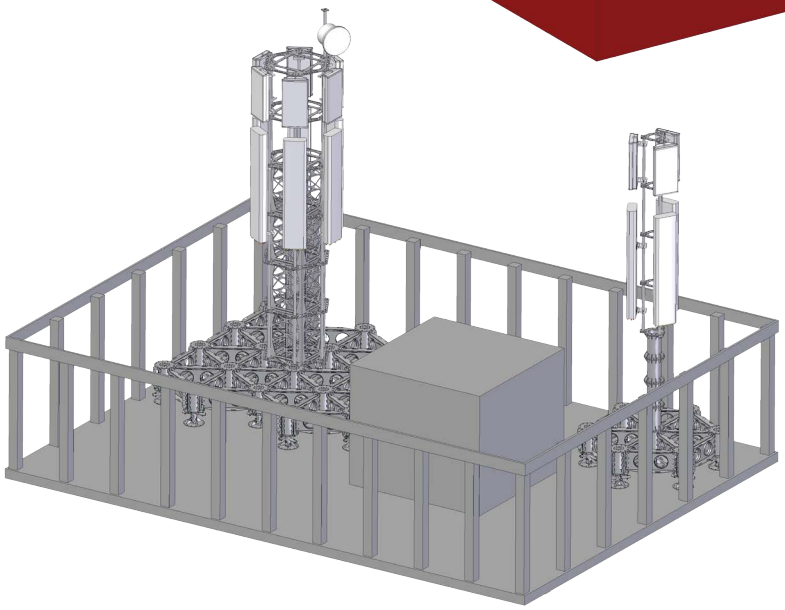
SYSTEM-3

PIONEERING ROOF TOP SOLUTION

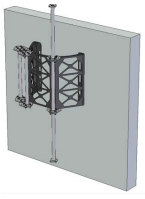
ROOF TOPS & BUILDINGS:-

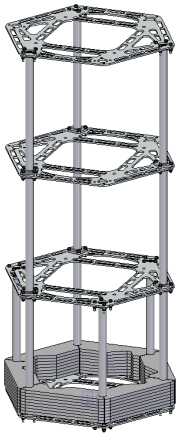
Any assembled shape can fit roof or wall applications. Here the completed mast install is attached to the wall mount.





The MMS rooftop System-3 is maturing to be adaptive, off-the-shelf and entirely re-usable. All parts fit into small residential lifts.



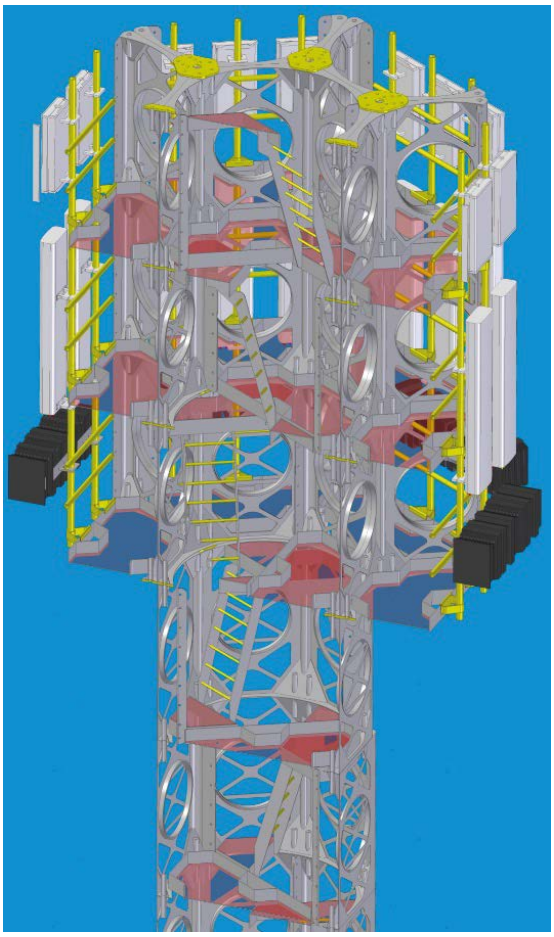


DIVERSE & MOBILE

SYSTEM-2 – A CASSETTE BASED & EASILY DEPLOYABLE FUTURE

HEX BASED SYSTEM-2 MAST WITH MULTIPLE OPTIONS:-

The cutaway illustration to the right is through a Hex based System-2 mast. The access stair up through the mast can be seen, as can the open step through apertures around each level.



