

TDI-BROOKS PNEUMATIC VIBRACORER

The TDI-Brooks Pneumatic Vibracorer (pVC) is a lightweight high power vibracorer. The pVC can be used for cores of 1 to 6 meters (and down to 12-m with frame extension). The topside display informs the winchman of the exact penetration of the core barrel into the soil at any point during its vibrating insertion.

OVERVIEW

Vibracorer Technology

Vibracoring is a technique for collecting core samples of seabed sediments and wetland soils. The core barrel is incrementally driven into sediment aided by gravity, using an asymmetric pulsing energy imparted to the barrel from the vibrating head. These pulses are generated by a pneumatic pressure drop across the head, which produces mechanical pulses (hammer blows) in the downward direction at a 10-20 Hz rate. The pulses cause a thin layer of material to mobilize along the outer barrel wall and the inner core liner wall, reducing friction, easing penetration into the substrate, and aiding recovery of the soil material into the liner.

Although vibracoring is not a system for hard material, like drilling, it has become the industry standard for the collection of environmental and sedimentological samples in shallow marine depositional environments. This is partly due to the efficiency of vibracoring – with cores up to 6 meters retrievable in 10 minutes, but also due to the high recovery of vibrated samples. In loose soils, recovered core lengths can approach full barrel penetration depth. In stiffer soils, less than half penetration depth is recovered from less than full penetration, as the liner plugs with soil and stops the movement of the core material up the liner. For marine environmental studies – particularly where chemistry is needed, the higher recovery of sediments is critical in understanding the history of the deposited sediments. The down-side of vibrating soil material to achieve greater core recovery is that the sample collected will likely geotechnically disturbed.

Pneumatic Vibracorer Origins

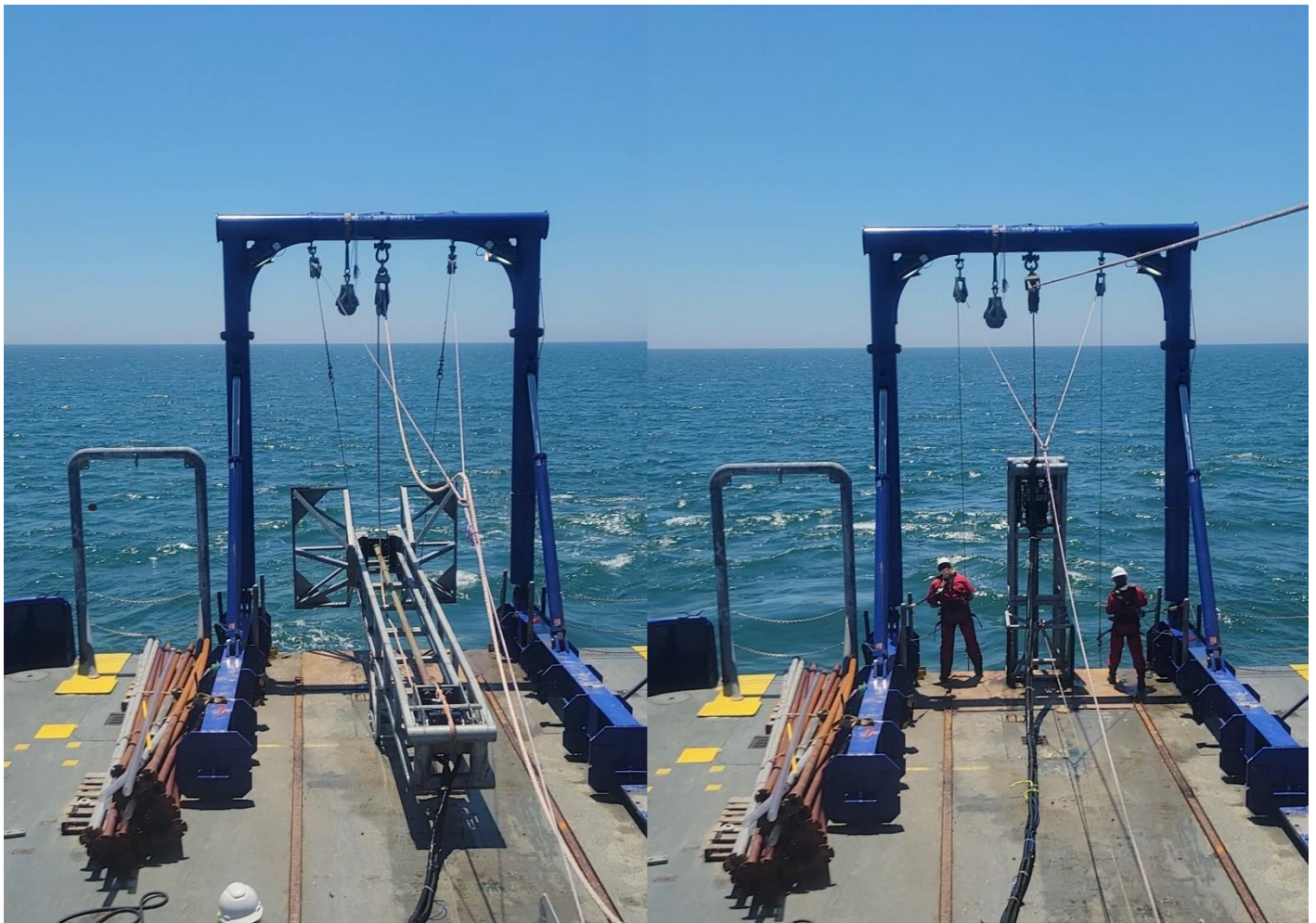
Some of the earliest designed vibracorers came from the construction industry using impact hammers and vibratory motors to run pile drivers. Early versions were frequently driven mechanically and as techniques progressed and adapted to the marine environment the approach migrated to air driven systems. This offered more flexibility and mechanical simplicity for usage underwater and allowed operation from more mobile, smaller vessels. The downsides being water depth limitations due to hose constraints and loudness both on the boat and in the water.

PRODUCT HIGHLIGHTS

The subsea equipment is built to withstand the harsh offshore environment and unforgiving handling. It is designed for safe deployments and retrievals using a robust process from the stern of the vessel. Operations are safely conducted by a winchman, an a-frame operator, and two deckmen. Due to its simple-to-assemble modular construction, the system can be mobilized very quickly for cores of 1-6-m.

- Vibrator Type: Pneumatic impacting piston vibrator
- Air Consumption: 250CFM @120psi
- Frequency: 600-1200 bpm
- Waveform: asymmetric Impacting
- Tool Dimensions in standard 6m configuration: 292" Tall x 82" x 105"
- Tool Weight in air:4,600lb
- Tool Weight in water: 3,900lb
- Stroke in standard 6m configuration: 5.75m

- Liner ID: 2.75"
- Cone Barrel ID: 3.0"
- Cone Barrel Wall: 1/8"
- Penetration Measurement: 5cm resolution, real time display at winch
- Water Depth Rating: 75m
- Maximum Core Length: 5.75m
- Lifting frame: 15,000lb crane/winch and a-frame
- Power requirement: 440V ø3 300KVA start / 100KVA run



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