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JUNG-A MARINE

Aluminium Helidecks

ASTECH® Enhanced safety helideck
Heli-Refueling System

Main PRODUCTS

Hull Outfittings

ACC. LADDER, PILOT ASSIST LADDER
PILOT ROPE LADDER REEL
WINCH & MOTOR
WHARF LADDER
DAVIT, CAPSTAN
DECK MACHINERY

Accommodation Outfittings

WINDOW WIPER
CLEAR VIEW SCREEN
SUN SCREEN

New Products

HELIDECK
HELI - REFUELING SYSTEM
CABLE REEL FOR AMP SYSTEM
HATCH
TELESCOPIC HANGAR
AL STRUCTURE
SPECIAL PRODUCT



JUNG-A MARINE CO.,LTD.

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2ND FACTORY
1489-1, Songjeong-dong, Gangseo-gu, Busan, Korea

3RD FACTORY
24, Jangpyeong-ri, Yongnam-myeon, Tongyeong-si, Gyeongsangnam-do, Korea



JUNG-A MARINE

We create customer impression beyond customer satisfaction / Customer

History of JUNG-A MARINE

We are happy to be able to tell you that for the past 35rd years we have been engaged in manufacturing & exporting a great variety of out fittings to all over the world spreading a good reputation. Our excellent organization of conducting, manufacturing (export business) and close connections with the best sources of material supply have enabled us to supply goods in the best quality at competitive prices.

1970

1978. 05. Established Jung-A company and started to produce aluminum ladder.

1980

1981. 04. Built a factory at 339-9, Jangnim-dong, Saha-gu, Busan and changed a former name to Jung-A Ship Stores Plant and started to produce shipbuilding equipments.
1984. 03. Joined Korea Shipbuilding Industry Cooperative.

1990

1986. 01. Incorporated Jung-A Ship Stores Plant (Representative director : Yum Jeong-min)
1986. 07. Selected as a company for Small & Medium Business Interrelationship shipbuilding Joint Project, and produced shipboard Clear View Screen, Window Wiper, Accommodation Ladder, and Wharf Ladder.
1988. 12. Developed Clear View Screen Gas-Tight Type.
1990. 10. Appointed as Metal Committee Member for Quality Control from Industrial Advancement Administration.
1991. 02. Acquired "Q-Mark" on ladder from Korea Testing & Research Institute for Chemical Industry.
1996. 08. Moved to a new head office at 316-35, Jangnim-1dong, Saha-gu, Busan (Area: 1,650m², Building site: 660m²)
1997. 08. Yum Dae-bum appointed as a representative director.
1997. 10. Acquired WPS Certification. (AL 6061-T6)-LR
1998. 05. Acquired WPS Certification. (STEEL)-KR
1998. 07. Acquired WPS Certification. (AL)-DNV
1998. 11. Acquired ISO9001 Certification. (Accommodation Ladder)-DNV

2000

2001. 02. Moved to a new head office and factory in Noksan Industrial Complex at 1496-5, Songjeong-dong, Gangseo-gu, Busan (Area: 6,600m², Building site: 3,300m²)
2002. 08. Developed shipboard Sun Screen.
2003. 10. Developed Edge Self Parking Wiper.
2004. 01. Acquired WPS Certification.(STEEL)-DNV
2004. 05. Acquired WPS Certification.(STEEL)-LR
2004. 12. Acquired WPS Certification.(STEEL)-RINA
2005. 03. Acquired Sun Screen Type Approval Certification-ABS
2005. 09. Changed to Jung-A Marine Co., Ltd.
2006. 02. Acquired WPS Certification.(AL)-GL
2006. 07. Acquired Wiper and CVS Motor Certification.
2006. 12. Achieved total sales of KRW 205hundred million in 2006.
2007. 08. Acquired WPS Certification.(AL 5083)-LR
2007. 09. The first helideck Project Launched.
2007. 10. Marine Week 2007 Exhibitor
2008. 10. Approved Research Institute by Government.
2008. 12. Promising Export Firm by SMBA of Korea
2009. 03. Achieved "Q"- mark (From Samsung Heavy Industries Co., Ltd.)
2009. 04. Certificated ISO 17899 for Window Wiper
2009. 11. Granted USD5 Million Export award
2009. 12. Achieved annual sales of 42 Billion won
2010. 11. Granted USD10 Million Export award
2011. 08. Acquired ISO 14001 Certification
2011. 08. Acquired OHSAS 18001 Certification
2012. 06. Acquired Fall Arrest System Type Approval (ABS. KR)
2013. 04. Signed AOPL & JA Helideck License Agreement.

