

# TENDEKA

## CoilHose Light Well Circulation System (LWCS) – Effective scale removal\*

### Well Intervention



CoilHose Light Well Circulation System (LWCS) is a truly innovative development providing a lower cost, more efficient alternative to traditional coiled tubing systems for scale, wax and asphaltene removal in the upper completion.

The high pressure force created by CoilHose used in combination with highly effective, environmentally responsible scale solvers, optimises treatment volumes, exposure times and effectiveness.

Scale affects fluid flow, causes production loss and can interfere with integrity of downhole safety valves. Carbonate scales can be removed relatively easily with acid but barium sulphate scale is particularly challenging to dissolve, especially at low temperatures. Soak times can be long and limited in their success. Enviro-Syn® BSD-40™ dissolves twice as much barium sulphate compared to other leading chemistries such as  $K_2DTPA$  and is effective even at low temperatures. A recent study also demonstrated that twice as much barium sulphate scale is dissolved in Enviro-Syn® BSD-40™ under dynamic conditions demonstrating that applying agitation with CoilHose will significantly improve effectiveness.

When removing carbonate scales, consideration needs to be given to compatibility of the treatment with metallurgy and elastomers present. The Enviro-Syn® Modified Acid HCR range provides superior performance properties compared to hydrochloric acid, without the extremely hazardous/negative exposure, transport, effluent, and corrosive properties associated with HCl. Enviro-Syn® HCR-3000™ in particular is a strong, non-fuming, non-oxidizing acid alternative, has zero halogen content and has ultra-low corrosivity even on high Chrome metals such as duplex and L80-13Cr at temperatures as high as 177°C. A recent case history in Norway combining CoilHose and Enviro-Syn® HCR-3000™ resulted in 83% increased oil production and 144% gas production and an overall reduction in 14.5% gas needed for gas lift.



Scale build up on pipe restricting flow

\* In collaboration with Tendeka

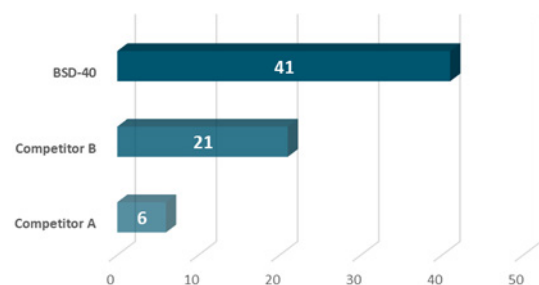
#### Key applications

- Scale, wax and asphaltene dissolution in upper completion
- Jetting services, chemicals combined with high pressure force
- Compatible with common oilfield chemicals and nitrogen
- Circulation and/or chemical spotting at low rate pumping
- Memory logging services

#### Features and benefits

- Dissolves higher amount of scale in shorter period of time
- Effective at broad temperature range
- Innovative system that can incorporate both wireline and coiled tubing as a 'hybrid system'
- Integrated services crew structure
- Lowers the overall cost of intervention
- Alternative technology to Coil Tubing for certain applications
- Mobile, flexible and compact with a relatively small footprint
- Superfast rig-up times (3-4 hours/critical rig time) with lightweight PCE
- Integrated well intervention crew structure

Barium Sulphate Dissolution in  $kg/m^3$



Enviro-Syn® BSD-40™ dissolves twice as much barium sulphate as industry leading  $K_2DTPA$  chemistry

## CoilHose Light Well Circulation System (LWCS) - Effective scale removal\*

Specifications	¾" CoilHose	1" CoilHose
Outer diameter	19.5 mm	22.6 mm
Inner diameter	9.8 mm	12.9 mm
Breaking strength	14,330 lbf	14,330 lbf
Burst pressure limit	50,000 psi	40,000 psi
Collapse pressure	4,670 psi	3,800 psi
Working pressure	12,500 psi	12,500 psi
Temperature rating	-40°C to 150°C	-40°C to 150°C
Recommended max depth in combination with max. deviation - 60 degrees (gravity fed)	1200 m Fluid and nitrogen	3500 m Fluid and nitrogen
Nominal diameter	0.768"	0.890"
Wall size	0.191"	0.191"
Weight in air	0.497 lb/ft	0.632 lb/ft
Guideline fluid pump rate	10-35 lpm	20-50 lpm

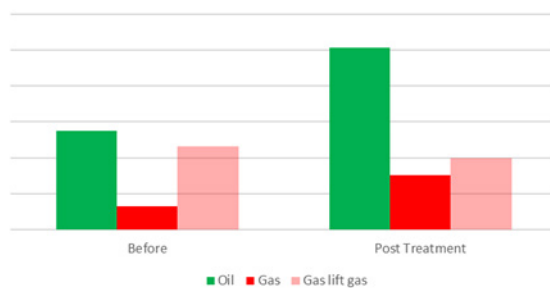
Note: Additional factors to be considered – length of hose and weight of BHA, natural stretch of hose will reduce ID

Note 2. ¾" CoilHose length can be adjusted for retrofit third party units and has an optimum depth of 3500 m (N2) and 2000 m (fluid)

	Static	Dynamic
Barium Sulphate Field Scale	38%	99.50%

**Enviro-Syn®BSD-40™ effectiveness significantly improves with agitation as provided by CoilHose**

North Sea HCR-3000/CoilHose Treatment



**North Sea Case History - Combination of Enviro-Syn HCR-3000 and CoilHose**

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