

WETBELL

TECHNICAL SPECIFICATIONS

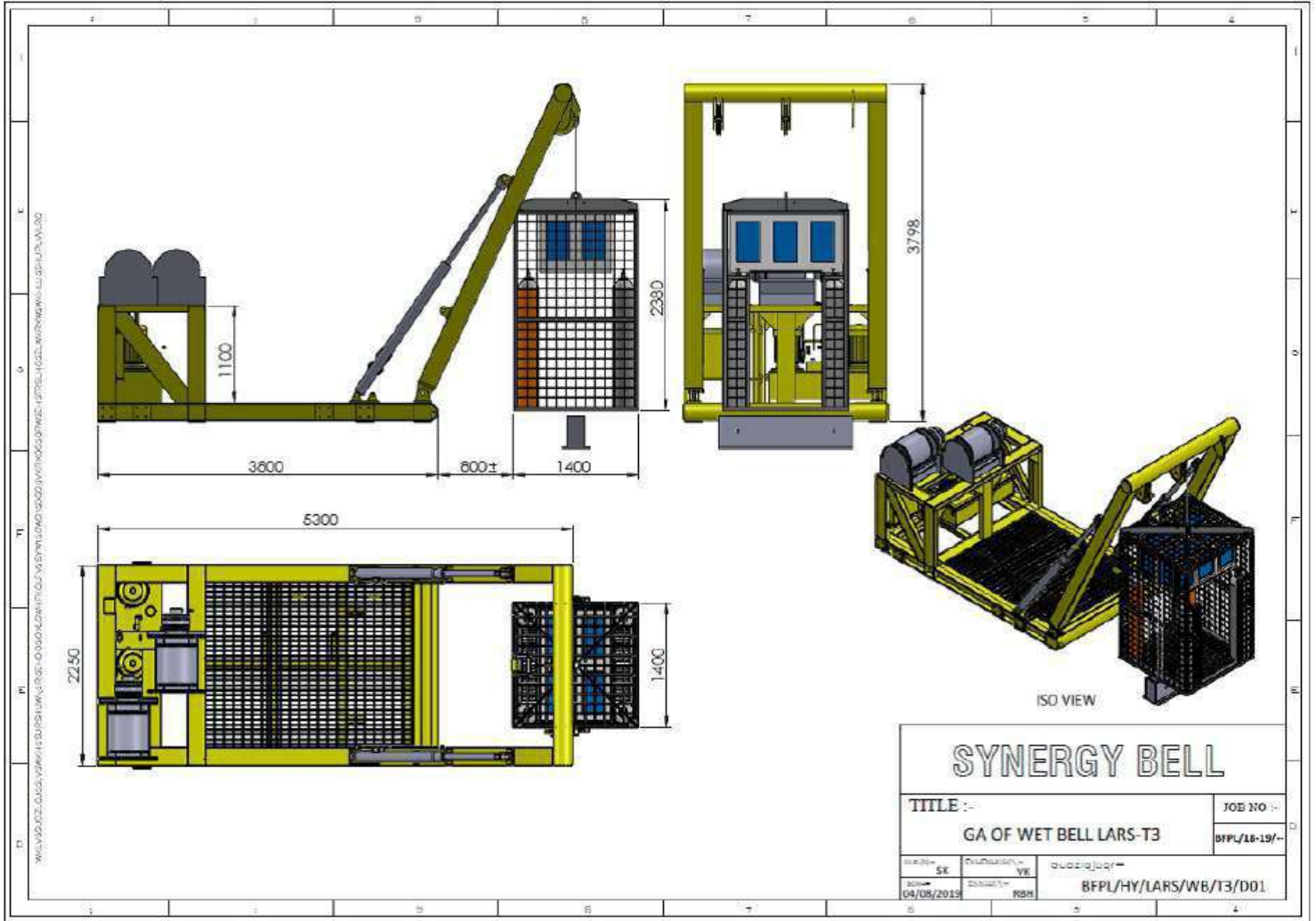
Introduction

Synergy Diving Wet-bell system is designed and manufactured to Imca Standards, engineered to the highest standards, with a smooth design and aesthetics.