Main Factory

Marine Innovation for tomorrow

JUNG-A MARINE CO., LTD. Has progressed in professional manufacturing of ship's out fittings (accommodation ladder, wharf ladder, clear view screen, window wiper, davit, portable ladder and etc.).

We are happy to be able to tell you that for the past 33rd years we have been engaged in manufacturing & exporting a great variety of out fittings to all over the world spreading a good reputation. Our excellent organization of conducting, manufacturing (export business) and close connections with the best sources of material supply have enabled us to supply goods in the best quality at competitive prices.

So we convince that we can compete successfully in both quality and price.
We welcome your interest in our company and products and remain with best regards.

Panoramic view of the Company

Main Factory 1469-5 Songjeong-Dong, Gangseo-Gu, Busan, Korea

Main Business List

ACC. LADDER : VERTICAL STOWING SYSTEM / HORIZONTAL STOWING SYSTEM
180° TURN-OVER STOWING SYSTEM / TELESCOPIC SYSTEM
WHARF LADDER : SOLID GIRDER TYPE / CURVED STEP TYPE

WINDOW WIPER : EDGE SELF PARKING TYPE /
STRAIGHT-LINE TYPE / PANTOGRAPH TYPE
CLEAR VIEW SCREEN : GAS TIGHT TYPE / WEATHER PROOF TYPE
SUN SCREEN : SPRING ROLLER BLIND TYPE /
CHAIN CLUTCH TYPE

JUNG-A 2nd Factory



2nd Factory
1489-1, Songjeong-dong, Gangseo-gu, Busan, Korea

Main Business List

- ROPE LADDER REEL : FIXED TYPE / TRAVELLING TYPE
- WINCH & MOTOR : ELECTRIC TYPE / AIR DRIVEN TYPE
- DECK MACHINERY : DAVIT / FIRE WIRE REEL / CAPSTAN

JUNG-A 3rd Factory
(Tongyeong)



3rd Factory
24, Jangpyeong-ri, Yongnam-myeon,
Tongyeong-si, Gyeongsangnam-do, Korea

Main Business List

- HELIDECK
- HATCH
- CABLE REEL FOR AMP SYSTEM
- SPECIAL ORDER PRODUCT

Aluminium Helidecks

Why aluminium? = [Weight savings]

Weight Savings : 65% over steel

Helicopter	Helideck diameter	Aluminium(pancake)	Steel(pancake)
S-76	16m	13MT	34MT
AS3321	19.5m	18MT	50MT
S-92	21m	24MT	70MT

Why aluminium? = [Cost savings]

- No maintenance
- Quick assembly
- Fast installation
- Lighter support

COST EFFECTIVE

An aluminium alloy structure is highly cost effective compared to an equivalent steel construction and in some cases an aluminium structure can also deliver lower initial purchase costs. Once maintenance, inspection and other ancillary savings are also factored in, the overall life cycle cost of using aluminium is significantly lower than any other available material.

Why aluminium? = [Maintenance free]

Properly selected aluminium alloys require no painting or other protection in marine environments. Aluminium rapidly forms a protective oxide coating, which insulates the base metal from corrosion. Aluminium alloys have been in continuous, in some cases unmailntained, service in marine environments for over seventy years now.



- marine grade alloys
- SS 316 fasteners
- alu. safety net
- explosafe® marine alloy
- modular design

