

# CETCO

## ENERGY SERVICES

A Minerals Technologies Company

## Presentation

Providing high flow rate, variable inlet oil in water removal from multiple pig runs without relying on consumable media. Up to 281m<sup>3</sup> p/h and 10000ppm OIW inlet

Kris Frampton  
Sales Manager - Europe

CLEAR SOLUTIONS  
for complex fluids

complex fluid  
Experts  
OIL & GAS



# WHY CETCO?

decades  
experience

proven  
successes

get it right  
the first time

for your  
fluid  
challenges

complex fluid  
**Experts**  
OIL & GAS

**CLEAR SOLUTIONS**  
for complex fluids 2

# CETCO

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# YOUR TRUSTED OIL & GAS PARTNER AND COMPLEX FLUID EXPERTS

Equipped and Ready To Solve Your Fluid Challenges; Delivering Clear and Proven Results by Increasing Operator Efficiency, Reducing Downtime, and Maximizing Output While Safely Protecting the Environment

### COMPANY STRUCTURE

# NYSE:MTX



**Parent Company:**  
Minerals Technologies Inc.

**Business Segment:**  
Engineered Solutions  
Environmental & Infrastructure |  
Energy Services

**MTI Subsidiary:**  
CETCO ENERGY SERVICES, LLC

### MTI PUBLICLY TRADED — 1992

A Global Leader in minerals-based applications, technologies and innovation

### OUR COMMITMENT

#### Quality, Environmental, Health & Safety

- Robust Culture of Stop Work Authority
- Rigorous Training Program
- Operational Excellence Philosophy
- Compliance: ISO 9001, 14001 & OHSAS 18001 Handling, and Managing COMPLEX Fluids

#### Customer Focus

- Strong Voice of the Customer Program
- Innovative Technologies, Solutions & Services
- Wide Range Patented Technologies
- First Class Research & Development Facility with Laboratory Services

### CETCO ENERGY SERVICES (CETCO)

is your trusted partner for treating problematic fluids and measuring well performance. As globally recognized specialists, we offer a comprehensive portfolio of products, services, and innovative solutions backed by patented technologies to solve complex fluid challenges around the world.

Leveraging our decades of experience, we efficiently manage projects for oil & gas customers that extend from exploration through production to final decommissioning.

Our customized engineered solutions and proven technologies reduce operating costs, increase production, and extend asset life for our customers while achieving industry-leading safety, quality, and environmental compliance.

All of which, makes CETCO your CLEAR choice for treating, handling and managing COMPLEX fluids.

### SERVICES

- ORCA™ (Objective Root Cause Analysis)
- Well Testing
- Water Treatment & Filtration
- Well Fluid Management
- Pipeline Fluid Management

### SOLUTIONS

- Temporary Process Equipment
- Permanent Process Equipment
- Solids Management Systems
- FPSO Water Solutions
- Produced Water Excursion Packages
- Custom Design Well Test Packages
- Well Intervention & Flowbacks
- Brownfield Optimization & Retrofit
- Early Production Facilities
- Research & Development
- Engineering Services



### CETCO ENERGY SERVICES EST. 1995

1997 Subsidiary of AMCOL International  
2014 Acquired by Minerals Technologies Inc. CETCO has several subsidiaries, legally registered in various countries, and a JV Partnership in the Middle East



**16 WORLDWIDE LOCATIONS**  
**±10 COUNTRIES**  
\*Headquarters Houston, TX

### REVENUE STREAMS

Well Testing • Water Treatment & Filtration  
Produced Water • Custom Process Equipment