Gratings and kick rails will all comply with industry standards. Stairs are shown to Royal Navy diamond set square bar configuration for ice dispersal during climbing. Normally Eurocode compliant rungs would be applied. The mast is then fully Eurocode Compliant.

Design evolution is targeting cassette based antenna mounts, where entire facets of antennas are assembled off site to be delivered and lifted into place in one go. This is in difference to the solution illustrated here, where antennas are individually attached to vertical poles that are bracketed to handrail and kicker plate. Upshot is ready to work with operators and their specific equipment requirements to optimise any install.

Though not illustrated here, the mast section directly under the head can be pre-mounted with the brackets needed to fit an additional head layer beneath the current head. This, along with added new head layers to the top of the mast, would allow for significant upgrade potential to be designed in, on a provide for but not with basis, without incurring the production cost up front.

To date, all bar paint or powder coat of our scope of supply is of materials that can be weathered back into the environment over time. It all corrodes harmlessly. All material is fully recyclable.

This System-2 Modular Mast System is demonstrating such high levels of diversity that the system scope is constantly expanding. At Upshot UK Ltd we are fully aware that our key commitment is listening to the needs of our existing and potential customers; whether here or abroad and whether civilian or military.

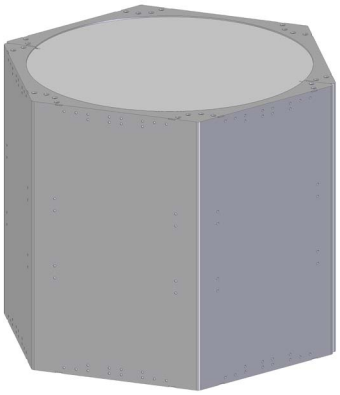
CONFIGURABLE TO NUMEROUS BED LENGTHS AND READY TO GO SECTIONS:-

Whilst wider than ISO containers (to maximise useful size and access up through the middle), Upshot's System-2 Modular Mast System has available transport volume at any available bed length. In these images of the detailed design, note how the latest bolt pattern is both strengthened and to a common conjoined pitch circle diameter. With the right circle, semi-circle and quadrant link plates, the four Cube mast lengths shown can be linked together at every level to transport and construct as a single massive 12m column. Additional interface design will mount the Hex section onto the column.

SECURE & SECURITY

SYSTEM-2 – OVERGROUND & UNDERGROUNDED BASES

20 TONNE HEX EXAMPLES INCLUDING 50M UNGUYED MASTS:-



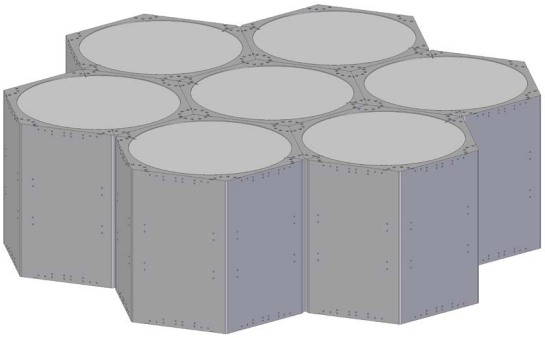
System-2 includes base weight options similar to those in System-1. The main differences are the size of weights, which change from standard delivery to site to install and connection of the steel frames prior to concrete pour.

This 20 tonne weight is the principle permanent modular weight. It can be surface mounted or completely buried.