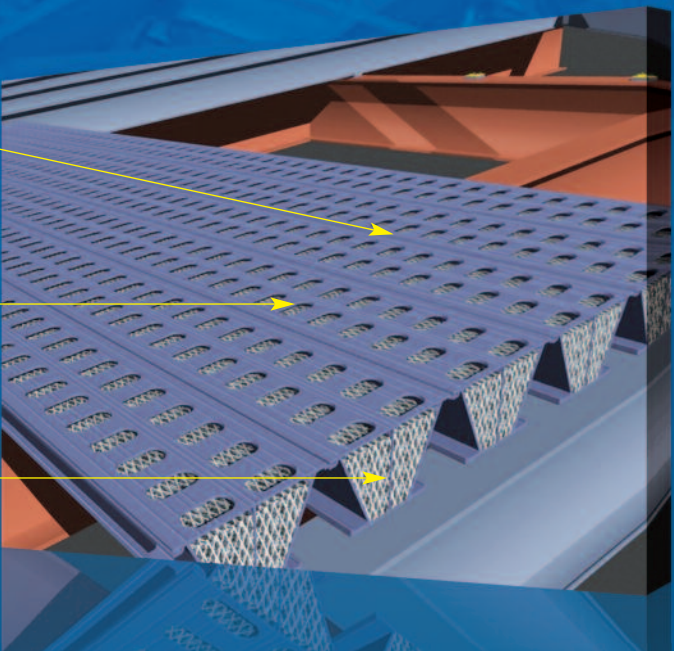
Astech® Enhanced Safety Helideck

- passive fire safety
- lightweight
- corrosion resistant

Burning fuel drains thru perforations

Explosafe® dissipates heat, kills fire

Condensed fuel drains thru to porimeter gutters



The Astech® Enhanced Safety helideck was developed to reduce these risks and make passenger safety a top priority. This deck incorporates a patented, passive fire-retarding system which works by allowing burning fuel to pass through densely packed layers of compressed aluminium explosion suppression mesh. The fire is retarded immediately. Spilt fuel is quickly and safely drained away unburned and any remaining vapour burn-off can be extinguished in seconds with minimal water spray. Upto 97% of spilt fuel is recovered unburned.

Standard Helideck

- flat top deck
- lightweight
- corrosion resistant

Non –slip, interlocking deck extrusions

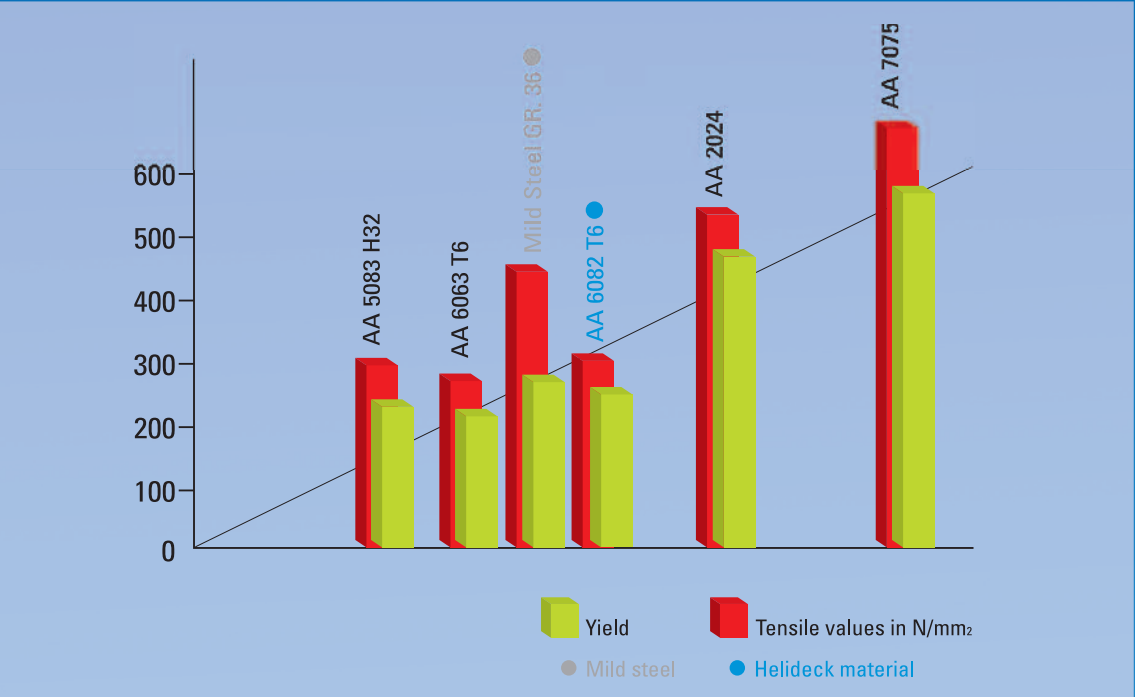
Xtru-clamp™ clip system

470mm aluminium main beam



Our Standard helideck is an an all-aluminium helideck with all the features of the Enhanced Safety helideck but without its passive fire suppression system. The top surface of this helideck is flat and non-perforated and incorporates a non-slip pattern which is etched and milled into the decking. The decks are fully pre-fabricated and shipped in containers to you for local assembly under our supervision.

Tensile strengths of selected aluminium alloys



Glare free lighting system on a safety helideck; note the combined perimeter cum floodlight fittings.

general information about aluminium

► Aluminium and fire : aluminium alloys are classified as non-combustible by British Standard BS476. Its thermal conductivity is quadruple that of steel and its volumetric heat capacity twice steel. Its thermal efficiency factor is much higher than that of steel and, in any given fire situation, the aluminium structure may actually provide a longer integrity period than a steel equivalent.

