

CECO Peerless



PROVEN SOLUTIONS FOR THE OIL PRODUCTION INDUSTRY

CECO
ENVIRONMENTAL

WITH OVER 80 OF YEARS EXPERIENCE, CECO PEERLESS IS THE GLOBAL LEADER IN SEPARATION TECHNOLOGIES FOR THE OIL, GAS AND PETROCHEMICAL MARKETS.

Offering systems for both onshore and offshore applications, CECO Peerless designs and supplies a wide range of compact, engineered, high-efficiency, processing, separation and filtration equipment for the global oil and gas industry.

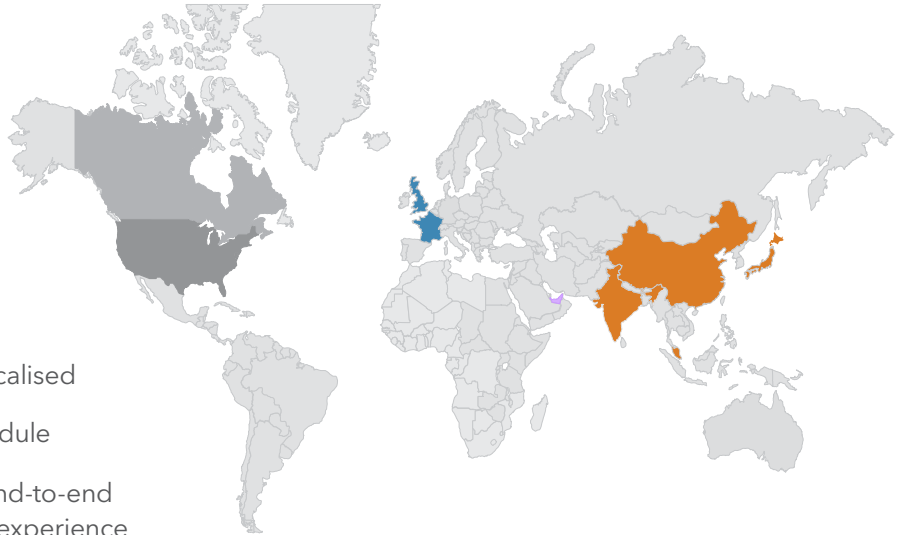
CECO
ENVIRONMENTAL



CECO Environmental's energy solutions include leading technologies such as CECO Peerless separation and filtration, Burgess Manning oil and gas processing technologies and Skimovex oily water separation.

Key CECO Peerless Facts

- Over 80 years of experience
- 1000s of successful installations and millions of hours of engineering excellence
- Experienced in technology, process, engineering and turnkey solutions
- Expertise from concept through commissioning stages
- Worldwide delivery capability and vast network of local/regional/global partners
- Global presence, multi-cultural teams with localised approach to attain clean, safe, efficient and sustainable solutions within budget and schedule



CECO Peerless provides you with the seamless end-to-end solution. We combine our technologies, process experience and R&D with our multi-disciplined engineering experience to give you every advantage:

- Concept/FEED studies
- Detailed engineering
- Engineered packages
- Modular/skid design and supply
- Turnkey solutions for EPF/CPF/topsides
- Fast track delivery
- Achieve overall performance
- Customer satisfaction
- After sales service



OIL INDUSTRY SOLUTIONS

FROM UPSTREAM THROUGH MIDSTREAM AND DOWNSTREAM, CECO PEERLESS SUPPLIES A WIDE RANGE OF COMPACT, ENGINEERED, HIGH-EFFICIENCY, PROCESSING, SEPARATION AND FILTRATION SOLUTIONS FOR THE OIL INDUSTRY.

PRODUCTION AND TEST SEPARATOR

Well fluid streams originating from wellheads consist of crude gas, oil, condensate, associated produced water and several other contaminants. The primary purpose of the production separators is to facilitate the bulk separation of gas and produced water from the crude oil prior to further processing. Production separators are critical equipment for any upstream oil and gas processing facility as they have a significant impact on the operation of downstream equipment.