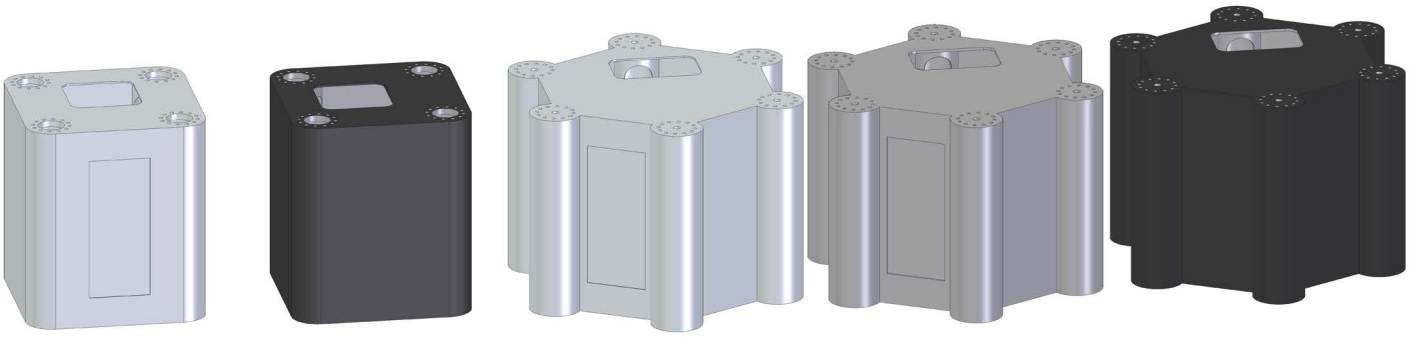
System-2 Hex-2 system masts bolt down directly to any base configuration made with these weights. Options are to limit concrete level beneath the mast, to enable it to be removed at a later date, or have the bottom section of the mast installed first and then permanently concreted in.

In the example to the right the seven module arrangement forms a 140 tonne mass with a freestanding tipping moment of 5 MNm. This is sufficient for unguyed security mast loads, in excess of 50m, in the harshest weather locations in the UK.

As an option, Upshot base units can be designed by independent expertise to be installed into excavated locations to be back filled, saving on material handling and concrete curing.

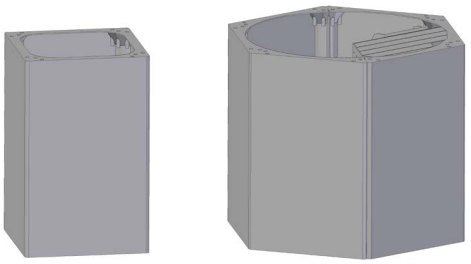


HIGH SECURITY & MILITARY FORT & CASTLE MODULES:-



From left to right:

- Cube based Fort module with security door - 10mm plate.
- Cube based Fort module for through surface interface - 10mm or 20mm plate.
- Hex based Castle module - max 10mm plate
- Hex based Castle module - 20mm plate
- Hex based Castle module for through surface interface - 20mm plate



And as can be seen in the illustration to the right, all configurations of permanent HalfHex, Hex and Cube can be fully encased in 6mm plate.

ACCESS & PRIVACY

SYSTEM-2 – CASTLES, SIGNAL TRANSPARENT PANELLING & MORE

UNPOPULATED FULL MAST EXAMPLE WITH 10MM & 20MM PLATES:-

In this sample mast there are shown many of the elements of design achievable with the System-2 (Permanent) Modular Mast System.

The mast head is shown unpopulated with equipment. By doing so the clear access around the three levels of installation space is visible.

Design work continues to provide an option to surround the mast head with signal transparent composite panelling. The aim is to reduce equipment degradation and allow maintenance to be carried out during inclement weather. There is space to bring equipment into each of bays around mast head, reducing mast torques.

The inclusion of a Castle under the mast head arrangement is to show that the creation of an equipment hoist station, or any other enclosed space requirement, is not difficult. Such a unit could be of entirely bespoke design.

The standard Hex sections contain a spiral stair with rest platforms in every section. For this stair, the sections rotate anti-clockwise 60 degrees with each additional level added. For shorter masts, the large rest platform can be omitted and, with each level now rotated 120 clockwise, a clockwise spiral stair is formed, albeit requiring a harness to use.

Where striped masts are required, the masts offer a natural 2m band width that every section can be pre-painted in.

With the exception of exterior finish, the entirety of this mast can be maintained from the inside. All fastenings are protected from weathering. Higher performance System-2 sections have exterior bolting, exchanging reduced security for increased structural height.

In high security/ military operations, the fully plated sections conceal the position of those moving around inside, protecting them from attack.