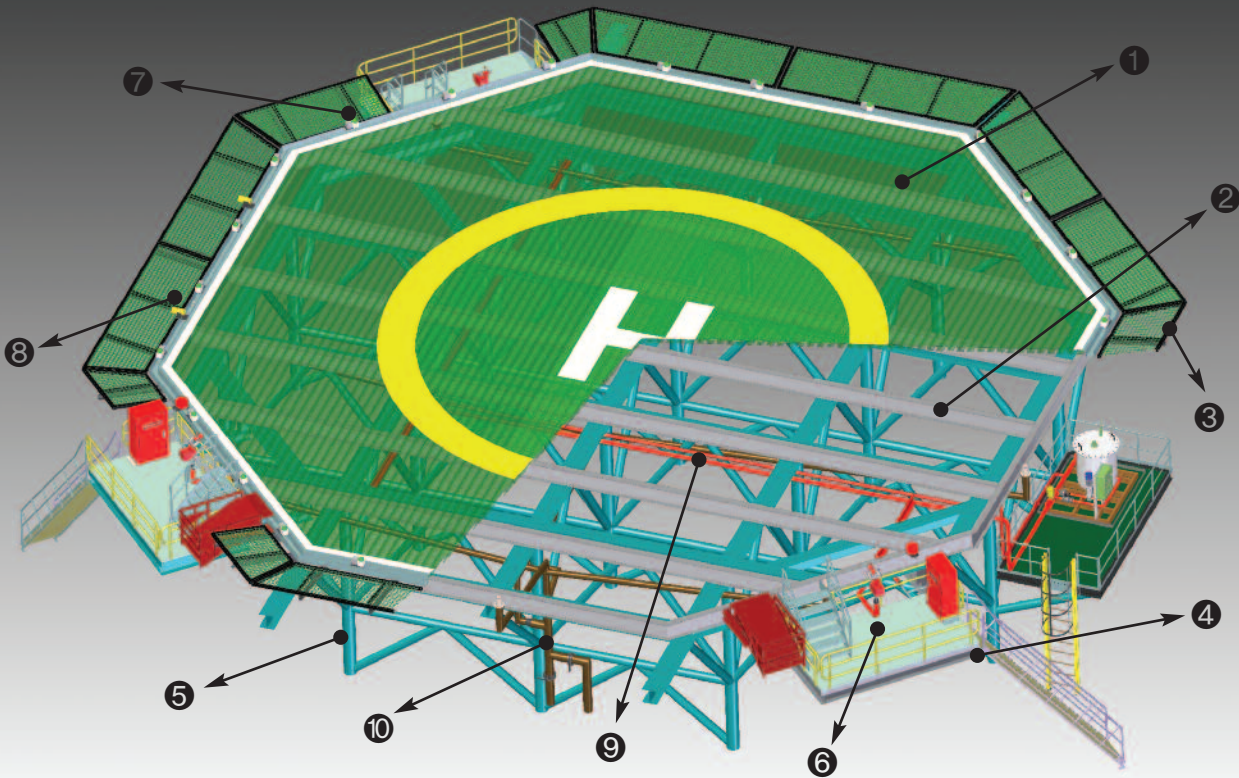
► Decades of experience with aluminium in marine environments have shown that bimetallic corrosion between directly coupled steel and 6000 series aluminium alloys is usually not structurally significant above the waterline because of a dense oxide layer that forms between the contact areas and prohibits further contact.

► The residual value of aluminium moves upwards constantly so that the final scrap value of any project is usually greater than its initial cost!

► Most first time users of aluminium helidecks never revert to steel.



Components of Helideck



NO. Main Components Name

- | | |
|----|-------------------------------------|
| 01 | Aluminium Pancake |
| 02 | Aluminium Girder |
| 03 | Safety Net |
| 04 | Aluminium Platform & Stair |
| 05 | Steel Support Structure |
| 06 | Fire Fighting System (FMS or DIFFS) |
| 07 | Perimeter Light |
| 08 | Flood Light |
| 09 | FMS Pipe |
| 10 | Drain Pipe |

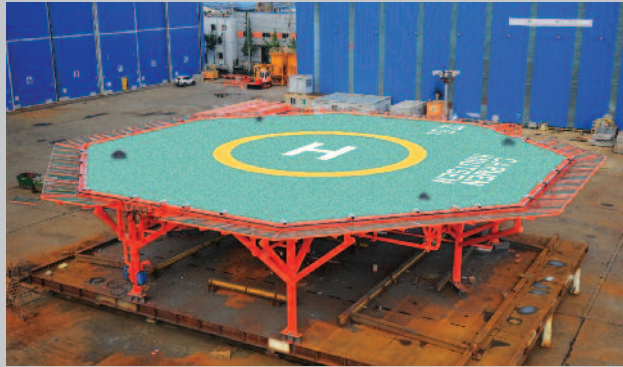


Trunkkey Based Project



HHIC S067/068

Vessel : Dive Support Vessel (DSV)
Size : 22.2 m
Weight : Pancake - 25 MT
Platform, Stairs and Walkway - 5 MT
Steel Support Structure - 3.8 MT
Class : DNV



