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"A One Stop Shop for All Your Engineering and Marine Construction Requirements"

DECOMMISSIONING STRATEGIC EQUIPMENT FOR MARINE PLATFORMS AND PIPELINES

UNITED REGISTRAR OF SYSTEMS URS ISO 9001

UKAS MANAGEMENT SYSTEMS 0043

NATA

Marine Platforms and Pipelines OCS In-House Strategic Equipment

OCS continues to expand in-house equipment inventory. Current stocks include :

- Internal High Pressure Water Abrasive Suspension Cutter for Piles, Conductors and Jacket legs (16” to 42” PCH and 36” to 72” DCH3)
- Internal Lifting Tools (30” to 54” and 24” to 48”)
- Diamond Wire Cutter (16” to 36”)
- Jet – Airlift with High Pressure Pump and Compressor for Pile Plug removal

Schematic of Internal Pile / Conductor Cutting System (Adapted to marine spread as required)

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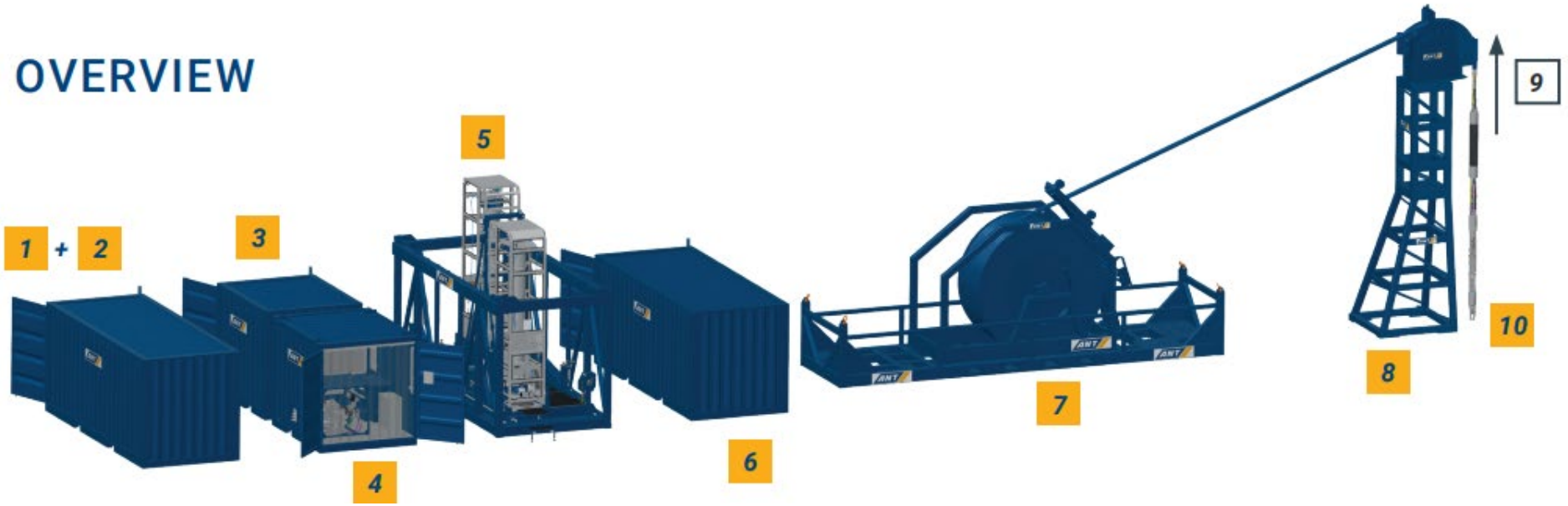

European Pressure Equipment Directive (PED) 2014/68/EU Compliant Product

1+2: Working Container + Abrasive Storage

3: High Pressure Pump (WOMA 400M)

4: Control System with HPU and 3S Cut Verification System

5: Abrasive Mixing Unit (AMU) 2500-100 MK2

6: Air Compressor

7: Winch with Water, Hydraulic, Control Umbilical

8: A-Frame/Gooseneck

9: Lifting Frame

10: PCH MK2 or DCH-3

Internal High Pressure Water Abrasive Suspension Cutter Pile Cutting Head (PCH) MK2

