



The Pipe Hull System

Modular floating platforms on sealed HDPE pipe, with a treated hardwood frame

Nautilus Water Platforms | Version 2 of the Nautilus platform | Rev A | 21 October 2026

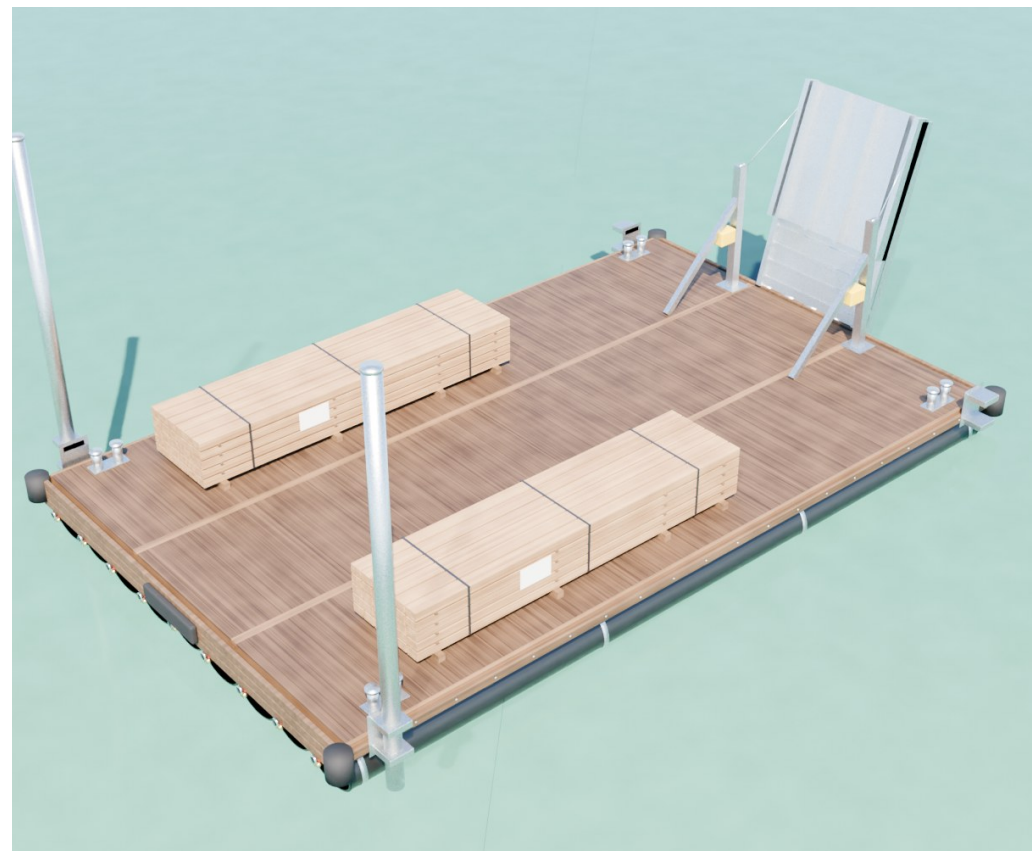
Nautilus Innovation Pte Ltd, 200 Loyang Avenue #03 04, Loyang Valley, Singapore 509058

A platform that never needs painting

Version 2 of the Nautilus platform: the same modular idea, rebuilt around sealed plastic pipe

Nautilus has run a steel modular platform for about 15 years. It works, and it has been repainted three times. Version 2 keeps what the steel system proved, a modular, container shipped, bolt together platform, and changes the hull. The hull is now heavy duty sealed PE100 pipe that cannot corrode, under a pressure treated hardwood frame. It is lighter to ship, quicker to build, cheaper to own, and easy to take apart and use again.

Where it is used. Work barges for island and lake construction, sports courts, event decks, landing stages, walkways, and the base for floating suites such as the Escape Edition. The platform is the product; what sits on it is the application.