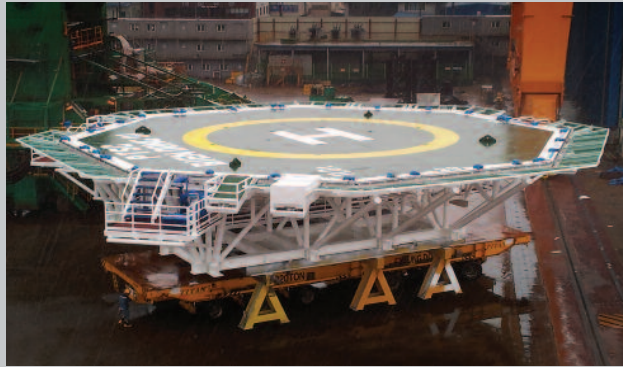
HHI H2518(steel)

Vessel : Shuttle Tanker
Size : 26.1m
Weight : Pancake - 110.2MT
Platform and Stairs - 15.5MT
Steel Support Structure - 32.5MT
Class : DNV



DSME H2268/78

Vessel : LNG Carrier
Size : 16 m
Weight : Pancake - 13MT
Platforms and Vet / Ladder - 4.5 MT
Steel Support Structure - 18.1MT
Class : BV



SUNGdong S5005(steel)

Vessel : FSO
Size : 19.5m
Weight : Pancake - 51MT
Platform, Stairs and Walkway - 11.2 MT
Steel Support Structure - 56.5MT
Class : ABS



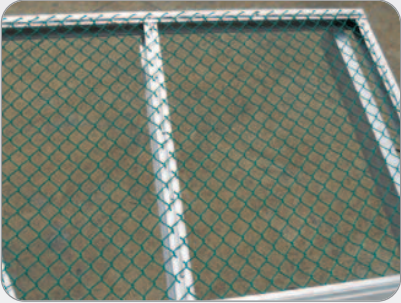
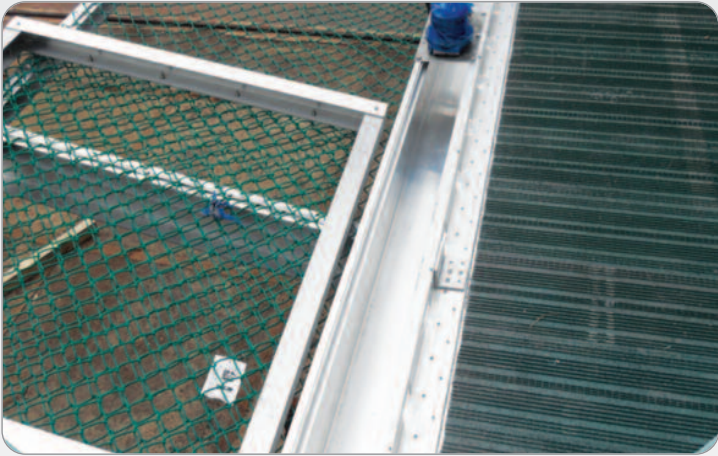
STX S1571/1572

Vessel : Shuttle Tanker
Size : 22.2 m
Weight : Pancake - 30MT
Platform, Stairs and Walkway - 1.6 MT
Steel Support Structure - 75.6MT
Class : DNV



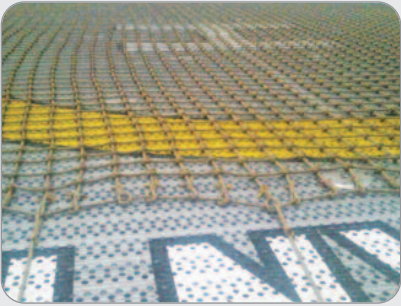
Helideck Equipments

SAFETY NET



Safety Net :
Safety nets produce a hammock effect, absorbing the kinetic energy of falling objects or persons and recovering to their original form after tension

LANDING NET



Landing Net :
Landing nets provide higher friction than traditional rope nettings, and will not deform or distort regardless of the weather.
As the net always stays in its form, there is no need for constant tightening and loosening.

Fire Fighting System

DIFFS (Deck Integrated Fire Fighting System)



Specification

The DIFF system consist of deck integrated pop-up nozzles, foam skid and release panels. Standard design criteria is CAP437, but the system can be delivered according to any regulations and requirements. The nozzles are installed flush with the deck top surface. When the system is released the nozzles will be lifted up by the water pressure and make an effective spray distribution of water/foam mixture to the entire landing area.



FMS(Foam Monitor System)

Specification

The helideck systems include self contained foam stations consisting of combined hose reels and monitors as per CAP 437 requirements. The foam tanks meeting specific requirements are also provided depending on the client's requirements. Detailed engineering and construction drawings are provided.



