The CPS* 977 cement pumping skid is designed for offshore high-pressure pumping services, delivering up to 2,000 hhp. A closed-loop seawater circuit cools the motors that power the unit. The Advanced Cement Control (ACC) data acquisition and monitoring system enables precise control of slurry density.

The CPS 977 skid features stainless steel displacement tanks, an adjustable choke valve, and a temporary replacement for mud pumping. It is compliant with Zone 2 hazardous area regulations and meets the American Bureau of Shipping (ABS) certified drilling system (CDS) criteria.

### CPS 977 Skid Specifications

**General**
- Engines: Two General Electric® GEB22 motors and one General Electric GEB20 motor
- Capability (each): 1,150 bhp [860 kW]
- Transmissions: Allison Transmission® S8610M with air shift, six speeds
- Improved reliability and efficiency with direct-driven mixing pumps
- Cooling systems: Marine cooled

**Triple Pumps**
- Model 1: Gardener Denver GD1250 Series with 3¼-in fluid end
- Capability: 18,100 psi [125 MPa] or 8.9 bbl/min [1.41 m³/min] (FOPI)
- Model 2: Gardener Denver HD2250 Series with 5½-in fluid end
- Capability: 10,000 psi [69 MPa] or 19.3 bbl/min [3.07 m³/min] (IOPI)
- Discharge manifold: 15,000 psi [103 MPa]
- Displacement tanks: 2 × 20 bbl [3.18 m³], stainless steel 316

**Slurry Mixing System**
- Model: Twin CBS-393 mixing systems with Mark III SLURRY CHIEF* cement mixing equipment
- Maximum mixing rate: 22 bbl/min [3.5 m³/min] for lead slurry and 15 bbl/min [2.38 m³/min] for standard tail slurry [60 sacks/min of dry cement per mixer]
- Volume capacity: 6-bbl [0.95-m³] mixing tub and 18-bbl [2.86-m³] averaging tank per mixer

**Liquid Additive System**
- Model: Four SUP-511 pumps (Waukesha 015U2)
- Capability of SUP-511: 0.25–11 galUS/min at 100-psi [0.69-MPa] max. discharge pressure
- Model: Three SUP-512 pumps (Waukesha 045U2)
- Capability of SUP-512: 1–54 galUS/min at 100-psi [0.69-MPa] max. discharge pressure
- Flowmeters: Micro Motion™ R650S and R100S, accurate to ± 0.5% of flow rate

**Other**
- Area classification: Zone 2 Package, DNV certified
- Process control and acquisition: Redundant control systems
- Auxiliary equipment: Twin 100-bbl [15.9-m³] batch mixers, electric with independent drives for each centrifuge and agitator

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