The technical specification provides functionality, design parameters and ease of operation

Below is the technical specification of the equipment being provided Wet Bell Launch and Recovery Systems

The Synergy LAR12-6 Wet Bell Launch & recovery systems are designed for diving up-to 75 MSW, and can be used for both air and mix gas diving . The entire system can be accommodated into a standard 20ft ISO container, making it one of the best workable designs in wet bell systems.



WETBELL

IMCA D018 –Code of Practice for The Initial and Periodic Examination, Testing and Certification of Diving Plant and Equipment



**Code of Practice for
The Initial and Periodic
Examination, Testing and
Certification of Diving
Plant and Equipment**

IMCA D023 –DESIGN for Surface Oriented (Air) Diving Systems



**Diving Equipment Systems
Inspection Guidance Note**

**DESIGN for Surface Oriented
(Air) Diving Systems**

WETBELL

LR12-6- 2 Diver Wet Bell Launch and Recovery

A FRAME WITH PULLEYS
SKID BASE FRAME
HYDRAULIC POWER PACK
CERTIFIED MAN RIDING WINCHES
WETBELL HYDRAULIC CONTROL MOUNTED ON THE SKID WITH ELECTRICS
ELECTRICAL CONTROL IS MOUNTED ON THE SKID
WETBELL, OPEN TYPE , WITH RECTANGULAR ACRYLIC GAS DOME WITH GAS FOR ONBOARD LIFE SUPPORT
SKID BASE AND A FRAME HANDLING SYSTEM
WINCHES AND HYDRALUIC POWERPACK

SUMMARY OF SPECIFICATIONS	
DESIGN STANDARD	IMCA /DNV (REFERENCE)

SAFE WORKING LOAD	
WET BELL	1500 KG

BELL WINCH	1500 KG CONTINUOUS (1000)
GUIDE WIRE SYSTEM	2400 KG CONTINUOUS (TWO REEVES)

FAIL SAFE BRAKE RATING	
BELL WINCH	2250 KG CONTINUOUS (Testing)
GUIDE WIRE SYSTEM WINCH	2850 KG CONTINUOUS (TWO REEVES) (Testing)

ELECTRICAL POWER REQUIREMENTS	
MAIN POWER SUPPLY	15Kw /20 HP,440V, 50/60HZ - 3 PHASE
STANDBY POWER SUPPLY	15Kw /20 HP,440V, 50/60HZ - 3 PHASE

DIMENSIONS

Description of Equipment	Length	Width	Height	Weight (approx.)
Wet Bell and Skid (transport mode)	3800mm	2250mm	2280mm	5 ton
Wet Bell and Skid (deployed)	3800mm	2250mm	4150mm	5 ton

WETBELL

A FRAME WITH SKID

Keeping in mind the restrictions on space and the weight of the wet bell Lars system, the base has been designed to ensure minimum utilisation with maximum effect on the diving vessel or barge. The system consists of the main A frame the hydraulic power packs (2 completely independent units built into one frame), hydraulically operated rams (SS Shaft) for extending and resting the A frame (Double acting bore 100mm x rod 56 mm x ST 1000mm, welded with dual lock valve 2 sets), Basket and guide weight, 2 x hydraulic winches (one for Wetbell and one for guide wire). The design allows the main winch to be located on the base next to the power pack, and the guide winch to be installed on the platform raised above the power pack for ease of operation. The electrics are Star Delta starters, and can be operated from the power pack or on the platform as deemed fit during operation. The paint is double epoxy heavy duty marine grade paint.

Pulleys (Sheaves)

The top of the frame is fitted with sheaves. The wire cannot come off the sheave due to the design. Uniform wear of the sheave and prevention of side movements are incorporated.

Hydraulic Cylinders -

Hydraulically operated rams (SS Shaft) for extending and resting the A frame (Double acting bore 100mm x rod 56 mm x ST 1000mm, welded with dual lock valve 2 sets). The ram cylinders are piped in with dual hydraulic over centre valves, and this protects uncontrolled movement in case of loss of hydraulic pressure.

Hydraulic piping -

All hydraulic pipe work is of stainless steel construction and fittings are stainless steel also.

Protection -

Heavy duty chain on the side of the a frame, to be secured in closed position after the wet bell is launched. An inside fence is provided near the rams so that there is no damage accidentally while recovery of the bell.