0

paint on the hull,
ever

0

welds: it all bolts
together

1 box

of pipes floats an
85 m2 platform

4 days

to build, crew of
four

48 deg

range of stability,
IMO criteria met

1 pipe

can flood; it stays
afloat

0.3 bar

factory air test,
every pipe

630+

to 1,200 mm pipe
sizes

How it works

Sealed pipes carry the load; a glulam frame sits in curved seats on the pipes; a hardwood deck goes on top



Sealed pipe hull

Each module floats on three PE100 pipes, closed with caps fused in the factory. Each pipe is its own watertight compartment, kept at 0.10 to 0.15 bar of air with a gauge on the end.

Curved seats, not clamps

Every glulam primary has a 25 mm seat cut to the pipe, with taper blocks either side. The load spreads over a broad arc of the pipe. A lined galvanised strap at every second primary holds the pipe in its seat.

Treated hardwood frame

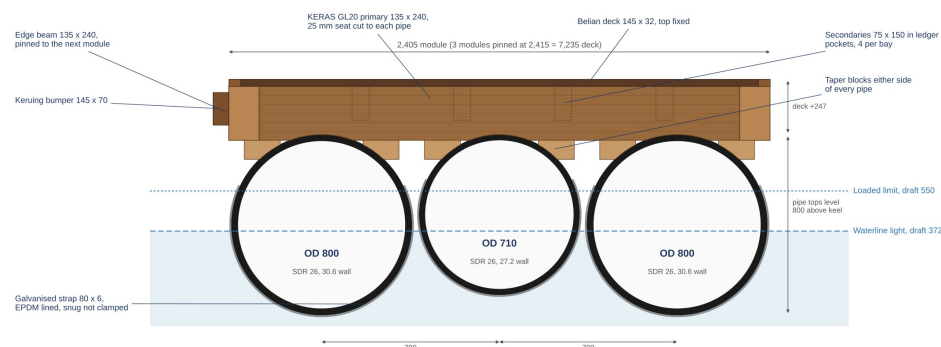
KERAS glulam, ACQ pressure treated keruing, machined before treatment. It does not corrode, and takes a marine paint or stain to suit the project.

Hardwood deck

Belian or other hardwood boards on secondaries, or a sports or wearing surface where the use needs it.

