



ALUMINIUM HELIDECK

Low weight

No maintenance

Easy assembly



**KAPP ALUMINIUM
TRETUM OFFSHORE**

Aluminium Helideck

Low weight

Due to clever use of the extrusion technique the weight savings compared to steel decks are substantial, up to 70 %

No maintenance

Seawater resistant aluminium alloys are used. All details are engineered to avoid corrosion traps. Only marking painting is required

Friction surface sufficient

Serrated surface provides a friction that meets the requirements from authorities and class, i. e. no friction paint.

Easy assembly

Clever design, special tools and excellent supervisor/assembly crew from Kapp Aluminium will assure cost efficient assembly.

Approvals - no problem

Approvals from class and authorities will be taken care of by our engineering staff.

Heat tracing

The deck can be delivered with electrical heating cables if it shall be in operation far north or on a hospital roof, where it is imperative to have the deck available at any time and the use of rope net should be avoided.

Top fire safety

The deck can be delivered with Deck Integrated Fire Fighting System as strongly recommended in the CAP 437. A number of pop-up nozzles in the deck surface will deliver water/foam mixture that extinguishes fuel fires in less than 15 seconds, as recommended. Fire monitors and hose reels will not be required

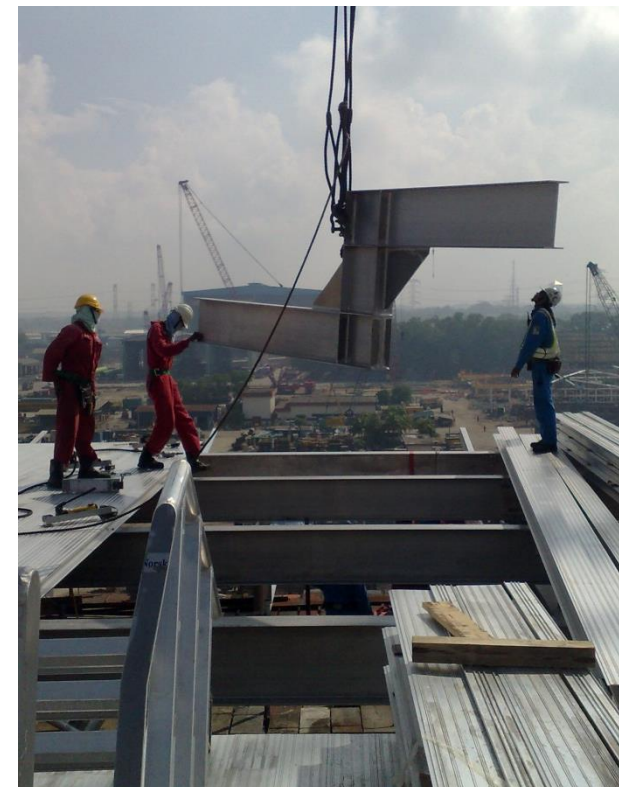


Kapp Aluminium Tretum Offshore is well known as a supplier of aluminium structures for the ship and offshore industry. The company is small, well managed and financially sound. We have production facilities, certified welders and engineering capacity.

Our staff have long experience in the production of helideck components, helideck assembly and helideck installation, first for Hydro Raufoss, later for Maritime products. Through recruitment from Raufoss the engineering part has been taken care of. Reference list is attached.

Our goal is to meet the requirements and specifications of class, authorities and ship/rig owners in the most cost efficient way. Components are produced in our production line at Kapp, and the assembly is done at the coast, preferably at client's yard, thus saving the high transport cost for an assembled helideck. Assembly could be done by a crew from Kapp or by the yard's own people with a supervisor from us.

The attached sketches show some design details. The standard pancake consists of extruded deck planks and beams, gutter, safety net, tie-downs and miscellaneous brackets. In addition we can deliver access/escape routes, platforms, fire fighting and rescue equipment, drainage piping, support structure and lights.



Scope of supply, standard Helideck pancake

Deck planks

Extruded aluminium profiles joint together by a tongue and groove connection and 2,5 mms high serration to provide sufficient friction on the landing surface

Support girders

One layer of large extruded aluminium H-girders to support the deck planks

Safety net frames

Prefabricated with netting and in sizes suitable for transport and mounting.

Safety net supports

Prefabricated from aluminium profiles

Drainage gutter all around

Size 200 x 200 mms with 50 mms high edge to retain water and foam, brackets for flood and perimeter lights and rope net tensioners, grating at access points and short, flanged tubes for connection to the drainage piping.