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Smallest API pipe / casing	16 in - 36 in
Smallest inner casing bore	14,7 in
Standard Nozzle Holder for casing	stepless
Weight	882 lb
Overall length	118 in
Depth	< 500 ft
Degrees per hour	395 - 3,950 °/h
Max. cutting depth	4 in (optionally more)
Drive	Hydraulic driven & endless rotation
Directives	Machinery Directive 2006/42/EC
	ATEX Directive 2014/34/EU (Optional, Zone 2)

Internal High Pressure Water Abrasive Suspension Cutter Downhole Cutting Head (DCH-3)

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Application area	Pipes / piles up to 102 mm (4") max. solid wall thickness
Outer diameter of inner pipe	Depending on the configuration: 30" up to 50" or 50" up to 72"
Minimum inner pipe diameter	Depending on the configuration: 711 mm (28") or 1156 mm (45.5")
Standard nozzle holders for casing	Stepless
Drive	Hydraulic
Rotation speed	90.5 - 905 °/h
Material	Structual and body parts made of stainless steel / aluminum
Weight	Depending on the configuration: approx. 690 kg (1,521 lbs), 820 kg (1,808 lbs)
Overall length	approx. 3,300 mm (130")
Underwater working depth	< 150 m (492 ft)
Hydraulic functions	Stepless clamping, endless rotation of the cutting head unit, stepless extension of nozzle holder

Internal High Pressure Water Abrasive Suspension Cutter Abrasive Mixing Unit (AMU) 2500-100 MK2

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Maximum pressure	2,400 bar (34,800 PSI)
Pressure vessel	
Volume	100 l (26 US gallon)
Abrasive capacity	200 kg (440 lb)
Operation pressure valves	pneumatic
Weight	4,200 kg (9,260 lb) empty
Size (L x W x H)	1,495 x 1,075 x 4,150 mm (59 x 42.5 x 163.5 in)
Hopper capacity	100 l (26 US gal) / 200 kg (441 lb)
Nozzle size	1.0 mm (0.04 in)
Maximum working pressure	2,400 bar (34,800 PSI)
Water flow	29.4 l (7.77 US gallon)/min
Hydraulic power at the nozzle	118 kW
Abrasive	HPX 80
Abrasive concentration	10 % (mass)
Cutting time with one filling abrasive	70 min

Internal High Pressure Water Abrasive Suspension Cutter High Pressure Pump Skid (WOMA 400M)

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- Fluid End: WOMA 400M High Pressure Plunger Pump (P20)
- Engine: GM8V92 Detroit Diesel Engine
- Max. Working Pressure: 2,500 bar
- Flow Rate: 42 L/min

Pinion shaft		Crank shaft	P18	
1,500 [1/min]	1,800 [1/min]		3,000 bar*	
Gear ratio		[1/min]	[kW]	[l/min]
2.96		507*	233	42
	3.60	500	230	42
3.60		417	191	35

* Maximum values of the pump
** Technical changes reserved

Internal High Pressure Water Abrasive Suspension Cutter
3S Cut Verification System

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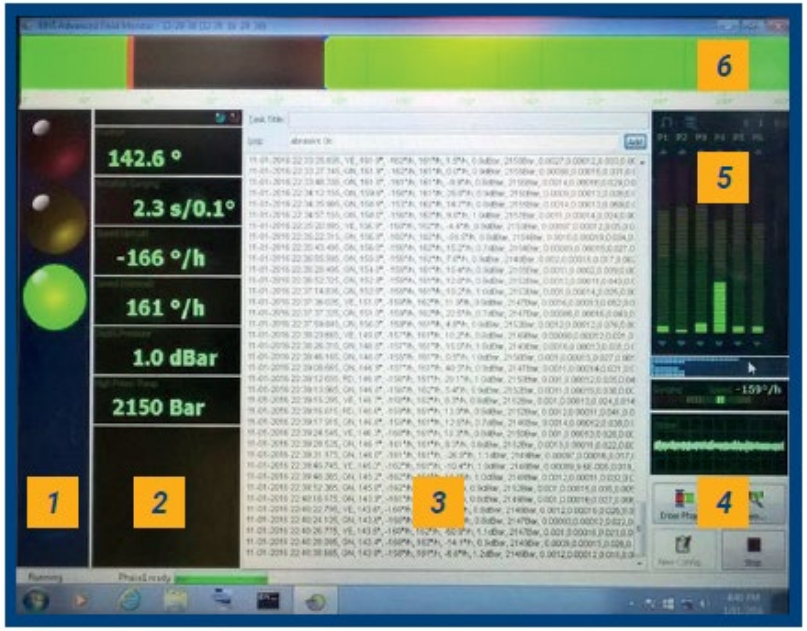
1 CUTTING QUALITY