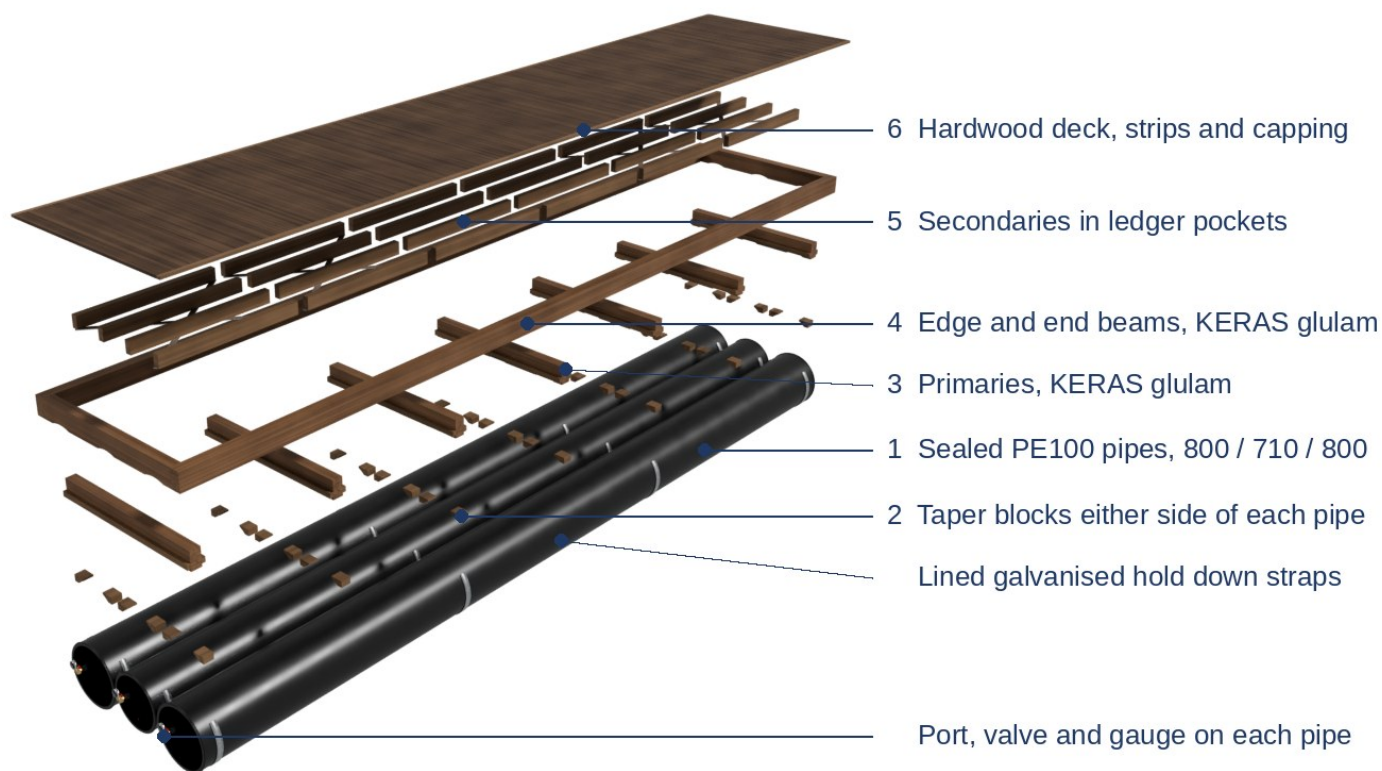
Lifted by the frame

Lift points and landing blocks are on the frame. Out of the water the pipes only ever carry their own weight.



The build up

One module, 2,405 x 11,800, layers lifted apart in build order



1 Pipes

3 sealed PE100 pipes, 800 / 710 / 800 at 790 centres, tops level. Caps, ports and gauges fitted in the factory.

2 Taper blocks and straps

Keruing blocks either side of every pipe, fixed under the primaries in the factory. Lined straps at primaries 1, 3, 5 and 7.

3 Primaries

7 KERAS glulam primaries 135 x 240 per module, seats cut to the pipes, ledgers bolted both faces.

4 Edge and end beams

KERAS 135 x 240. Galvanised lugs and tapered pins join modules side by side.

5 Secondaries

Bay frames drop into ledger pockets: 4 per bay, 12 in the vehicle bay.

6 Deck and trim

Hardwood boards top fixed; strips, capping, joint covers, bumpers and end fascias.

The pipes

Standard ISO 4427 PE100 pipe, sized to the job, sealed and tested in the factory

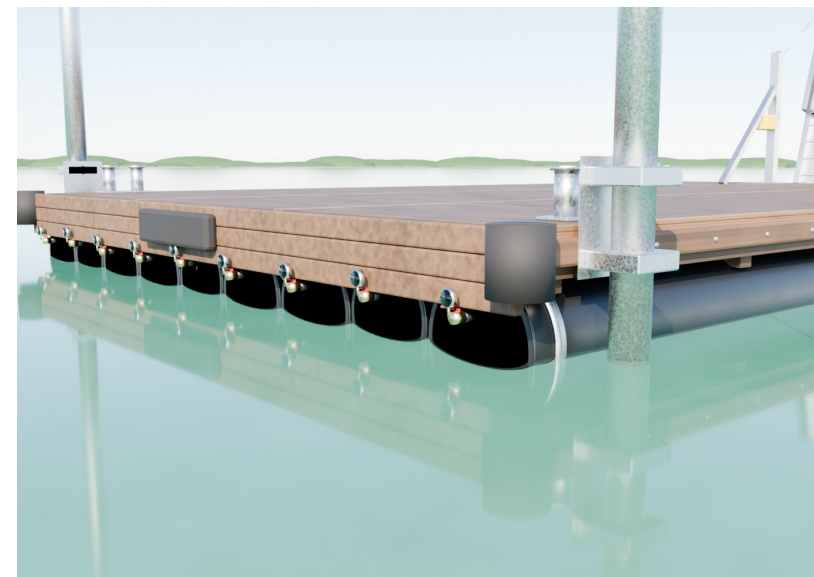
Pipe sizes 630 to 1,200 mm. Walls from about 19 mm (630 DR 33) to about 68 mm (1,200 SDR 17).