Tie down fittings

Prefabricated from aluminium profiles

Connection to the steel structure

Steel plates bolted underneath the girders for connection to the support by welding, with neoprene sheet in between for insulation

Fasteners etc

Bolts, nuts, washers, etc, all in stainless steel. Sealing rail for the central joint, sealing compound

Class approval

included in Kapp Aluminium's delivery

Assembly assistance

Supervision or entire assembly crew from Kapp Aluminium, with special tools and long experience



Additional equipment and services, deliverable upon agreement

Lightening

Perimeter lights, flood lights and illuminated wind sock, ex or strd as required.

Assembly

Due to extreme transport costs on assembled helidecks it is advantageous to do the assembly at the client's yard. Kapp Aluminium can provide a supervisor or the entire assembly crew. The assembly will normally take no more than 3 weeks.

Firefighting equipment

Monitors, extinguishers, fire fighting systems, and rescue equipment as required by client and actual regulations.

Piping for firefighting equipment

Prefabricated

Piping for drainage

Piping from the gutter to an agreed point

Platforms etc

Platforms for firefighting equipment, stairs, ladders and walkways for helideck access and escape routes

Support structure design

Design and class approval for fabrication by client

Support structure

Prefabrication of support structure to plane frames. The element size is limited to fit road transport. Assembly at customer's yard.



Reference

No	Name	Host	Class	Owner	Installation/Yard	Country	Year
15	"Hull 6018"	Piling/Rescue Vessel	CCS	Wuhan Haiyi S/T Ltd	CSSC Huangpu Wenchong Shipyard Ltd	China	2019
14	"MS SKY"	Multi purpose Vessel	DNV	EDT Offshore	FD Ifestos Marine Works Ltd	Cypros	2018
13	"Nordica" (Upgrade)	Multi purpose Vessel	DNV	Arctia Offshore	Arctia Offshore Oy	Finland	2018
12	"Sea Challenger"	OWTI	DNV	A2SEA	Esbjerg	Denmark	2015
11	"Sea Installer"	OWTI	DNV	A2SEA	Fredrikshavn	Denmark	2014
10	"RG WH3"	Weelhead Platform	DNV	RasGas	McDermott Middle East Inc.	Dubai	2014
9	"RG WH 2"	Weelhead Platform	DNV	RasGas	McDermott Middle East Inc.	Dubai	2014
8	"Hay Yang Shi You 691"	Service vessel	DNV		WuChang Shipbuilding Industry	China	2014
7	"Indira Point"	Supply vessel	IRS	DGLL	Chocin Shipyard Ltd.	India	2014
6	"Seven Viking"	IMR/Constr. Vessel	DNV	Eidesvik Offshore	Ulstein Yard	Norway	2013
5	"Fennica"	Multi purpose vessel	DNV	Arctia Offshore	Arctia Offshore Oy	Finland	2012
4	"Nordica"	Multi purpose vessel	DNV	Arctia Offshore	Arctia Offshore Oy	Finland	2012
3	"H3016 -Hai Yang Shi You 708"	DESV	DNV	COSL	CSSC Guangzhou Huangpu Shipbuilding Ltd	China	2010
2	"Seamec I"	Diving Support Vessel	DNV	Technip/Seamec	Dubai Dry Docks	Dubai	2010
1	"Lorelay"	Pipelaying Vessel	Lloyd's	Allseas	MMHE Shipyard	Malaysia	2010



