

# SUCTION PILE TECHNOLOGY



## Suction Pump Spread SAPS-004

**SPT Offshore**



SPT Offshore operates a total of four (4) suction pump spreads SAPS-004 comprising a Suction Pump Unit (SPU), a 20 ft control container, four (4) umbilical sets and one (1) spare of 250m stored on umbilical racks. The SPU is capable of operating in water depths up to 150m and is fully remotely operated from the control container, using hydraulic components and electronic data monitoring systems. Venting of air and water within the suction pile is accomplished through two (2) large hydraulically operated vent valves (20") built in the pump itself. Hydraulically operated pins accommodate the connection between the suction pump and the suction pile. This connection enables easy release of the pump from the pile after the suction operation. The suction connection consists out of a 20" flange to flange connection with radial rubber O-rings guaranteeing a seal with minimum losses.

The control container contains a full set of spare parts that in case of an electronic or hydraulic failure the SPU can be repaired above water. In that case the SPU will be retrieved from the Suction Pile using the diver/ROV operated pin over-ride. Further the control container is equipped with a frequency converter which allows the system to operate on different power requirements and by adjusting the frequency from the control container the pump capacity will be adjusted to the required differential pressure and/or pumped water volume.

The SPU incorporates two identical electrical water pumps which are capable of operating simultaneously as well as separately. The result is a fully redundant system. In dual operation the maximum flow is 400 m<sup>3</sup>/hr and pressures up to 7.5 bar can be generated.

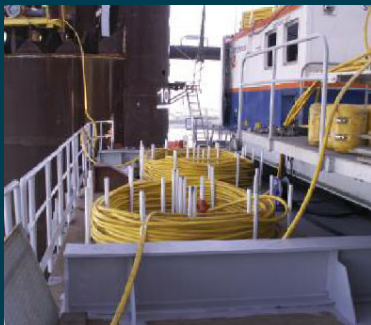
The SPU is built in a robust steel frame and can be docked on top of a suction pile using a docking frame and four (4) supports.

The SPU is equipped with the following electronic instrumentation for monitoring the installation operation:

- Pressure sensors – internal, ambient and differential pressure
- Inclinometers – SPU roll & pitch
- Echo sounder – internal soil plug height
- Gyro (optional) – SPU heading

The total Suction Pump Spread can be transported in the following packages:

- One (1) 20 ft control container
- One (1) 20 ft open top container with the four (4) SAPS-004 SPUs
- One (1) 20 ft open top container with the five (5) umbilical racks



#### Specifications Suction Pump Spread SAPS-004

##### Suction Pump Unit (4 no's available)

- Weight: 3,1 mT
- Dimensions: 2.9 x 1.1 x 1.55 m
- max. water depth: 150m
- max. water flow
  - 1 pump: 200 m<sup>3</sup>/hr
  - 2 pumps: 400 m<sup>3</sup>/hr
- max. diff. pressure: 7.5 bar
- vent valves: 2 no's x 20"
- suction inlet size: 20"

##### Umbilical (5 no's available)

- length: 250m
- diameter: 42mm

##### Control container

- weight: 13.3 mT
- dimensions: 20x8x8 ft
- contents
  - control room (for max 4 SPU's)
  - electrical switch board
  - frequency converter
  - 440V and 230V separator transformer
  - workshop
  - full set of spares

##### Power requirements

- pumps: 400 – 440 V  
50 Hz or 60Hz
- computers: 230V  
50 Hz

##### Control software

- real time monitoring on 15" screen (data and graphs)
- installation data storage in log files
- monitoring capabilities
  - pile X/Y inclination
  - pile heading (optional by gyro)
  - pressure ambient
  - pressure internal
  - differential pressure
  - discharge valve position
  - vent valve position
  - latching pin position
  - internal soil plug by echo sounder
  - bottom depth
  - motor temperatures
  - power consumption
- spare computer for full redundancy
- battery system as back-up power