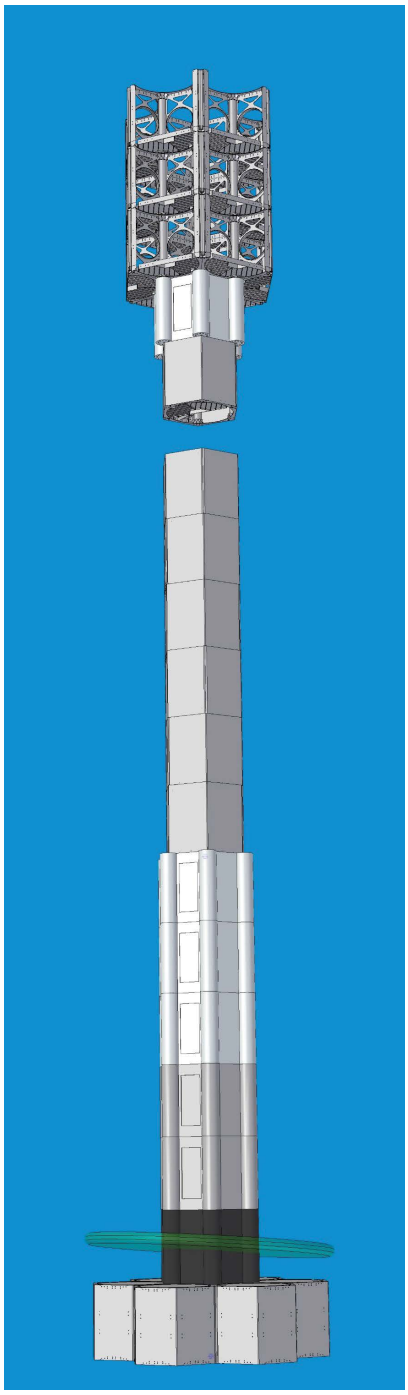
There is room inside the mast for equipment cabinets. Doors at each level allow larger box equipment to be delivered, either by the mast head hoist or tele-handler.

With any permanent mast, bespoke additional work, such as ventilation and weather tight hatches, can be arranged.

Two mast sections bolted together and streamlined into prevailing winds enhance strength further and provide separate man access and services routing. There are medium-term plans to offer lift integrations.

The lighter colour sections denote sections fabricated of 10mm plate. The transition between these and the normal Hex sections above will be down to what equipment room is required and when loadings have diminished to the point the normal Hex can take over.

At elevations where assessment of risk determines, the 20mm thick Castle sections can be used. These offer appreciably more resistance to vehicle impact. The base units (coloured black in this image), can be fully filled with concrete for maximum resilience to impacts.



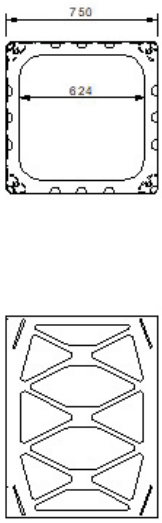
Note: the green disc denotes uneven ground level.

With all of Upshot's mast ranges, emphasis is placed on saving costs throughout projects, to deliver a greater percentage of that cost as physical mast. The ability to calculate mast configurations, quickly and effectively, reduces response times and time to delivery on site. The safe and controlled access to mast assembly, at every stage, ensures the health and safety of all personnel.