SAFETY EQUIPMENTS + LOOSE EQUIPMENT

	Specification Type : Aluminized proximity fire-fighting suit with Bag Testing Standard : Fire suit : ISO 15538 Helmet : EN443 Gloves : EN388, EN407, EN659 Boots : EN ISO 20344 & EN ISO20345 Product Feature : Two piece Aluminized Rayon fire suit of universal size. The jacket consist of 5 pieces & also fitted with fireproof cotton lined mandarin collar & with elastic band Approval : MED 96/98/EC (Amended on April 2009)		Specification Type : Flashlight / Explosion-Proof Power Source : Two D size Batteries Lamp : 2.4 v, 0.5 am Lamp Output : 11.4 lumens Lamp Life : Weight : 0.113 kg (without batteries) Approval : UL, MSHA, CSA Note : MSHA approved for use in methane-air mixtures and UL listed for Division I and II, Class I, Approved also for use in dust-air mixtures of Class II, Group G.
	Specification Type : Aluminized proximity fire-fighting suit with Bag Testing Standard : Fire suit : ISO 15538 Helmet : EN443 Gloves : EN388, EN407, EN659 Boots : EN ISO 20344 & EN ISO20345 Product Feature : Two piece Aluminized Rayon fire suit of universal size. The jacket consist of 5 pieces & also fitted with fireproof cotton lined mandarin collar & with elastic band Approval : MED 96/98/EC (Amended on April 2009)		Specification Type : Shaft type Material : Steel head Rubber shaft cover Weight : 1 Kg
			Specification Type : Wire type Material : Line outer cover Ing : Polyvinyl Chloride Inner core : Galvanized Steel Hook : Chrome Steel Size : 4mm Length : 30m, 45m, 50m (Other length available on request) Approval : MED Weight : 2.5 Kg, 3 Kg, 3.5 KG

HELIDECK RESCUE EQUIPMENT / CAP 437

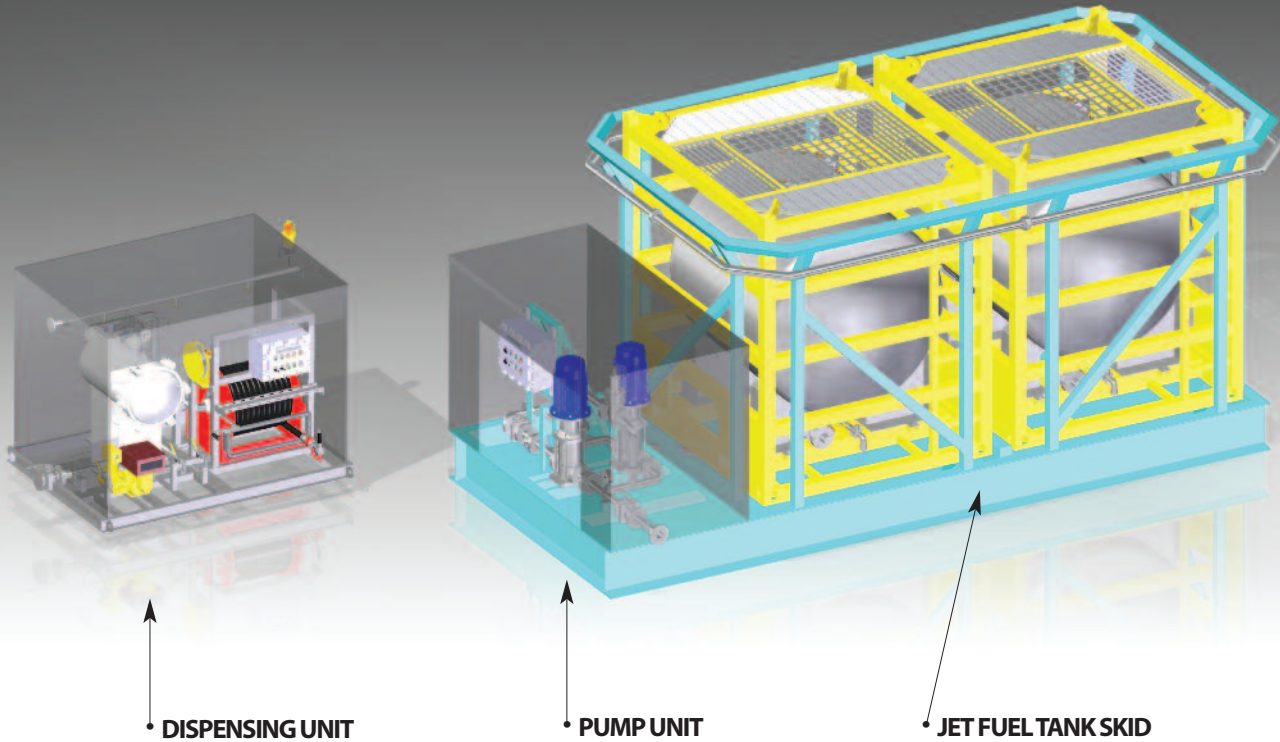
						
Adjustable Wrench	Fire Blanket	Wire / Bolt cutter	Hook	Hacksaw	Ladder, Alu, Step	Lifelin 30mtr With Hook
						