Signals the cutting grade via traffic light

- Red = no cut
- Yellow = incomplete cut
- Green = good cut

2 CUTTING PARAMETERS

- Absolute angle of the cutting position
- Planned & actual rotational speed
- Water depth
- Working pressure



3 LOG WINDOW

- Reports the sensor readings
- After starting a task, measurements are logged to a file

4 ROTATIONAL GANGING

Shows the speed evenness of the actual cutting feed motion

5 SENSOR AMPLITUDES

Displays the particular signal amplitudes of the sensors

6 CUTTING RESULT

Real time performance feedback at the actual cutting position

Internal High Pressure Water Abrasive Suspension Cutter Control System with HPU and 3S Cut Verification System

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Internal High Pressure Water Abrasive Suspension Cutter Water, Hydraulic, Control Umbilical

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Internal High Pressure Water Abrasive Suspension Cutter Trial Cut Result

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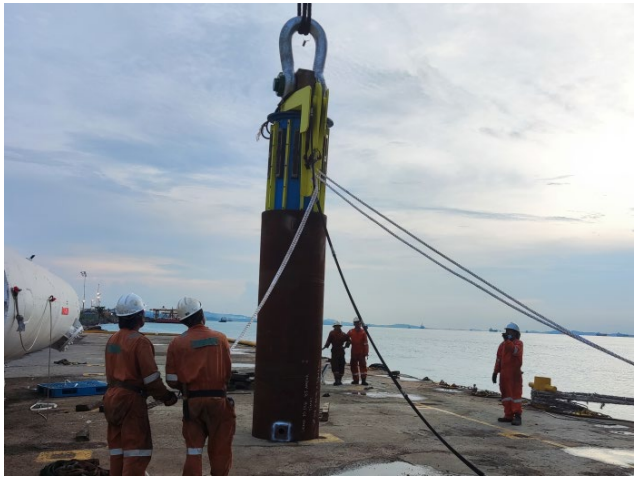
Internal Lifting Tool

OCS designed and fabricated a 30” - 54” fail safe ILT (Internal Lifting Tool). The ILT is specialised for lifting & upending of tubular piles and horizontal pull. It comes with power pack with release and clamp function supplemented with sufficient length of hydraulic hoses and hose spooler.

Internal Lifting Tool

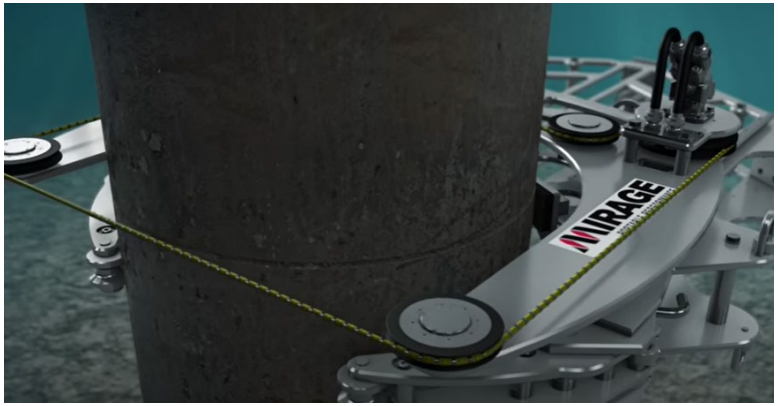
Description	Parameter
Pile Diameter Range	30” – 54”
Wall Thickness Range	Adapted to Suit.
Vertical Working Load Limit	500 Tonne
Horizontal Working Load Limit	125 Tonne
Clamping Pressure	165 Bar



Diamond Wire Saw

OCS owned a 16”-38” Diamond Wire Saw. The tool uses a continuous loop diamond wire to cut the jacket piles/legs/braces and pipelines externally.

Description	Parameter
Cutting capacity	16”–38” (406–965mm)
Feed stroke	44” (1117mm)
Clamping	Hydraulic
Weight in air	1,250lb (566kg)
Dimension (L x W x H)	102” x 75” x 30”



Jet-Airlift with High Pressure Pump and Compressor for Soil Plug Removal

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OCS designed and built jet / airlift combined with our unique high pressure / volume Pump skids and compressor are used for Pile plug removal. The pumps generate 2000 USGPM at 600psi. A two stage 1070 cfm x 350 psi compressor and all required hoses and fittings completes the spread.