Painting -

All steelwork is shot blasted and painted to a marine grade paint specification. The colour scheme is normally bright yellow, but colour can be as per client requirements also. Pls inform in advance what colour preference is required, and we will do the needful

WETBELL

MAIN WIRE LIFT SYSTEM

The main wire winch lifts the bell to and from working depth. The wire runs through the sheave assemblies and is connected to the bell. The winch is Offshore man rider certified by manufacturer and witnessed by DNV. Specifications for the winch are as follows :

SAFE WORKING LOAD	1500 KG
MAXIMUM LIFTING SPEED	OPERATOR CONTROLLABLE UPTO 18MTR PER MINUTE
WIRE DIAMETER FOR 2 TON	14MM NON SPIN
MAXIMUM DRUM WIRE CAPACITY	180M OF 14MM
WIRE LENGTH SUPPLIED	120 M
DRIVE SYSTEM	HYDRAULIC DIRECT

BRAKING	
BRAKE 1	MULTI DISC BRAKE AUTOMATIC (SPRING ACTIVATED)
BRAKE 2	DYNAMIC HYDRAULIC OVER CENTER VALVE
BRAKE 3	EMERGENCY - MANUALLY OPERATED BAND BRAKE

Winch finish to man riding specifications - High gloss top coat, marine grade finish, with guards in place

GUIDE WIRE LIFT SYSTEM

To maintain the bell in correct orientation and in relative position to the vessel, the guide wire system is used. It negates the movements of the currents when the bell is in the water and compensates for vessel movements also. The ascent speed of the winch is 18 m/min on two fold.

SAFE WORKING LOAD	1900 KG IN TWO FOLD SYSTEM
MAXIMUM LIFTING SPEED	OPERATOR CONTROLLABLE UPTO 36MTR PER MINUTE
WIRE DIAMETER FOR 2 TON	13MM NON SPIN
MAXIMUM DRUM WIRE CAPACITY	260M OF 13MM
WIRE LENGTH SUPPLIED	220 M
DRIVE SYSTEM	HYDRAULIC MOTOR

BRAKING	
BRAKE 1	MULTI DISC BRAKE AUTOMATIC (SPRING ACTIVATED)
BRAKE 2	DYNAMIC HYDRAULIC OVER CENTRE VALVE
BRAKE 3	EMERGENCY - MANUALLY OPERATED BAND BRAKE

Winch finish to man riding specifications - High gloss top coat, marine grade finish, with guards in place

Approximate weight - 540 kg

WETBELL

HYDRAULIC POWER PACK

This is the most critical component of the system, as it operates the Main and Guide weight winches. The power pack is mounted on the base skid with the main winch and the guide winch on a platform above.