Lifting Harness	Assorted Screwdriver	Plate Cutters	Knife for Quick Release with Sheath	Glovers, Fire Resistant	Rescue Axe, Large	Crow Bar, Large

JUNG-A MARINE HELIDECK : Track Record

No	PROJECT	YARD	D/L YEAR	SIZE	Design Helicopter	CLASS	Pancake Material	REMARK
01	P144 DSV	HYUNDAI	SEP. 2014	22.2m	Silkorsky S92	DNV	Aluminium	Turnkey Base
02	H2518 Shuttle Tanker	HYUNDAI	AUG. 2012	26.2m	Silkorsky S92	DNV	Steel	Turnkey Base
03	S1571 Shuttle Tanker	STX	AUG. 2012	22.2m	Silkorsky S61n	DNV	Aluminium	Turnkey Base
04	S1572 Shuttle Tanker	STX	OCT. 2012	22.2m	Silkorsky S61n	DNV	Aluminium	Turnkey Base
05	S5005 FSO	SUNGDONG	AUG. 2012	19.5m	EC225	ABS	Steel	Turnkey Base
06	H3031/32 (+2 ships)	DSME	2013	27.75m	Silkorsky S61n	DNV	Aluminium	Material(Agent)
07	2268 LNG Carrier	DSME	2009	16m	Silkorsky S76	BV	Aluminium	Turnkey Base
08	2278 LNG Carrier	DSME	2009	16m	Silkorsky S76	BV	Aluminium	Turnkey Base
09	S067 Dive Support Vessel	HANJIN	2009	22.2m	Silkorsky S61n	DNV	Aluminium	Turnkey Base
10	S068 Dive Support Vessel	HANJIN	2010	22.2m	Silkorsky S61n	DNV	Aluminium	Turnkey Base
11	H6001 PipeLay Vessel	STX	2009	26.25m	Silkorsky S92	DNV	Aluminium	Material
12	HN1950 Drillship	SAMSUNG	2012	27.2m	Chinook	ABS	Aluminium	Material(Agent)
13	HN1898 Drillship	SAMSUNG	2010	27.2m	Chinook	ABS	Aluminium	Material(Agent)
14	HN1866 Drillship	SAMSUNG	2010	27.2m	Chinook	ABS	Aluminium	Material(Agent)
15	HN1865 Drillship	SAMSUNG	2010	27.2m	Chinook	ABS	Aluminium	Material(Agent)
16	HN1864 Drillship	SAMSUNG	2010	27.2m	Chinook	ABS	Aluminium	Material(Agent)
17	HN1861 Drillship	SAMSUNG	2010	22.2m	Silkorsky S61n,EC225	ABS	Aluminium	Material(Agent)
18	HN1838 Drillship	SAMSUNG	2010	27.2m	Chinook	ABS	Aluminium	Material(Agent)
19	HN1862 Drillship	SAMSUNG	2009	27.2m	Chinook	ABS	Aluminium	Material(Agent)
20	HN1837 Drillship	SAMSUNG	2009	27.2m	Chinook	ABS	Aluminium	Material(Agent)
21	HN1786 Drillship	SAMSUNG	2009	27.2m	Chinook	ABS	Aluminium	Material(Agent)
22	HN1763 FPSO	SAMSUNG	2008	28.5m	EH101	DNV	Aluminium	Material(Agent)
23	HN1725 Drillship	SAMSUNG	2008	27.2m	Chinook	ABS	Aluminium	Material(Agent)
24	HN1674 Drillship	SAMSUNG	2007	27.2m	Chinook	ABS	Aluminium	Material(Agent)



Heli-Refueling System



Equipment Performance

The helicopter is a very important means of transport. Therefore, it has to be equipped with Heli-decking-facilities.

Among its facilities, Heli-Refueling System is a Device that supplies fuel to the helicopter in case of emergencies. This Heli-Refueling System consists of Tank Skid & Pump Unit and Dispensing Unit. and Functionally classified as Tank Skid, Pump, dispensing Unit, and Deluge System..

