SAGD SEPARATORS

CECO ENVIRONMENTAL

HIGH PRESSURE STEAM INJECTION SEPARATORS (SAGD)

High-pressure steam separators purpose-built for high-entrainment, high-volume SAGD injection systems in oil sands thermal recovery.

PEERLESS SEPARATION DESIGN AND INTERNALS + HOOPER VESSEL DESIGN AND MANUFACTURE

An integrated process and fabrication solution.

BUILT FOR REAL SAGD CONDITIONS

Unlike conventional moisture separators designed for steady-state industrial service, Peerless + Hooper systems are engineered specifically for SAGD's severe operating environment:

- Extreme liquid-to-steam ratios
- Bitumen solids loading
- Severe and variable slugging
- Continuous 24/7 operation

WHY STEAM QUALITY MATTERS?

Steam quality directly affects:

- Reservoir heating efficiency
- Water cut and surface handling volumes
- Overall facility reliability
- Oil production performance
- Erosion and corrosion of injection piping

Effective steam separation boosts oil production efficiency & protects piping and downstream assets.

INTEGRATED ENGINEERING & FABRICATION

Peerless Separation & Filtration:

- SAGD-focused separation process design
- Proprietary multi-stage internals
- Designed for simplified lifetime maintenance and future performance uprates
- Decades of successful SAGD operation

Hooper welding

- ASME Section VIII fabrication
- CRN registration
- Robust welding qualifications across material grades
- Canadian-sourced materials and fabrication

One coordinated solution - from process design through vessel fabrication - reducing risk and improving execution efficiency.

PERFORMANCE OVERVIEW

Guaranteed Separation Efficiency:

- 100% removal of liquid droplets ≥ 8 microns
- High-efficiency liquid slug removal
- Stable performance during load changes and transients
- Optimized Multi-stage Internals Design

OPERATIONAL IMPACT

- Consistent, low-moisture injection steam
- Reduced erosion and corrosion in piping and valves
- Improved system reliability and reduced topsides produced water



PEERLESS

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ENGINEERED FOR YOUR SAGD CONDITIONS

Each unit is configured based on:

- Steam flow rate and pressure
- Liquid loading and solids content
- 100% turndown requirements
- Allowable pressure drop
- Footprint constraints
- Project-specific P&ID requirements

Designed to maintain stable separation during slugging events and continuous operation.



MECHANICAL & COMPLIANCE HIGHLIGHTS

Design Features:

- Vertical or horizontal configurations
- High-performance inlet diffuser
- Removable vane systems within permanent framework
- Sealed internal drains to prevent re-entrainment
- Separated Liquid Management within HPSS Vessel

Standards & Materials

- ASME Section VIII Div. 1 (Div. 2 available)
- CRN registration
- Canadian regulatory compliance
- NACE compliance where required
- Carbon steel, stainless steel, cladding, and specialty alloys



TYPICAL APPLICATIONS

- SAGD central processing facilities
- Once-through steam generators (OTSG)
- Steam drum systems
- Enhanced Oil Recovery Facilities
- Separator upgrades and debottlenecking projects



WHY NOT USE CONVENTIONAL STEAM SEPARATORS?

Conventional separators are typically designed using volume flow “K-factor” methods that can result in undersized or oversized designs.

Peerless SAGD designs are bespoke, multi-stage, separation systems engineered for high water volumes, slugging, and bitumen loading to ensure reliable performance over decades, with the ability to upgrade internals for future steam operating conditions.

Peerless + Hooper SAGD Steam Separators.
Reliable, high-quality steam delivery for demanding SAGD operations.

Systems are sized based on site-specific operating conditions and performance requirements.

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