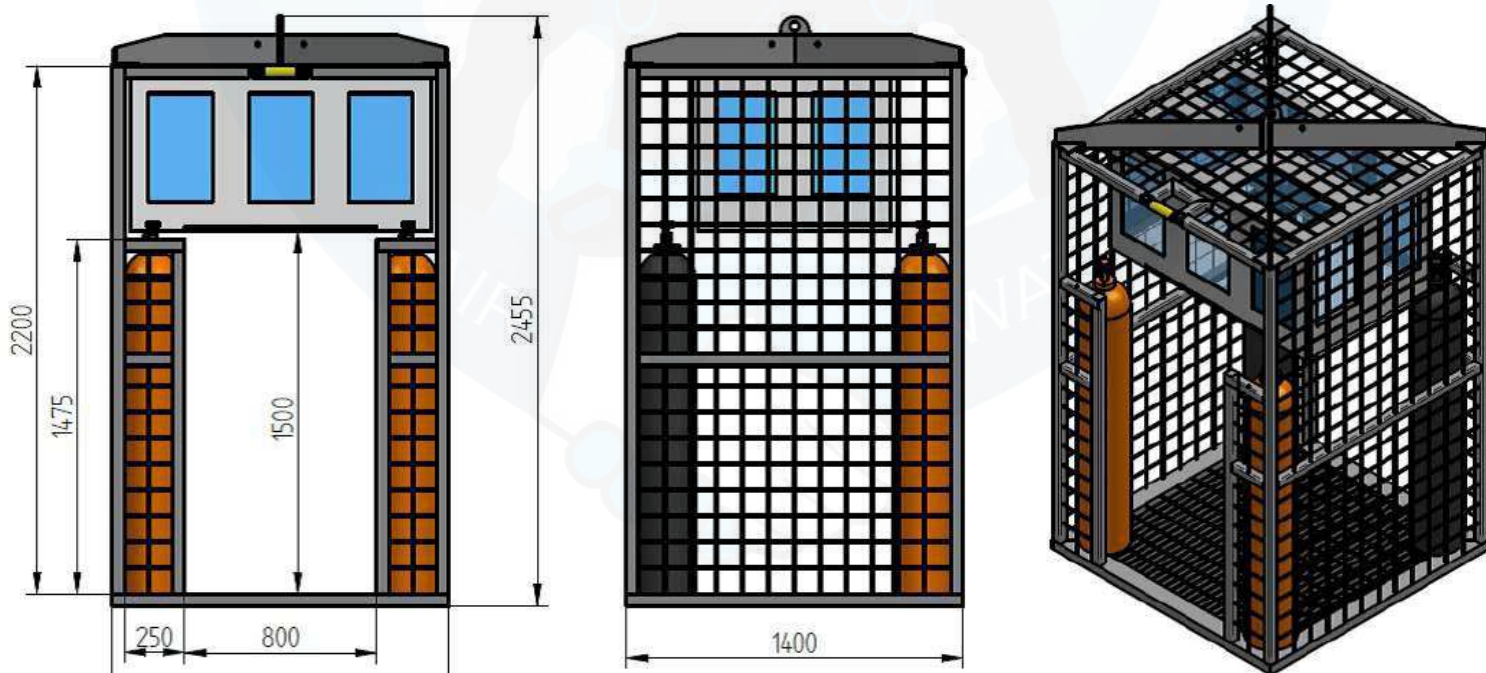
Electric motor and pump shall be 1 x working and 1 x standby. Provided along with strainer, breather, level Gauge, manifold block and return line filter, high temperature cut out switch.

There are two separate control boxes, one on the power power pack, and one provided on the platform, to be used as per operational ease. The power pack will have controls for the launch and recovery of the A frame with the basket (main wire) and the guide weight wire.

All hydraulic fittings will be standard cadmium plated. All hydraulic pipework used will be painted and covered with DENSO tape. All hose fittings pipe crimping ferrules and other hydraulic fittings will be of the O- ring type to minimize the chance of leakages. Heavy duty pipe clamps are used throughout to clamp all pipe runs to the skid. Two wire hydraulic hose will be used exclusively on all relevant flexible areas on the skid.

ELECTRIC MOTOR X 2	20HP, 440V, 3 PHASE, 50/60 HZ
PUMP X 2	40 LPM AT 140
OIL TANK CAPACITY	200 LTRS (100 LTR INDEPENDENT TANK FOR EACH WINCH)

DIVER WET BELL



WETBELL

The wet bell is designed to accommodate two divers-the technical specification is as follows:

DIMENSIONS	
Outside	1400 MM
Height	2455mm
Mass(unloaded)	750kg (Empty basket) + 4 x cylinders 300 Kg =1050 Kg
Payload	450 Kg

Acrylic Dome -

The dome consists of acrylic panes, fitted individually on the dome. In case of any damage to the panes offshore, it is easy to replace the damaged units with spare acrylic panes, or even steel plates can be fitted on them to ensure continuity of diving. There are handles provided for the divers to hold in the bell. It is fitted with a diver bell recovery hoist.

Bell frame construction :

Built of stainless steel, r steel tubes are used to prevent accidental cuts to the diver during entry / exit of the bell. Due to the stainless steel manufacture, wear/tear and corrosion resistance is guaranteed, especially in marine environments. Lots of points are provided for additional equipment to be attached to the frame if required.

Lifting points As a standard, there is a main lifting point, secondary lifting and x eyelets are provided for kellems grip and also recovery of the bell in an emergency.