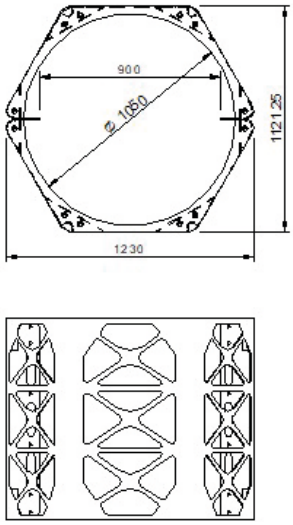
THE SECTIONS

SYSTEMS 1 & 2 – MODULAR MAST SECTIONS

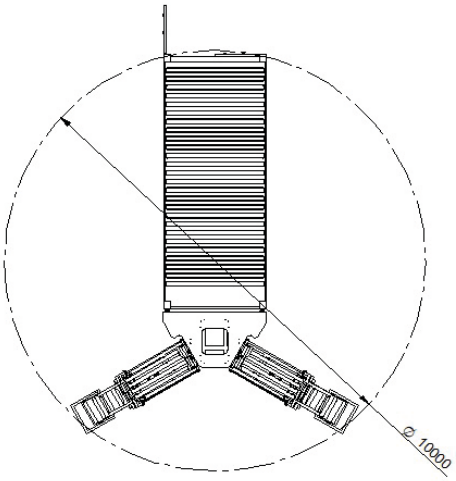
SYSTEM-1:-



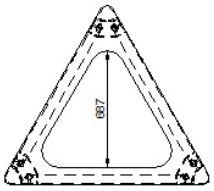
CUBE-1

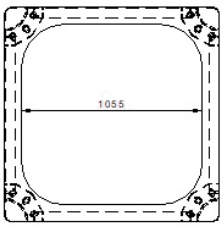


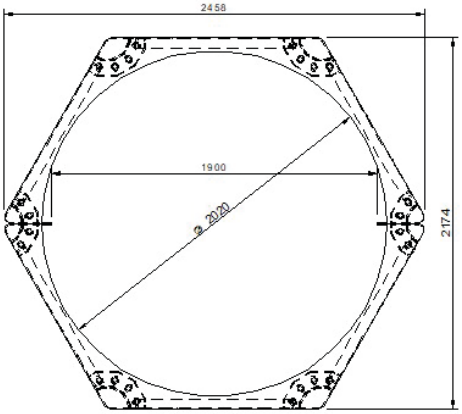
HEX-1

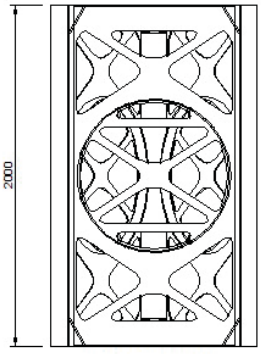


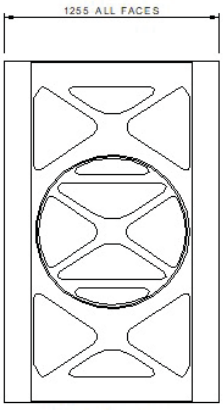
SYSTEM-2:-

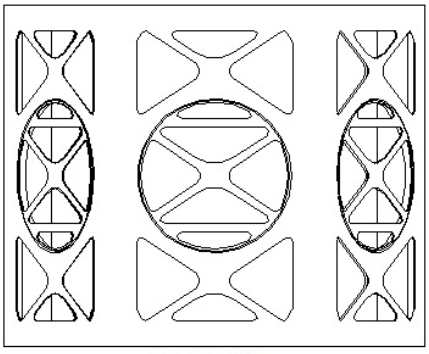












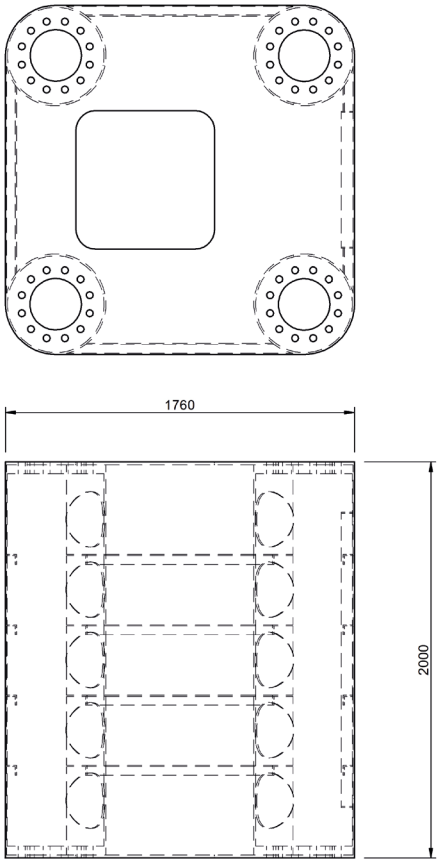
TRI-2

CUBE-2

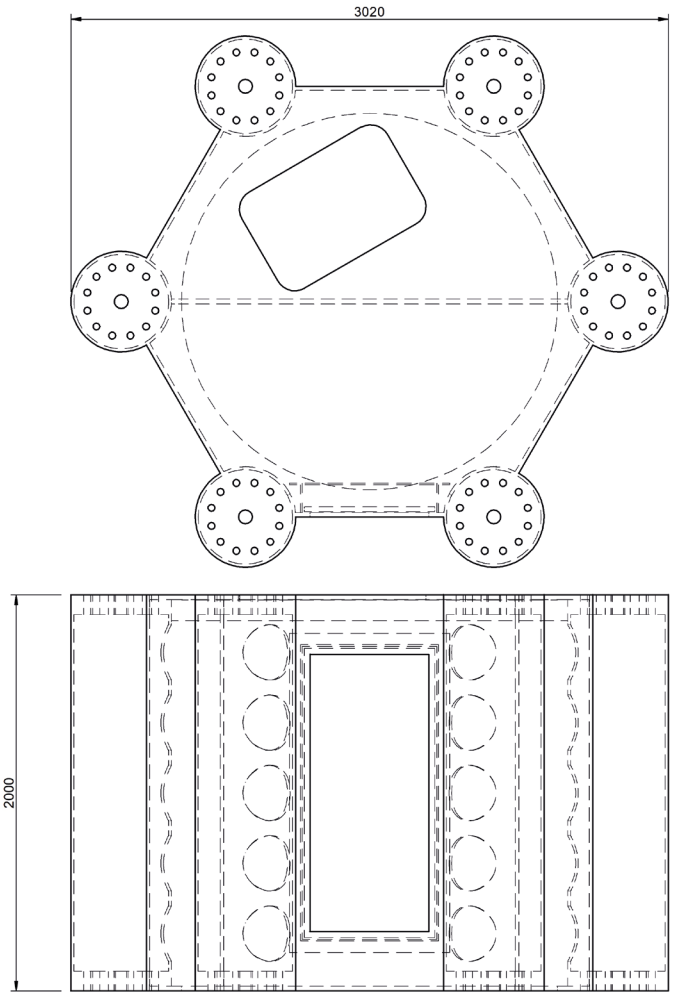
HEX-2

MILITARY GRADE

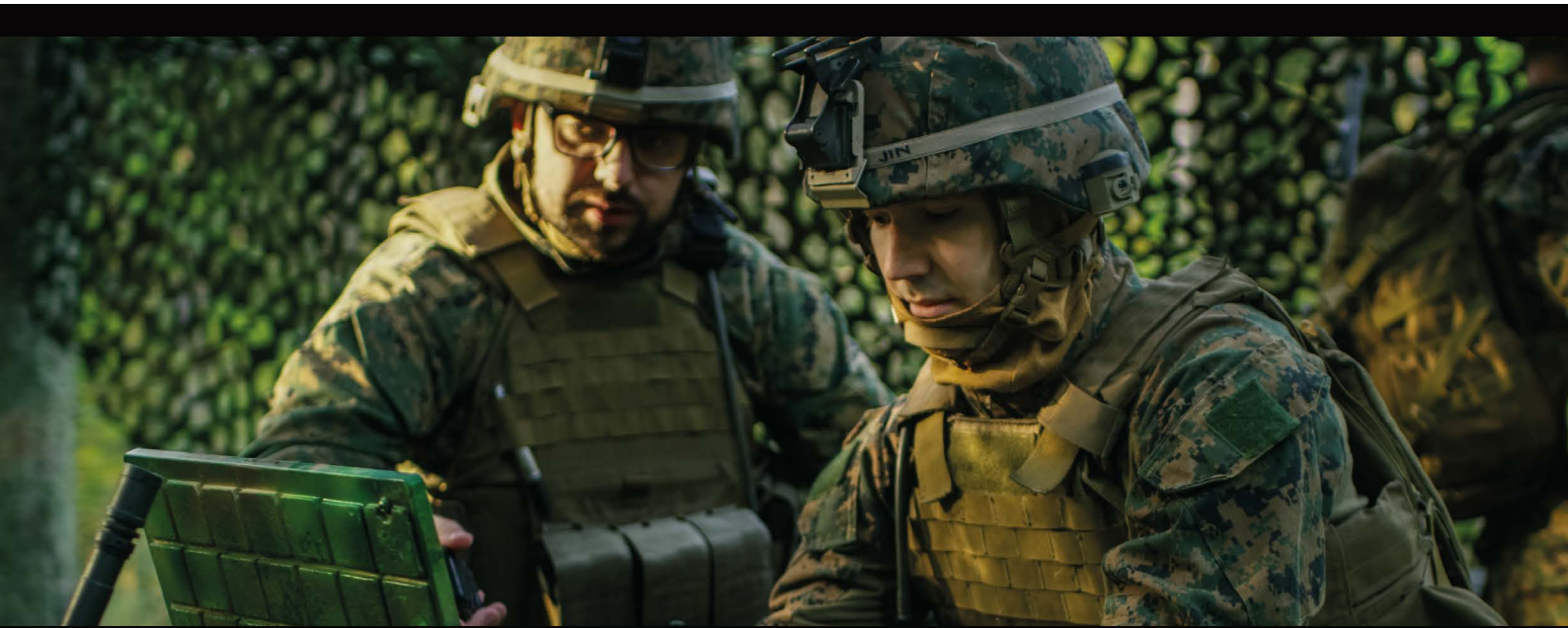
SYSTEMS 2 – HIGH SECURITY MAST SECTIONS



FORT P0 - 2.3 TONNES



CASTLE P0.2 - 20 THK - 6 TONNES
CASTLE P0.1 -10 THK - 3.2 TONNES



FAQ'S

SOME FREQUENT QUESTIONS AND ANSWERS

WHAT SIZES ARE THE MASTS?

The Modular Mast Systems are specifically designed to be erected at practically any realistic height. The System-1 modules are 1m and the System-2 modules are 2m high. This provides true aesthetic flexibility and scope for most environments.

CAN YOUR MASTS BE FITTED TO LEGACY SITES?

MMS masts can be deployed as unstayed towers, or as masts with a very small stay radius; with stays that ordinarily anchor to the mast base weight. For example our System-2, 30m Hub mast has a base option under 7m diameter.