References from former Project

P/E = Project Management / Engineering

PC = Production of Component

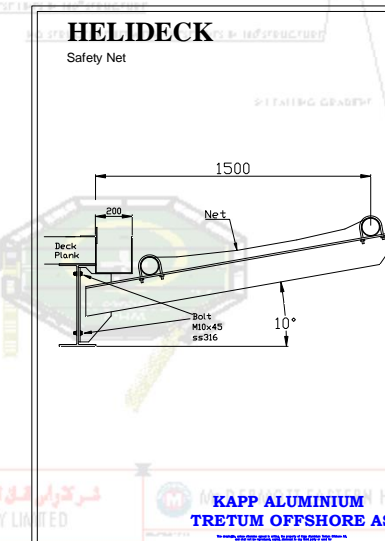
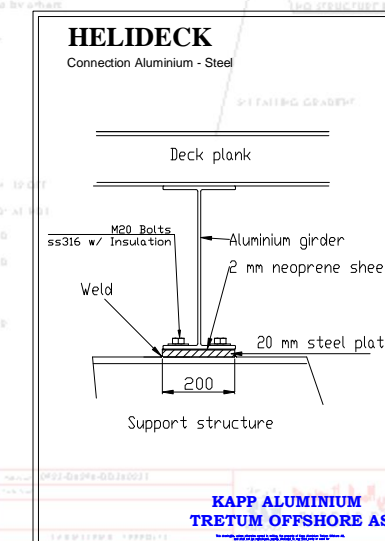
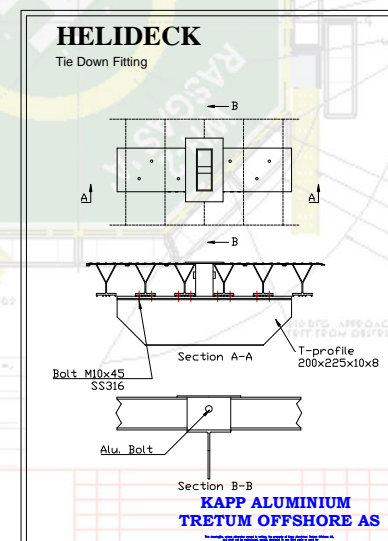
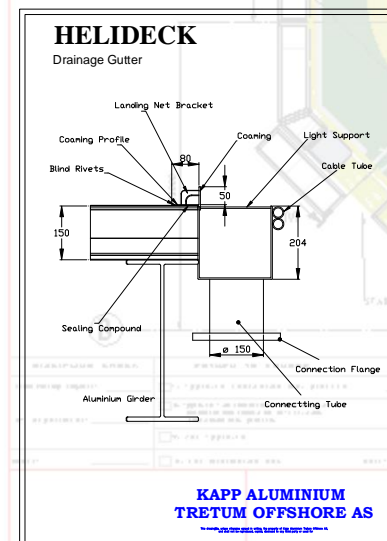
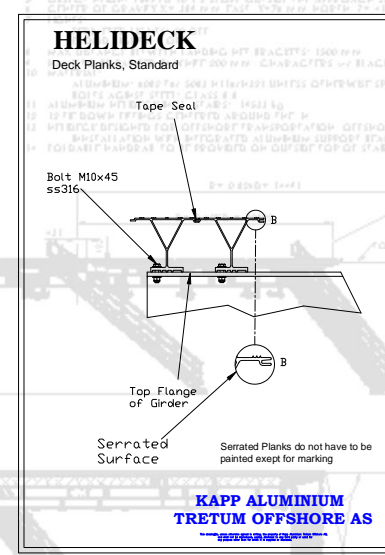
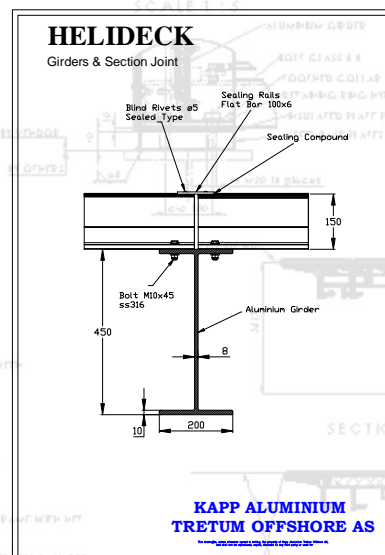
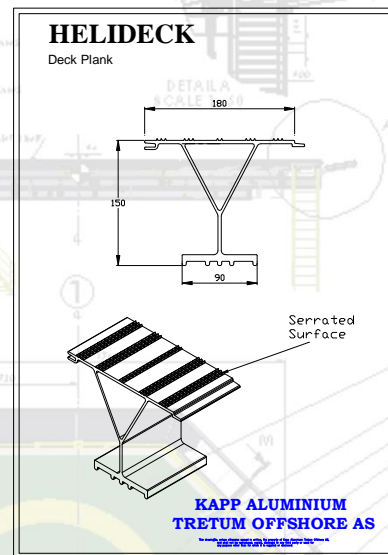
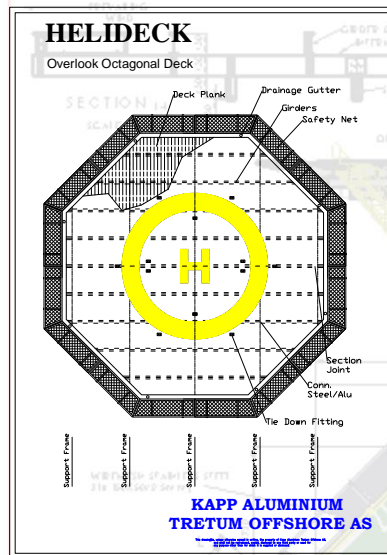
A/I = Assembly / Installation