### CONTACT US

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## SAFETY MILESTONE

9 years **NO** Lost Time Injury

17,316 Man Hours

# ABERDEEN

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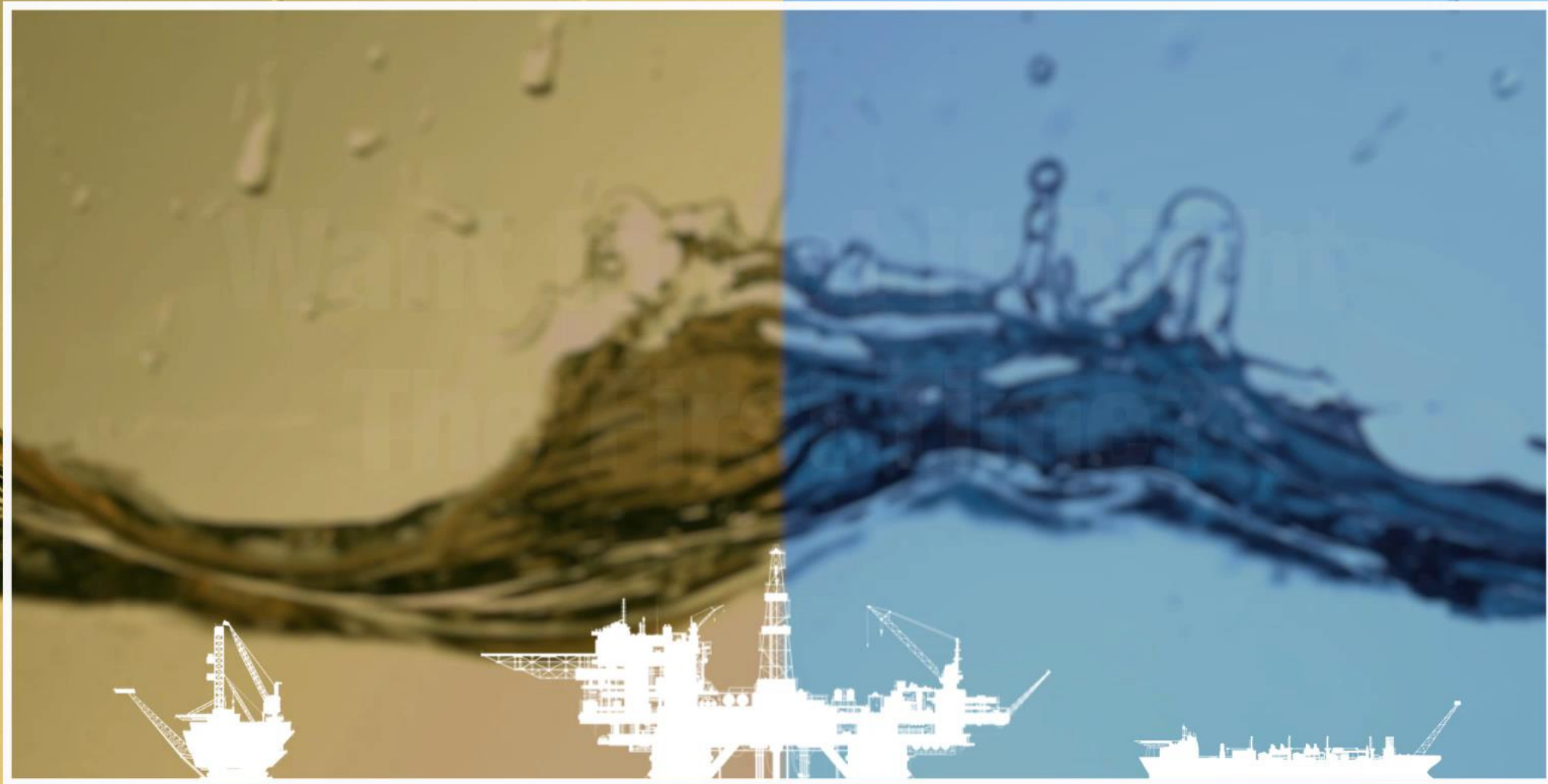
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# DEFINING THE CHALLENGE

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## PRIMARY



Primary Separators



Desander, Liquid/Solid Hydro-cyclones



Pleated Filter Solids Systems

## SECONDARY



Liquid /Liquid Hydro-cyclones



ANGLE COMPRESSIBLE MEDIA FILTER

## TERTIARY



CrudeSep<sup>®</sup> IGF



CrudeSep<sup>®</sup> DGF



Coalescer



Clay Media



Carbon Filter

>200 Micron.....Decreasing Oil Droplet Size.....<3 Micron .....

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## What was the challenge?