ARE YOUR SYSTEMS FULLY & EASILY REMOVABLE FROM SITES?

Every component of our inventory can be removed from site. Our surface mounted bases serve to minimise ground disruption; in itself a huge benefit environmentally.

HOW DO YOUR COSTS COMPARE TO TRADITIONAL MASTS?

The Modular Mast System has been designed to absorb as much project cost as possible. Principally the use of the Modular Mast System realises a potential:

- 99% sustainability (An inventory you can trade)
- 80% reduction in mast design costs (One system, many masts)
- 95% reduction in deployment time (Configure in minutes, pick from stock)
- 60% reduction in warehousing (It all stacks up)
- 40% reduction in training (Train in one system, not many masts)

DOES ANYONE ELSE MAKE SIMILAR MODULAR MASTS?

Our technology is worldwide patent protected so we are not only the first to manufacture this system, but also the only company globally building anything like it. Please inform us if you become aware of any imitations and by buying a Modular Mast System product, you can rely on strenuous safety and build quality checks and balances and full support and expertise born of thousands of hours of meticulous design and installation experience.

CAN WE SEE AN EXISTING MAST IN PERSON?

We have a demo mast available for viewing at our factory in Derbyshire and if you are a major operator or similar, we may be able to show you one of our installations, subject to approval. Some of our sites are sensitive and require special access or permissions to view them.

Please reach out to James Pickance on +44 (0) 1590 670845 or via his mobile on +44 (0) 7973 763590 or send an email to: james.pickance@upshot-uk.com in the first instance.

for more information please visit:

WWW.MODULARMASTSYSTEMS.COM

VISIT US:

We have demonstration facilities by appointment only at:

Salcombe Road
Meadow Lane Industrial Estate
Alfreton
Derbyshire
DE55 7RG

CONTACT US:

We have offices in London and our Head Office is in Lymington in Hampshire:

CONTACTS:

In the first instance please contact James Pickance on +44 (0) 1590 670845 or via his mobile on +44 (0) 7973 763590 in the very strictest confidence.

Established contacts can direct technical questions to John Miles on +44 (0) 7716 424995.

Full technical specifications and product configuration options available on request

WWW.MODULARMASTSYSTEMS.COM

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