Onboard gas for the bell supply are as below

Cylinders installed on the bell as below	
Cyl 1 50 ltr x 200 bar	Heliox 16/84
Cyl 2 50 ltr x 200 bar	Heliox 50/50
Cyl 3 50 ltr x 200 bar	Breathing air
Cyl 4 50 ltr x 200 bar	Breathing air

Will be supplied with demand valves, regulators for supplying emergency air through the divers air manifold

Bell supply : The bell gas supply is supplied from the standby divers onboard gas supply, this also includes a dome vent valves

WETBELL

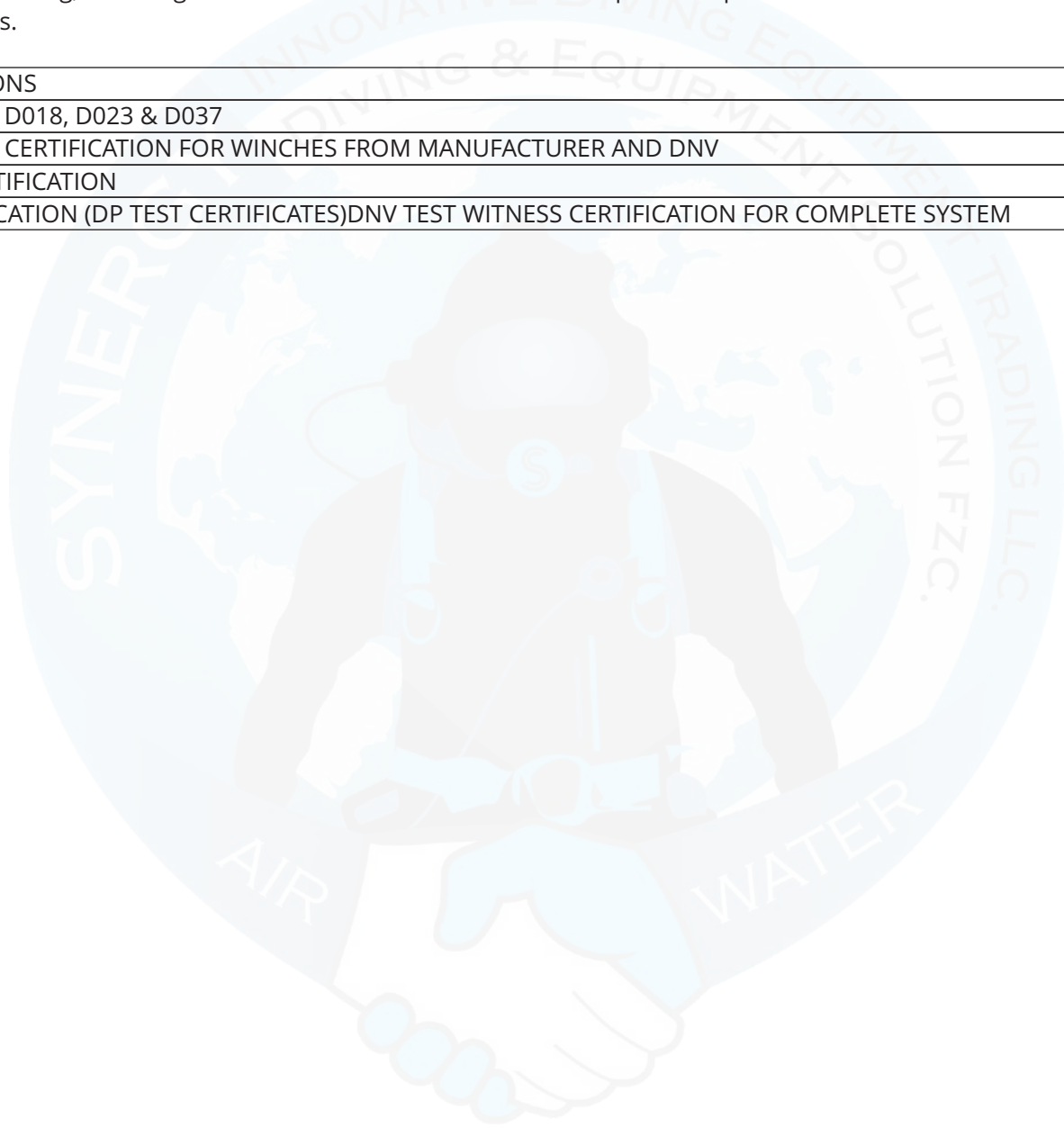
Hydraulic Control Panel

Will provide the controls for the bell / guide wire. If required, we can also provide hydraulic handling system. The controls are for A frame luff launch and recovery, main bell wire deploy and re-coiling, guide wire deploy and recoiling. It is located on the base skid itself. Main pump hydraulic system pressure is monitored with a pressure gauge provided.