- CETCO was tasked with the treatment of all aqueous fluid displaced from the pigging operation of a pipeline between 2 North Sea assets to enable it to be reinstated for use.
- The project required a Fluid treatment package designed to degas the fluid as well as remove any solids or hydrocarbons and waxes.
- It was also critical to ensure any fluids returned from pigging can be discharged overboard within acceptable parameters, i/e Sub 30ppm.
- The focus internally was to utilise nonconsumable oil removal technologies to minimise waste streams, negate breaking containment and simplify logistical challenges, while still facing the challenge of providing inspec fluids for discharge from variable inlet qualities at up to 350m<sup>3</sup> p/h

# Project Management is key

- CETCO engaged with the client to establish a clear scope of work for the offshore campaign. The Project Team worked closely with the client in the planning process to develop a suitable schedule for the work.
- The Project Engineer/Operations Team attended kick-off meetings with the Client project team to confirm initial requirements, where the following key elements of the work were discussed:
  - Review the operational requirements in detail, both scope and schedule.
  - Installation of the equipment and split of responsibilities during the installation.
  - Confirm equipment to be supplied by CETCO for the works, including utilities and interface considerations.
  - Confirm personnel manning level for the on and offshore work scopes.
  - Mutually agree mobilisation dates.
- As with any offshore mobilisation track record, deck space, manpower, and cost were all key considerations. A package, manpower, and schedule were quickly confirmed with the client.





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# The Pipedeck Layout

- CETCO proposed and mobilised the following –
- Smart Tank for degassing and bulk separation purposes
- A solids filtration unit (Pleated Filter Unit (PFU800-20))
- Hi-Flow<sup>®</sup> oil in water coalescence units (IFV4000/IFV5000)
- CrudeSorb<sup>®</sup> Adsorption technology, (2 x RFV4000) was proposed to be used initially on the first pigging operation to further reduce residual hydrocarbon content from the Hi-Flow<sup>®</sup> unit.
- The fluids were to be directed to the CETCO treatment package via a temporary pig receiver and discharged to the environment below the agreed/regulated 30mg/l.
- The Adsorbent media was never used as an inspec fluid was discharged from the Hi-Flow<sup>®</sup> Coalescer

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# CETCO TECHNOLOGY

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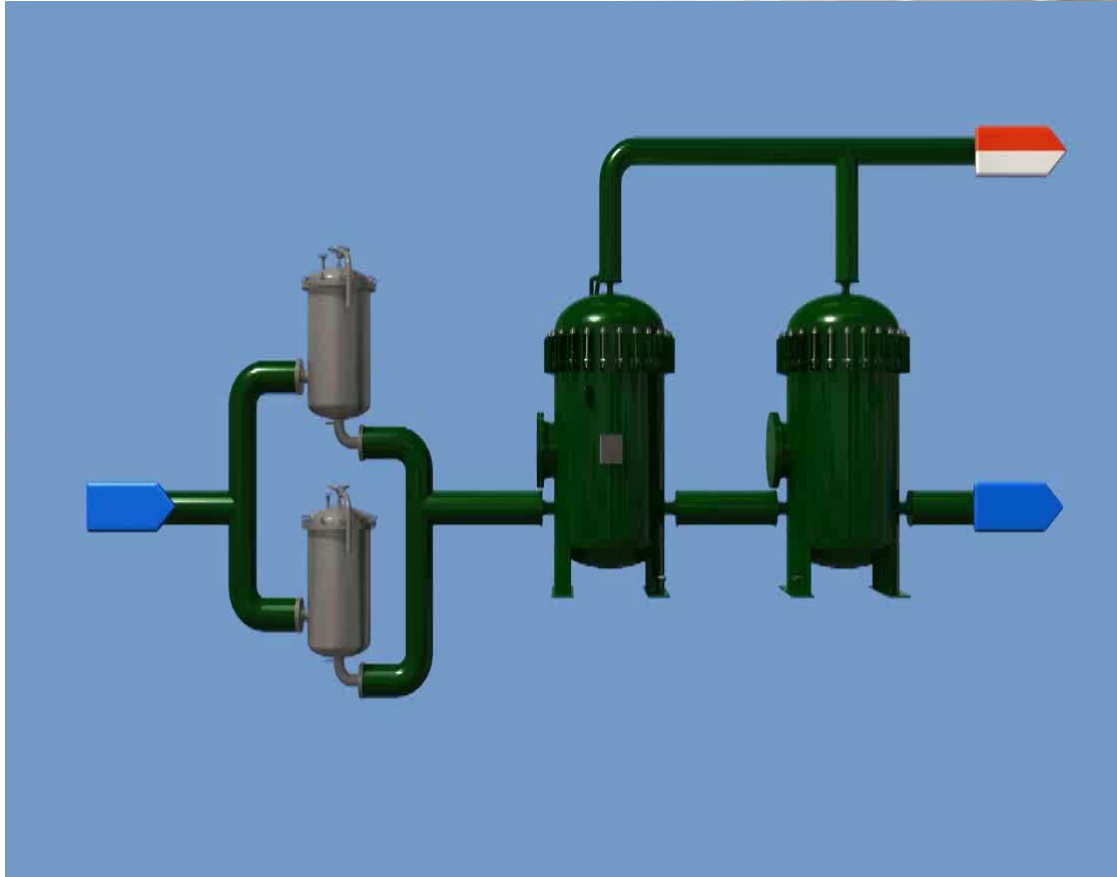
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# Hi-Flow<sup>®</sup> Technology