Typical Applications:

- Offshore - process platforms/wellheads/FPSOs for high, medium and low-pressure oil and gas separation, test separators, slug catchers, gas/condensate separators
- Onshore - free water knock out drum (FKOD), slug catchers, FWKODs

Features:

- Compact and high-efficiency design of separator vessel and internals
- Robust and reliable design with proven track record
- Modular design for onshore/offshore and FPSO application
- Designed to handle wide range of process conditions
- Meet stringent performance guarantee
- Overall low CAPEX and OPEX for customers



Ceco Peerless Process Internals:

- Inlet device - vane inlet deflector/cyclonic inlet device for high performance
- Liquid distribution baffles
- Demister - vane P5TM/mesh/cyclonic device for 99.9% removal of liquid droplets of sizes $> 8\mu\text{m}$
- Defoamer pack
- Coalescer pack
- Sand jetting - offline and online desander



DESALTERS / DEHYDRATORS

CECO Peerless offers desalters/dehydrators designed with state-of-the-art technologies to achieve most stringent performance guarantees requirement in crude oil processing units or refineries. These units can meet performance guarantees of 0.1 to 0.5 BS&W and salt guarantees of up to 5-10 PTB and are designed to process crudes ranging from light condensate to heavy opportunity crudes.



Typical Applications:

- Offshore - mobile offshore production units (MOPU)
- Offshore - FPSO topsides
- Onshore - oil and gas processing facilities
- Onshore - early production facilities (EPF)
- Refineries and petrochemical

Advantages:

- CECO Peerless desalters comes with option for AC or AC/DC technology or combination of both
- Advanced three-phase power transformer to simplify clients' power distribution
- Proprietary inlet distributor mechanism to ensure uniform distribution and efficient separation
- Advanced power modules to ensure hassle free operation and high safety standard
- High-efficiency proprietary mixing device

Benefits:

- 20+ years of field performance
- Compact footprint
- Simple and robust design
- Meets stringent performance guarantee
- Ideal for early production and central production facilities
- Modular solution for offshore and FPSO applications
- Rich industry expertise for fast track delivery of units

Additional services:

- Supply of internals and process design/ complete packaged assembly
- FEED study services
- Custom built/standard design
- Fast track delivery
- Rental services
- Troubleshooting and optimization of units

HEATER TREATERS

CECO Peerless heater treaters offer a reliable and cost-effective solution to heat crude and accelerate the separation of produced water and crude oil. Our heater treaters come with the options of mechanical separation using our high efficiency coalescer plate packs or separation using electrostatic forces to meet stringent guarantees. These units are designed to process crudes ranging from light condensate to heavy opportunity crudes.

Advantages:

- Option to use different fuels (gas/diesel/dual-fired)
- Forced draft burner to ensure efficient combustion to meet environmental emission norms
- Separation section with option of plate packs/electrode grids for AC or AC/DC technology
- Advanced three-phase power transformer to simplify clients power distribution
- Proprietary inlet distribution to ensure uniform distribution and efficient separation
- Advanced control modules to ensure hassle free operation and high safety standard



Benefits:

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CRUDE STABILIZATION COLUMN / H₂S STRIPPER

Sour water strippers are used to remove H₂S, ammonia and other impurities from produced water to ensure that it is safe for disposal and re-use. Steam, fuel gas or nitrogen is used as a stripping medium in the column. These units can be simple, or complex based on process requirements and application.

The stripper column is provided with high performance CECO Peerless internals to ensure efficient separation and handle variable turndown capability. The offered modular system is provided with column, process internals, pumps along with piping and instruments.



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EARLY PRODUCTION FACILITY

An Early Production Facility (EPF) is a modularised integrated solution for oil and gas production which enables customers start oil/gas production on fast track basis. Time is the key factor to achieve the commercial benefit. EPFs are preferred by several oil and gas operators for marginal field development or to quickly monetize the fields prior to installation of a permanent facility for oil and gas production which provides financial and operational benefits.