Pipe OD (mm)	Wall SDR 33 / 26 / 21 / 17 (mm)	Pipe weight SDR 26, 11.8 m	Gross buoyancy 11.8 m, fresh	Net lift SDR 26, 11.8 m	Pipes per 40 ft HC	Typical use
630	19.3 / 24.1 / 30.0 / 37.4	0.57 t	3.68 t	3.11 t	12	Light walkways, landing stages
710	21.8 / 27.2 / 33.9 / 42.1	0.73 t	4.67 t	3.94 t	9	Centre lines of the work platform
800	24.5 / 30.6 / 38.1 / 47.4	0.92 t	5.93 t	5.01 t	6	Work platform, courts, event decks
900	27.6 / 34.4 / 42.9 / 53.3	1.17 t	7.51 t	6.34 t	4	Heavier work decks
1,000	30.6 / 38.2 / 47.7 / 59.3	1.44 t	9.27 t	7.83 t	4	Heavy decks, single storey pavilions
1,200	36.7 / 45.9 / 57.2 / 67.9	2.08 t	13.35 t	11.27 t	2	Two storey suites, heavy plant

Footnote: Masson Blom ISO 4427 PE100. Buoyancy is the full displaced volume of an 11.8 m pipe; the section draft is not to the 760 mm freshwater rule, not full immersion. SDR 26 is our

Wall thickness is set for handling, impact, the seat loads and long term buckling under water pressure, not for mains pressure. SDR 26 is our standard and holds its working depth with no air inside. Heavier walls (SDR 21, SDR 17) are used for heavy plant or rough handling; lighter DR 33 for monitored, protected uses.



Stern corner: fused caps, DN50 port with ball valve and gauge on every pipe, corner fender, bumper strip and spud guide.

Step	In the factory
1	Virgin PE100 pipe, black, UV stabilised with carbon black, to ISO 4427 or EN 12201, with mill certificate
2	Cut to 11.8 m overall, the longest length that ships in a 40 ft HC
3	Flat PE100 end caps butt fused to ISO 21307 or DVS 2207 1, with a weld log per joint
4	DN50 port welded into one cap, high position, with plug for transit
5	Air test every pipe at 0.30 bar for 1 hour, soap test on welds and port; test sheet per pipe serial
6	Shipped at 0.05 bar; retested on site at 0.15 bar before launch; worked at 0.10 to 0.15 bar

Built on the beach in four days

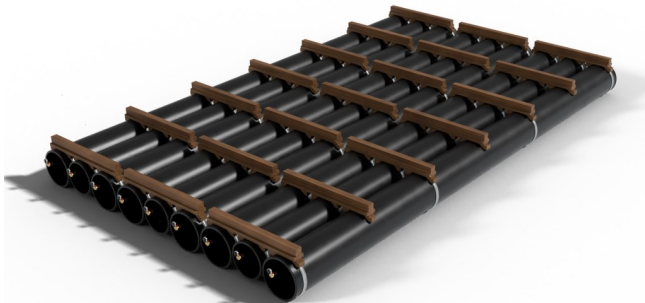
Work platform: crew of four plus a small crane, alongside a dock or on a beach. No welding.

1



Unload and check pressures. Set out the nine pipes.