Main Electrical Switchboard

Provides electric controls for bell and the a frame system. All necessary circuit breakers, control switches, indicator lamps for system monitoring, including isolation transformers. It caters to the power requirements of the main and standby hydraulic pumps.

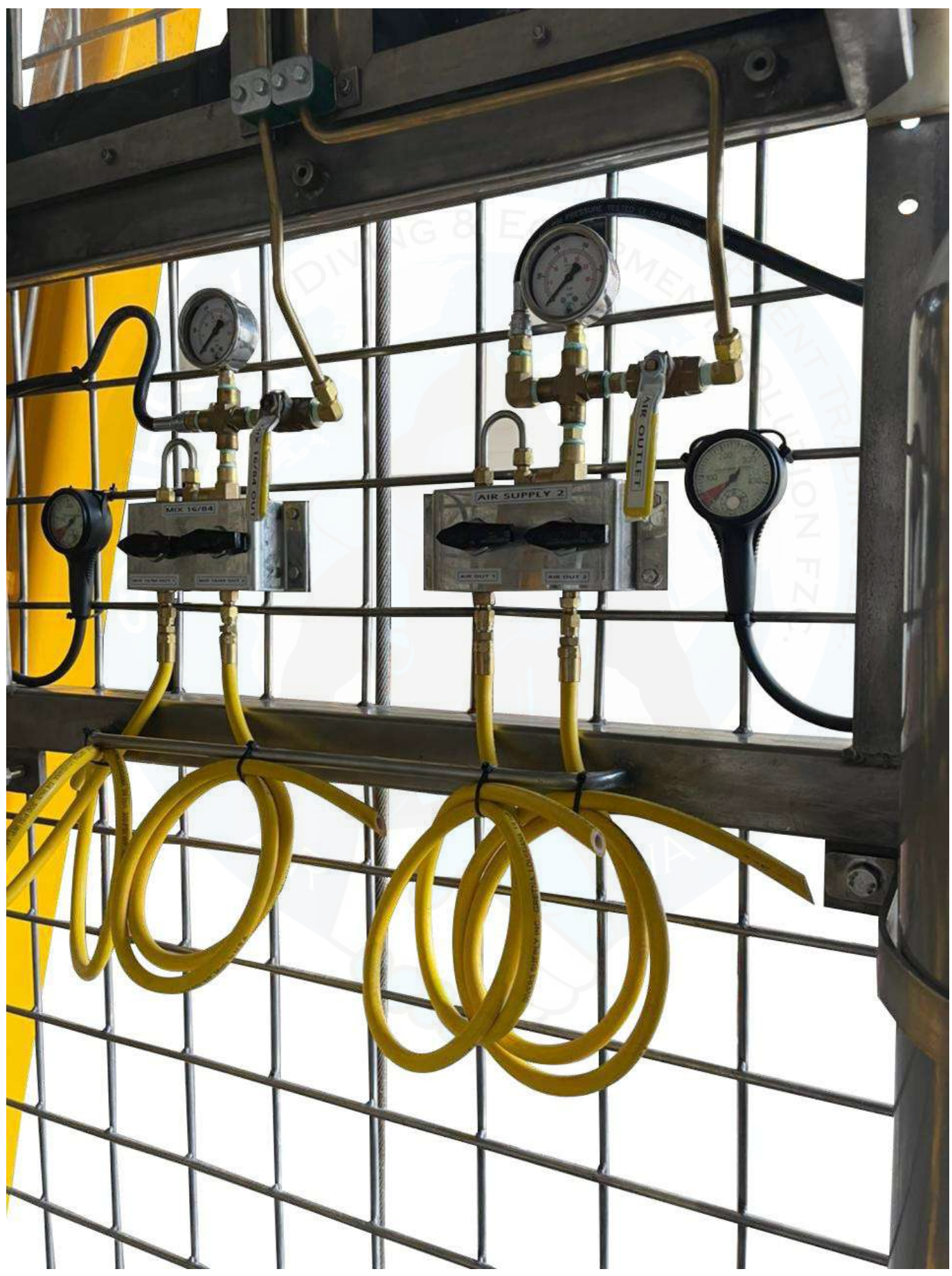
CERTIFICATIONS
AS PER IMCA D018, D023 & D037
MAN RIDING CERTIFICATION FOR WINCHES FROM MANUFACTURER AND DNV
LIFTING CERTIFICATION
NDT CERTIFICATION (DP TEST CERTIFICATES) DNV TEST WITNESS CERTIFICATION FOR COMPLETE SYSTEM