Typical Applications:

- Offshore - mobile offshore production units (MOPU)
- Onshore - upstream oil/gas processing

CECO Peerless Guarantees:

CECO Peerless can offer the following guarantees for early production facilities based on the in-house product and technology expertise:

Process Gas Treatment

- Gas sweetening unit (GSU): ≤ 50 PPM v/v H₂S and 3-5% CO₂ in treated gas
- Gas dehydration unit (GDU): 7 lbs/MMSCF water in treated gas
- HC and water dew point control (-50 C to -200 C and 00 C to -100 C respectively)

Oil Treatment Package

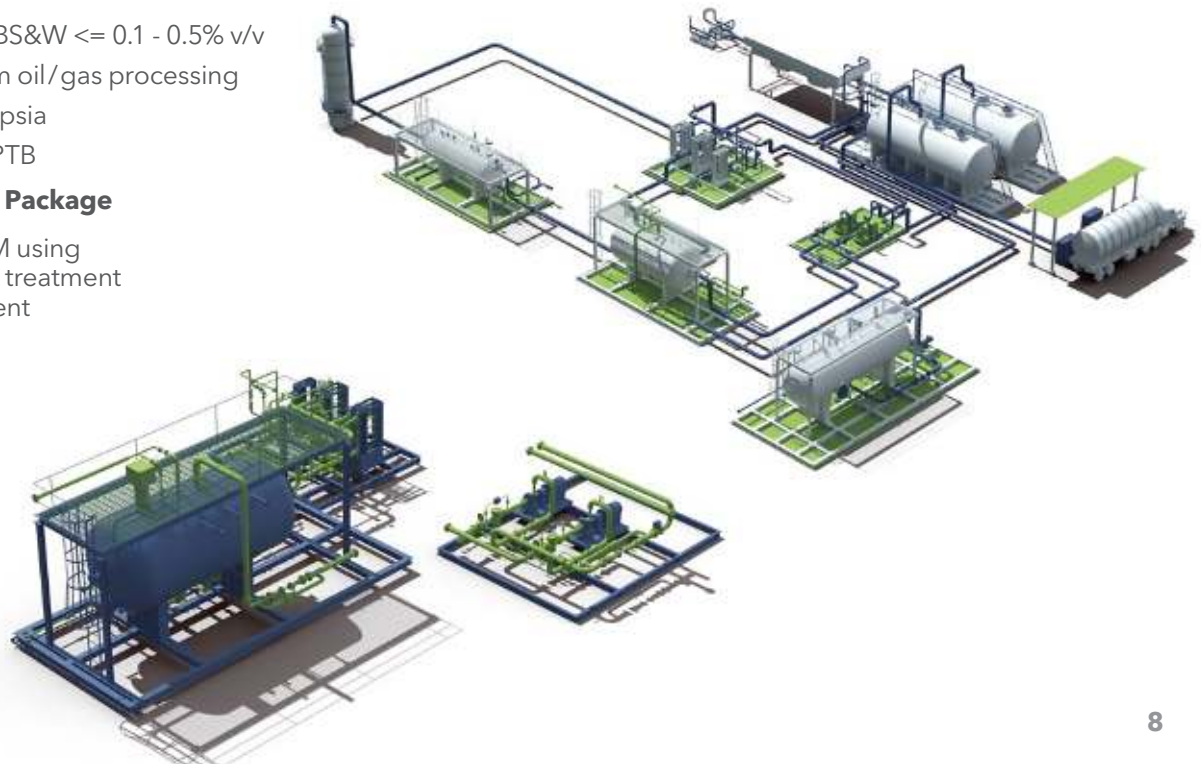
- Water in crude oil: BS&W $\leq 0.1 - 0.5\%$ v/v
- Onshore - upstream oil/gas processing
- Crude oil RVP: <10 psia
- Salt content: 5 -10 PTB

Oily/Produced Water Package

- Oil in water: <5 PPM using primary, secondary treatment and tertiary treatment
- TSS: < 3 microns

CECO Peerless offering includes an end-to-end solution for an integrated EPF package with following equipment:

- **Gas treatment:** gas compression, gas sweetening unit, gas dehydration unit, dew point control unit, gas metering system
- **Oil treatment:** three phase separators, crude oil heaters, electrostatic desalters/ heater treaters, crude stabilization unit, crude storage, metering and pumping units
- **Produced water:** CPI separators, deoiler hydro cyclones, induced gas flotation (or DGF/DNF), nutshell filters
- **E&I package:** integrated control and monitoring system (PLC) and ESD system
- **Structural modules:** modularised skid for ease of transportation
- **Plant utilities**



CECO Peerless

CECO Peerless is an experienced and reliable global leader in designing and supplying a wide range of compact, high-efficiency, separation and filtration equipment. Founded in 1933, CECO Peerless also serves the oil and gas production, gas pipeline transmission and power generating industries around the world.



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