2



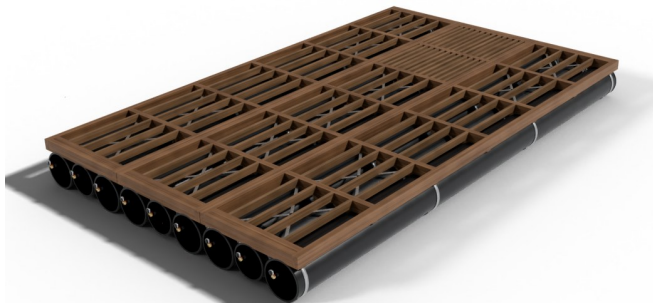
Place primaries with blocks fitted; strap the pipes.

3



Edge and end beams; pin the three modules together.

4



Drop bay frames and secondaries into the ledger pockets.

5



Lay and fix the hardwood deck.

6

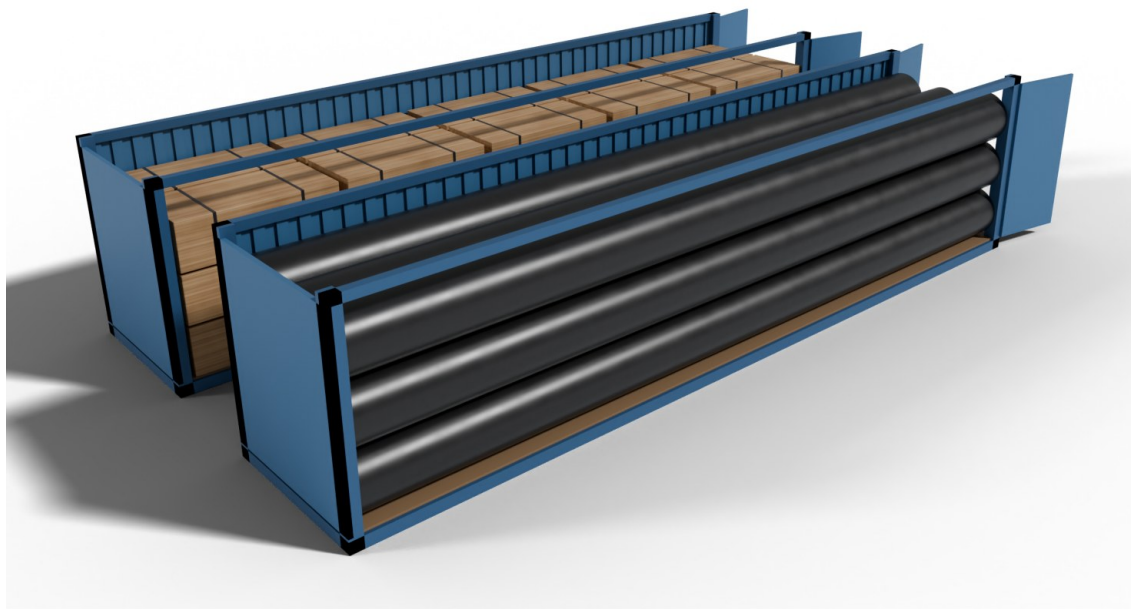


Bumpers, fascias, bollards, spuds and ramp. Launch.

Days 1 and 2: steps 1 to 4 with a crane operator. Days 3 and 4: deck and fit out. Local equipment and commissioning are additional.

Ships in standard boxes. Comes apart again.

Low weight, standard freight, and a second life at the end of a project



Box 1: nine pipes, a complete work platform hull, loaded 800 / 710 / 800 in three layers. Box 2: the timber kit, primaries with blocks and ledgers fitted, bundled by bay.

Weight, not steel

A work platform hull is about 7.7 t of pipe. The boxes are filled by volume, well under their payload, so freight is set by the number of boxes, not by tonnes.