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# What were the main issues?

- **Primary separator/Smart Tank Foaming**
- Heavy and unexpected stable foam building up in the Smart Tank registering on the High-level sensor and in turn activating the ESDV (emergency shutdown valve). More information about the chemical content of the pipeline fluid would have given the option of engineering chemical injection at a suitable point to add a defoaming chemical. HD500 was the cause here, mitigation measures are now in place to address any future issues and expedite project completion.

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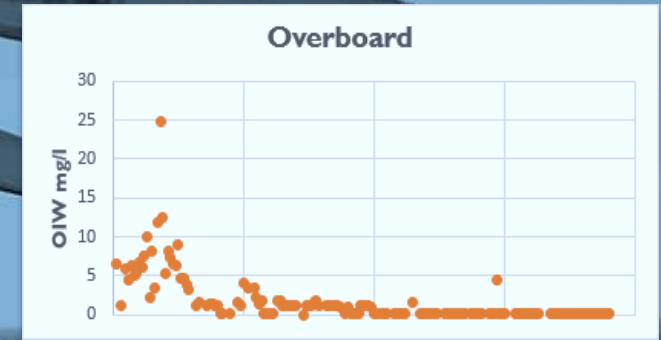
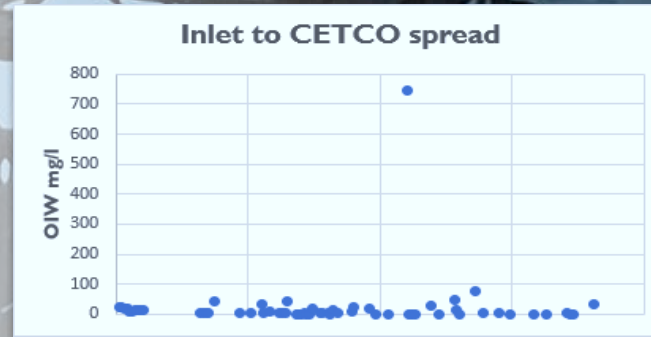
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# What were the main issues?

- **Solids removal**
- Pleated filters were used to their full capacity of 8kg of solids, the filters removed around 5,440kg of solids material. A significant volume but all managed under one mobilisation. Filtration is down to 10 micron which enables the coalescing elements to be protected and allow them to still provide effective oil in water removal duties.

## Key Highlights

- Total overboard 21,420 m<sup>3</sup>
- Average overboard OIW 1.5mg/l
- Average flow rate during treatment 155m<sup>3</sup>/h
- 5 tonnes of solids removed



Highest Inlet sample recorded: 744 mg/l (0.1mg/l overboard)

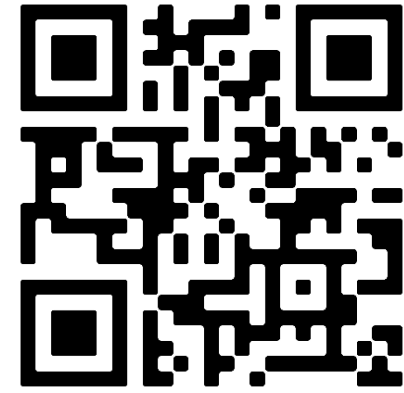
Highest Overboard sample recorded: 24.91mg/l

Lowest Overboard sample recorded: <0.1mg/l

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SCAN ME

# Thank You!



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