The using of Heli-Refueling System in offshore, it has a very strict Rule and Code Compliance. and it has to be based on SOLAS(Chap. II -2/Part G-Reg.18) and CAP 437(7th)

Usually, The helideck, it should be installed on platform or ship in offshore. But unlike the Heli-deck, Until now, this Heli-Refueling System is supply, installation and safe operation of the helicopter as an option, and it is a trend to an increase in demand. because the safe operation of the helicopter on greater purpose.

Main Components

JET FUEL TANK SKID

The tanks are manufactured according to ASME VIII, PD 5500, PED 97/23/EC and approved by DNV or ABS. Transportable tanks with frames according to DNV 2.7-1. The fuel tanks are made from stainless steel eliminating maintenance and increasing life time of the tanks.



Tank Skid Specification

DESCRIPTION	SPECIFICATION
FUEL TANK(TOTE TANK) UNIT	UK CAA-CAP 437, ASME vIII, ABS and DNV
MAN HOLE	Size : 450mm(18")
INSPECTION HATCH	Size : 150mm(6")
SAFETY RELIEF-VALVE	Stainless Steel, Size : 63.5mm(2 ½"), Pressure / Vacuum
IDENTIFICATION	Mark : JET A-1
OUTLET / FILL CONNECTION	Connection : 3" Hose line, Self Sealing Coupler(with Dust cap)
DELUGE SYSTEM(PIPING & NOZZLE)	Location : Overhead Tank, Pipe Material : SUS316, Deluge Nozzle : Brass

PUMP UNIT

The pump unit can be placed in a separate cabinet or mounted on the base frame. The unit is the main feature for transferring fuel in the system, and it is equipped with two stand alone high quality positive displacement pumps. The pumps can be operated by electrical motors(optional : Air). Antistatic and fire safe ball valves and non return check valves are used. .



Pump Unit Specification

DESCRIPTION	SPECIFICATION
PUMP UNIT BOX	Material : SUS316, Protection Shutter
FUEL PUMP & ELEC. MOTOR	Pump : SUS316, 227LPM / 5.5KW (Option : Air Driven)
SAFETY RELIEF VALVE	Material : SUS316, Size : 2"
BALL VALVE	Material : SUS316, Size : 2"
STRAINER	Material : SUS316, Size : 2"
PRESSURE GAUGE	Material : SUS316, Size : 1/2"
MAIN CONTROL PANEL	Material : Cast Aluminum, Protection : Exd IIB T5

DISPENSING UNIT

The Dispenser unit is a separate cabinet designed for easy and safe operation during fuelling of helicopters.



Dispensing Unit Specification

DESCRIPTION	SPECIFICATION
DISPENSING UNIT BOX	Material : SUS316, Protection Shutter
FILTER / SEPERATOR / MONITOR	API/EI 1581 &1583, ASME vIII, Automatic Air Eliminator Type
FUEL FLOWMETER	DNV, UL, Displacement Type (Including : Strainer & Air Eliminator)
MANUAL REWIND HOSE REEL	Capacity : 1 ½" x 30m
FUEL HOSE WITH COUPLING	Size : 1 ½" x 30m, ISO 1825, Type C
OVERWING NOZZLE WITH ADAPTER	Material : Aluminum
UNDERWING NOZZLE WITH ADAPTER	Material : Aluminum
GROUNDING CABLE REEL	Capacity : 30m Cable, Electric Resistance : Less than 0.5Ω
LOCAL CONTROL PANEL	Material : Cast Aluminum, Protection : Exd IIB T5
PUMP RUNNING FLASH BEACON	Ex-PROOF TYPE
DELUGE SYSTEM(PIPING & NOZZLE)	Location : Overhead Dispenser, Pipe Material : SUS316, Deluge Nozzle : Brass

ENGINEERING

We perform projects from drafting operations to turn key projects including :

- Conceptual design
- Pre design/engineering
- Detail design/engineering
- Calculations and verification
- Procurement
- Manufacturing
- Documentation and certification

HELI-REFUELING MAIN DESIGN CODE

SYSTEM	CERTIFICATION	CODE	REMARK
Helicopter Refueling System	SOLAS II - 2/reg.18/ch.7	UK CAA-CAP 437	
Pump		API 676	API (The minimum requirements of Pump)
Filter Separator	API 1581	ASME VIII, Div 1	The Specification and approval of Jet refueling filter separator
Filter Monitor	API 1583	ASME VIII, Div 1	JET Refueling Filter Monitor
Delivery Hose	BS EN 1361		The requirements of Hose and Component for Refueling / Taking out
Storage Tank		ASME VIII, Div 1	Pressure Tank
Ball Valve/Duo Check Valve		API 6D	Pipe Line and Valve
Local Control Panel	Explosion Proof Regulations - CE(Europe) / UL(U.S.A)	Exd IIB T5(IP 66)	