Closed containers, any port

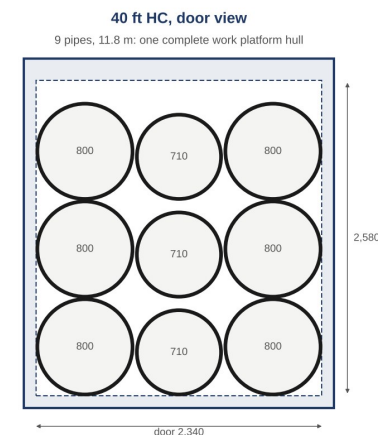
Standard 40 ft HC boxes. No open top or flat rack, no out of gauge, no module sized down to suit the container.

Simple to unload and build

Forklift or small crane, bolted connections, crew of four.

Built to be moved on

Unbolt, repack and ship to the next site. A work barge on one project becomes a court, an event deck or a landing stage on the next. Pipes and timber are recoverable at end of life.



Version 1 and Version 2

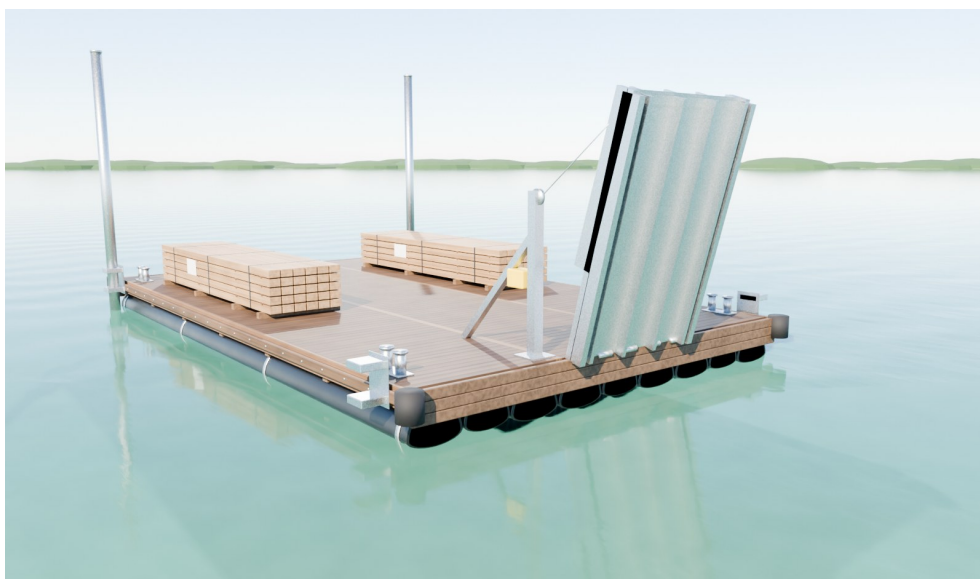
The steel modular system, proven over about 15 years, against the new pipe hull

	Version 1: Steel Modular System	Version 2: Pipe Hull System
Track record	About 15 years in service. Repainted three times	New generation. HDPE floating pipe is the standard hull for fish farm pens worldwide
Hull	Marine grade coated steel modules with drop in locking connectors	Heavy duty sealed PE100 pipe, caps fused and tested in the factory
Corrosion and paint	Blast and repaint cycle, anodes, coating repairs	None. Black through the wall, UV stabilised, no paint, no anodes
Understructure	Welded steel framing	Pressure treated hardwood glulam with a marine paint finish. Cannot corrode
Cost	High and rising with steel prices and fabrication labour	Standard pipe plus a factory machined timber kit
Shipping	Open top or flat rack containers; modules made slightly smaller to fit	Closed 40 ft HC. One box of pipes floats an 85 m2 work platform
Assembly	Heavy lifts, locking connectors, welded repairs if damaged	Bolted, no welding; crew of four, about 4 days for a work platform
Damage	Dents and coating damage start corrosion	One sealed pipe floods and the platform stays afloat; repair or swap the pipe
Power and approval	Can be certified as a hull and run as a self propelled craft	Non powered: pushed or towed by a workboat, held on spuds or moorings
End of life	Refurbish and repaint, or scrap	Unbolt, relocate, reuse; pipes and timber recoverable
Best for	Certified, self propelled accommodation craft and permanent heavy installations	Work barges, courts, event decks, landing stages and suites in sheltered water

Both systems are modular and container shipped. Choose steel when the craft must be certified and run under its own power; choose pipe for everything else.