No	Name	Host	Class	Year	P/E	PC	A/I
1	"Statfjord A"	Loading Buoy	DNV	1976	X		
2	"Arctic Seal"	Service vessel	DNV	1977	x		
3	"Tender Contest"	Diving support vessel	DNV	1977	x		
4	"Lance"	Service vessel	DNV	1978	x		
5	"Northern Installer"	Service vessel	ABS	1978	x		
6	"Pacific Installer"	Service vessel	ABS	1978	x		
7	"Skau-shore 1"	Drilling platform	ABS	1979	x		
8	"Safe Astoria"	Accomod. Platform	DNV	1979	x		
9	"Wildrake"	Service vessel	DNV	1980	x		
10	"Cheveron"	Prod. Platform	Lloyd's	1980	x		
11	"Nortrol"	Drilling platform	DNV	1980	x		
12	"Ragno Due"	Service vessel	DNV	1980	x		
13	"Safe Gothia"	Accomond. Platform	DNV	1981	x		
14	"Arctic Surveyor"	Sevice vessel	DNV	1980	x		
15	"Amatista"	Accomond. platform	DNV	1981	x		
16	"Stad Troll"	Diving support vessel	DNV	1981	x		
17	"BOS 300"	Working barge	BV	1981	x		
18	"Statfjord B"	Loading buoy	DNV	1982	x		
19	"Beryl B"	Loading buoy	Lloyd's	1982	x		
20	"Safe Industria"	Accomond. platform	BV	1982	x		
21	"Safe Holmia"	Accomond. Platform	DNV	1982	x		
22	"Drilling Star"	Drilling platform	DNV	1982	x		
23	"Ross Isle"	Drilling platform	DNV	1982	x		
24	"Treasure Sage"	Drilling platform	DNV	1982	x		
25	"Flexservice 3"	Sevice vessel	DNV	1982	x		
26	"Dyvi Omega"	Drilling Platform	DNV	1982	x		
27	"Geco Tau"	Service vessel	DNV	1982	x		
28	"Ferder"	Drilling vessel	DNV	1983	x		
29	"Seaway Labrador"	Service vessel	DNV	1983	x		
30	"Comex 1"	Service vessel	Lloyd's	1983	x		
31	"Stad Flex"	Service vessel	DNV	1983	x		
32	"Statfjord C"	Loading buoy	DNV	1983	x		
33	Univ. Of Chicago	Hospital roof		1984	x		
34	W.Jones Hospital	Hospital roof		1984	x		
35	"Sgt Matej Kocak"	Rapid deployment V	ABS	1984	x		
36	"PFC Eugene Obrigon"	Rapid deployment V	ABS	1984	x		
37	"Maj Stephen W Pless"	Rapid deployment V	ABS	1984	x		

No	Name	Host	Class	Year	P/E	PC	A/I
38	"Polar Pioneer"	Drilling platform	DNV	1984	x		
39	"Port of Singapore"	Rooftop		1984	x		
40	"Univ. Of Cincinati	Hospital roof		1985	x		
41	"Slidell Hospital"	Hospital roof		1985	x		
42	"St Francis Hospital"	Hospital roof		1986	x		
43	"Flexservice 1"	Service vessel	Lloyd's	1986	x		
44	"St Louis Univ. Hospital	Hospital roof		1987	x	x	
45	"Stephaniturm"	Service vessel	GermLloyd's	1988	x	x	
46	"Veslefrikk"	Production platform		1988	x	x	
47	"Westmoreland Hosp."	Hospital roof		1988	x	x	
48	"Sleipner A"	Production platform		1990	x	x	
49	"Petroland"	Production platform		1991	x	x	
50	"Tiffany"	Production platform		1991	x	x	
51	"Polymariner"	Drilling platform		1991	x	x	
52	"Castoro Sei"	Pipelying vessel	ABS	1992	x	x	
53	"Spirit of Columbus"	Production platform	RINA	1992	x	x	
54	"Yale University"	Hospital roof		1992	x	x	
55	"Hibernia"	Production platform	Lloyd's	1994	x	x	
56	"Sleipner Vest"	Wellhead platform		1994	x	x	
57	"Solitaire"	Pipelaying vessel	Lloyd's	1994	x	x	
58	"Dicto Oslo"	Shuttle tanker	DNV	1994	x	x	
59	Ashtart"	Production platform	BV	1995	x	x	
60	"Petrojarl 4"	Production vessel	DNV	1995	x	x	
61	"Berge Hugin"	Production vessel	DNV	1996	x	x	
62	"Berge Munin"	Production vessel	DNV	1996	x	x	
63	"Aberdeen"	Shuttle tanker	ABS	1996	x	x	
64	"Seaway commander"	Seismic vessel	DNV	1996	x	x	
65	"Njord B"	Production vessel	DNV	1996	x	x	
66	"Elisabeth Knutsen"	Shuttle tanker	DNV	1996	x	x	
67	"Åsgaard A"	Production vessel	DNV	1996	x	x	
68	"Maersk Dorset"	Production vessel	Lloyd's	1996	x	x	
69	"Odin"	Production vessel	DNV	1997	x	x	
70	"P-31"	Production platform	ABS	1997	x	x	
71	"Key Gibraltar"	Jack- up	ABS	1997	x	x	
72	"P-33"	Production platform	ABS	1997	x	x	
73	"P-35"	Production platform	ABS	1997	x	x	
74	"SHI1220"	Drilling vessel	ABS	1997	x	x	
75	"SHI 1189"	Shuttle tanker	ABS	1997	x	x	
76	"Mattea"	Shuttle tanker	ABS	1997	x		
77	"Daewoo 5109"	Shuttle tanker	Lloyd's	1997	x	x	
78	"Laminaria"	Production vessel	Lloyd's	1997	x		
79	"Deepwater Frontier"	Drilling vessel	ABS	1998	x	x	