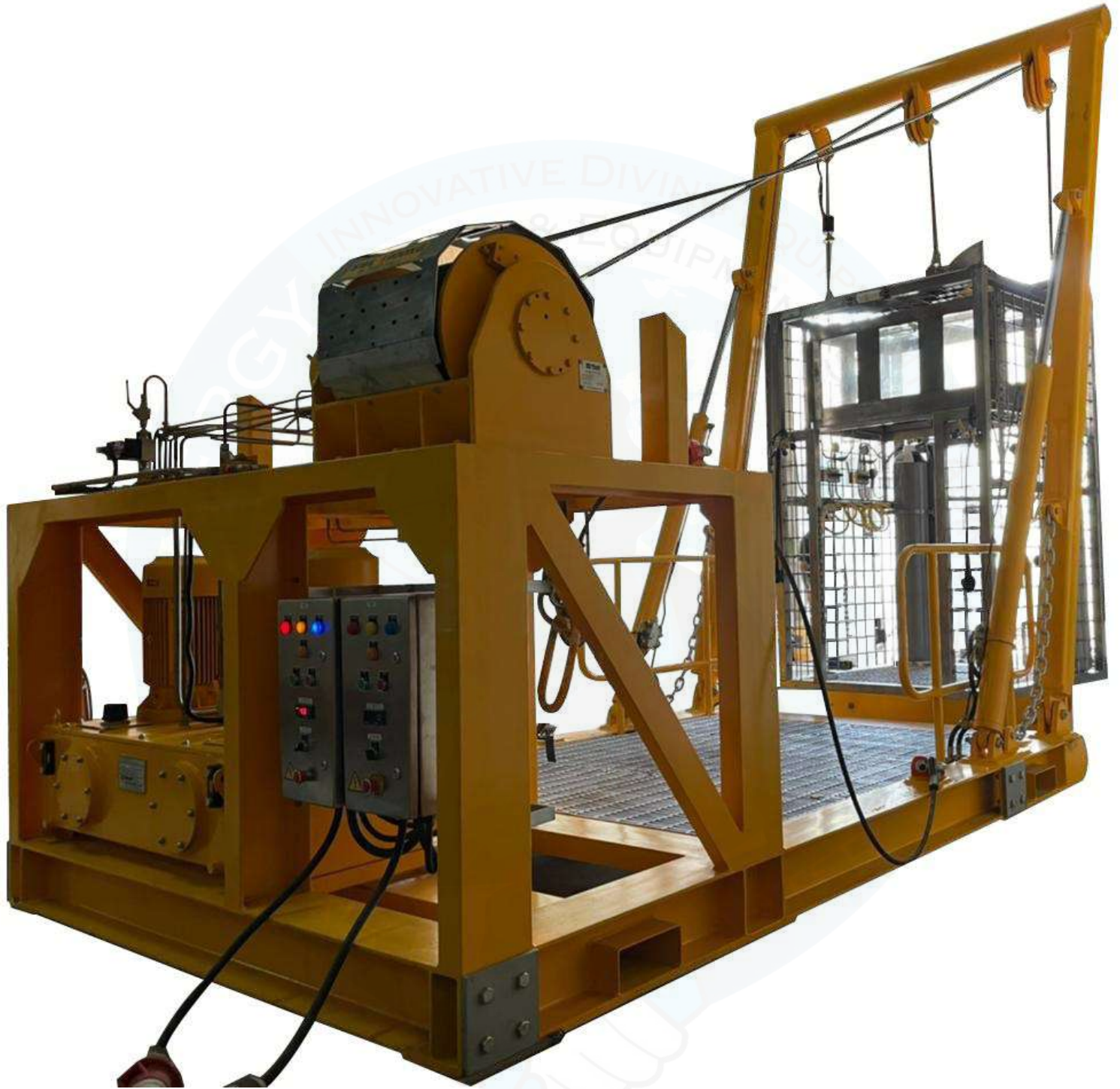
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CERTIFICATES PROVIDED WITH EACH TWIN LARS



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