Work Platform

A reusable floating work barge for island and lake resort construction

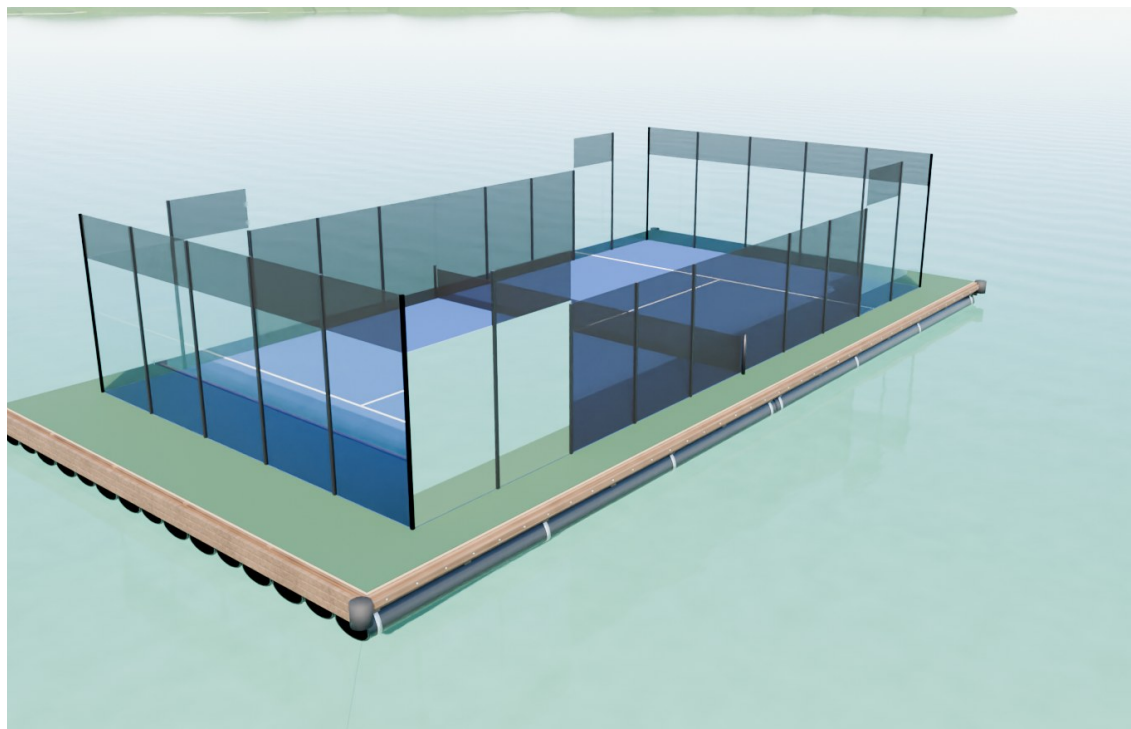


Item	Particular
Modules	3 modules 2,405 x 11,800, pinned side by side
Deck	7,235 x 11,800 mm, about 85 m2, plus 5.8 m folding ramp
Hull	9 PE100 SDR 26 pipes: 6 x 800, 3 x 710, tops level
Buoyancy	About 49.6 t fresh water
Product carried	About 13.5 t; about 9.5 t with a 3 t class spider crane (250 mm freeboard to the pipe tops)
Stability	IMO 2008 IS Code Part B 2.2 met in all six loading cases; GM 8.3 to 15.6 m; range 48 deg
Damage	One outer pipe flooded with crane aboard: about 4.4 deg heel, stays afloat
Operating	Sheltered water; transit in waves to 0.5 m loaded at 2 to 4 knots behind a 60 to 90 hp workboat; spuds hold in up to 3 m of water
Deck use	5 kPa; small flatbed to 5 t gross in the vehicle bay; mini excavator to about 3.9 t on steel plate
Shipping and build	2 x 40 ft HC; crew of 4, about 4 days, no welding