No	Name	Host	Class	Year	P/E	PC	A/I
80	"West Future II"	Drilling platform	DNV	1998	x	x	
81	"Siri"	Production platform	Lloyd's	1998	x	x	
82	"Vicksburg"	Jack-up	ABS	1998	x	x	
83	"Seaway Kingfisher"	Seismic vessel	DNV	1998	x	x	
84	"Ocean Explorer"	Seismic vessel	DNV	1998	x	x	
85	"Geco Triton"	Seismic vessel	DNV	1998	x	x	
86	"Atlantic Challenger"	Seismic vessel	DNV	1998	x	x	
87	"Umoe Sterkoder 198"	Seismic vessel	DNV	1998	x	x	
88	"P-47"	Production platform	ABS	1998		x	
89	"Geobay"	Seismic vessel	DNV	1998		x	
90	"SHI 1256"	Drilling vessel		1999		x	
91	"SHI 1300"	Drilling vessel		1999		x	
92	"Sestao H317"	Shuttle tanker		1999		x	
93	"Sestao H318"	Shuttle tanker		1999		x	
94	"Cajun Express"	Drilling platform		1999		x	
95	"Skandi Inspector"	Service vessel		1999		x	
96	"Nordic Torinita"	Shuttle tanker		2000		x	x
97	"Seisranger"	Seismic vessel		2001		x	x
98	"Edda Freya"	Service vessel		2002		x	x
99	"Edda Fjord"	Service vessel		2002		x	x
100	"Alma"	Production platform		2002		x	
101	"South Venture"	Production platform		2002		x	
102	"Skandi Bergen"	Service vessel		2003		x	x
103	"Basker Spirit"	Shuttle tanker		2005		x	x
104	"Neva"	Accomod. vessel		2005		x	x
105	"Western Monarch"	Seismic vessel		2005		x	x
106	"P50"	Production platform		2006		x	
107	"P51"	Production platform		2006		x	
108	"Finnmarken"	Accomod. vessel		2006		x	x
109	"Discover Sevan Seas"	Drilling vessel		2006		x	
110	"Normand Installer"	Service vessel		2007		x	x
111	"Terminal Adriatic LNG"	LNG Terminal		2007		x	x
112	"Island Pioneer"	Service vessel		2007		x	x
113	"Normand Seven"	Service vessel		2007		x	x
114	"Munin Explorer"	Seismic vessel		2007		x	x
115	"Island Constructor"	Service vessel		2008		x	x
116	"Olympic Triton"	Service vessel		2008		x	
117	"Bourbon Pearl"	Service vessel		2008		x	
118	"Ohm Leder"	Seismic vessel		2008		x	
119	"Stril Herkules"	Standby vessel		2008		x	x





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BY: [Signature]
FOR: [Signature]

FOR HELIDECK UPGRADE
FOR WELLHEAD 2 AND 3
RG Contract No.: CT/RG27/L112/18
RG Project No.: RGCP-512

KAPP ALUMINIUM TRETUM OFFSHORE AS
General Arrangement of
Helideck on WH2-3
DATE: 10/10/2018
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