Ratings use datasheet pipe weights; confirmed by a load and inclining test at launch. Stability to the work platform specification

One kit of parts, many platforms

Modules join side by side and end to end; pipe size steps up for heavier duty



Padel court on 5 x 2 modules, 12.1 x 23.6 m: a second life for the work platform once construction is done.

Work barge

Carries and lands materials and plant; holds on spuds as a stable work deck.

Sports courts

Padel on 5 x 2 modules; pickleball on 4 x 2. Marine ply base with sports surface, glass and mesh from the court maker.

Event decks and landing stages

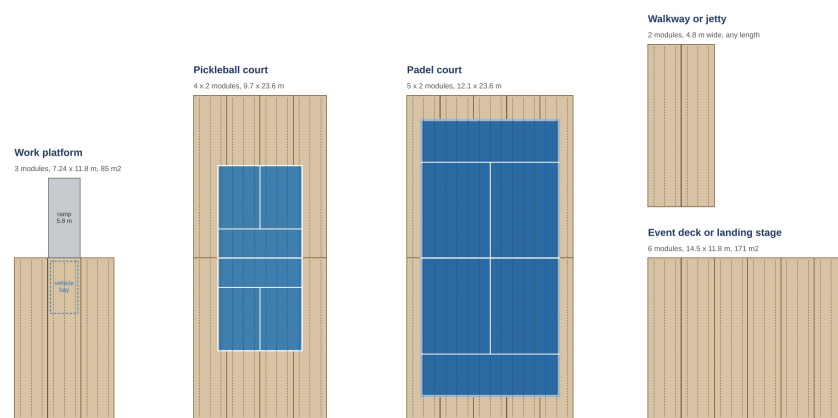
Any width in 2.4 m steps; join end to end for length.

Walkways and jetties

Two modules wide, any length, with handrails to suit.

Floating suites

The Escape Edition two storey suite on larger 1,000 to 1,200 mm pipes.



Pipe lines shown dashed. Court sizes: pickleball 13.41 x 6.10 m lines; padel 20 x 10 m inside the glass. Larger decks join further modules. Heavier duty steps the pipe size up within the same frame logic.

Standards, approvals and care

Area	Standard or route
Stability	IMO 2008 Intact Stability Code Part B 2.2 (pontoons); Transport Canada TP 7301 in Canada
Pipe and fusion	ISO 4427 or EN 12201; ISO 21307 or DVS 2207 1
Timber	CSA O86 design; CSA O80 treated wood; EN 350 durability
Structure	Local professional engineer verification
Crane on a floating base	Crane maker approval; ASME B30.8 as reference
Steel items	ISO 1461 galvanising
Registration	Per country, tonnage and use; an unpowered work barge is about 12 GT
Commissioning	Site pressure retest, load and inclining test, freeboard marks, stability booklet aboard

When	Check
Daily	Pipe gauges, straps, deck screws, ramp hinge and winch
Monthly	Joint pins and strap bolts, bumpers and fascias, spud pins, deck boards
Each move or yearly	Lift sample boards; inspect straps, blocks and pipe contact faces; retest pipes
Any pipe losing pressure	Offload, pump out through the port, repair or swap before loading

Talk to us

Nautilus Innovation Pte Ltd, 200 Loyang Avenue #03 04, Loyang Valley, Singapore 509058. kevin@nautilus-innovation.com

Platforms are engineered per project: pipe size, wall, module count and fit out are confirmed against the loads, the water and the approvals route.