



Oreco SNS[®] Roof-Leg

**Roof Leg - Single Nozzle Sweeper[®]
for efficient tank cleaning**

The Roof Leg - Single Nozzle Sweeper[®]
The core of automated crude oil tank cleaning
Main robotic tool used by Oreco's unique BLABO[®] and
MoClean[®] ATS non-man entry tank cleaning systems

introduction

The BLABO® and MoClean® ATS systems

Oreco A/S develops, manufactures, and globally markets solutions for automated, non-man entry cleaning of aboveground oil storage tanks, and systems for recovery of waste oil within the oil and petrochemical industries. The BLABO® and MoClean® ATS systems clean aboveground oil storage tanks containing crude oil, heavy fuel oil, other “black oils”, and refined (white oil) product types.

Roof Leg - Single Nozzle Sweepers (RL - SNS®) ensure safe and efficient non-man entry tank cleaning

An essential part of the BLABO® and the MoClean® ATS systems are tank cleaning nozzles known as the Roof Leg - Single Nozzle Sweeper® (patent pending) which are available only with the BLABO® and MoClean® ATS technology. The nozzles are the very components that replace people inside the tank, enable the BLABO® and MoClean® ATS systems to ensure non-man entry, thus maximum safety during cleaning operations. Operating inside the tank, the nozzles ensure that the entire inner surface of the tank is cleaned thoroughly and efficiently. This reduces tank downtime, helping tank owners obtain even greater cost-efficiency.

Along the years the market has required a rugged and reliable robotic tool able to clean oil tanks with floating roofs without the need of cold tapping. The Roof Leg - Single Nozzle Sweeper (RL - SNS®) is designed to be inserted through the sleeves of the tank roof legs. In this

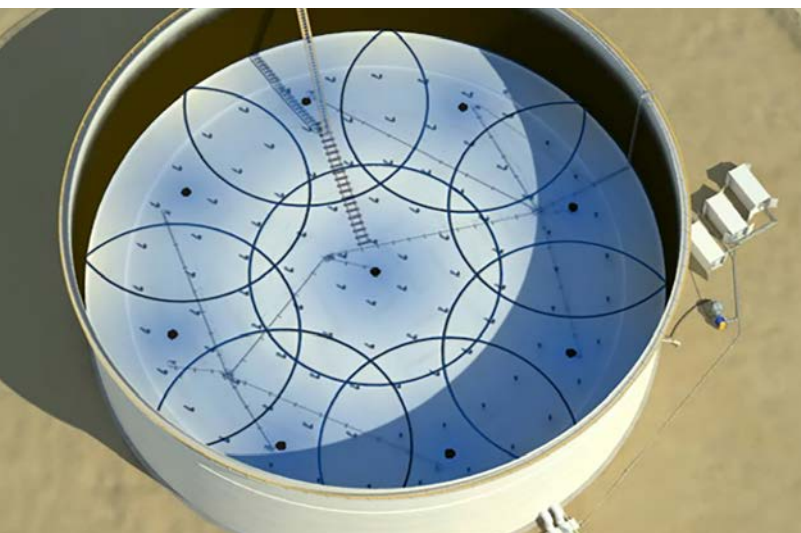
manner, no cold tapping orifices are needed on the roof plates. Some products have been on the market since years back. However, users never got confident due to weak performance and short life-time. The Oreco strong design is developed for heavy-duty operation and rough handling. The RL - SNS® is fully approved for operation in potentially hazardous atmospheres, as demonstrated by its ATEX-certification.

The washing pattern of the nozzles ensures that the entire inner surface of the tank is perfectly cleaned, ready for operations, maintenance, and hot-work. The nozzles work in a programmable indexed pattern, both vertically and horizontally, and two nozzles can be in operation simultaneously, thereby reducing tank downtime.

The nozzles are remote controlled from the BLABO® or MoClean® ATS tank cleaning system by PLC. The PLC allows operators to programme the nozzles to match each tank cleaning job; e.g. by concentrating special attention on specific areas.

Roof Leg - Single Nozzle Sweepers (RL - SNS®)

The nozzles can be installed via the existing sleeves of the roof support legs. Alternatively, via cold-tapped holes, safely made with the certified SafeTap® tool from Oreco. The RL - SNS® performs under dynamic conditions similar to our original Top Entry - SNS® in terms of throw length and impact.



benefits

Operational excellence in tank cleaning

The Roof Leg - Single Nozzle Sweepers® are a vital part of achieving operational excellence with our BLABO® or MoClean® ATS tank cleaning process. The design and operation of the nozzles give tank owners distinctive benefit in terms of cost-efficiency and increased safety as further explained in the below list:

Interchangeable Drive Unit with all Oreco's SNS® Types

Increased personal and operational safety

- Non-man entry: The nozzles truly eliminates the need for human entry into tanks, minimizing hazards to human and maximizing safety
- ATEX-certified: The RL - SNS® are approved for operation in potentially hazardous atmospheres 1G/2G (Zone 0/1)

Unique cleaning result

- Can handle heavy-duty cleaning tasks thanks to their robust and durable design
- All inner surfaces of the tank are thoroughly cleaned
- Customised PLC programming of nozzles to suit specific cleaning needs. This is a unique feature in the market.
- Far-reaching, low pressure, high impact jetting handling washing oil media

Reduction of tank downtime and cost

- Extremely useful when a tank is only to be de-sludged
- Much faster installation of nozzles
- Easier and faster setting the tanks back in operation or preparation of hot-work

Easy to operate

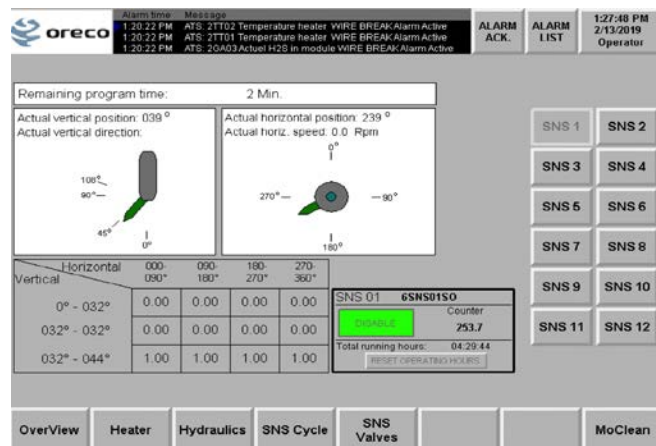
- Hydraulically driven
- PLC-operated and -controlled
- Operation of the nozzles by user-friendly touch screen
- User-friendly SCADA software facilitates programming, reporting and external communication

Advanced Proven technology

- Less pressure drop across the roof piping system and even flow distribution to all nozzles
- Same highest quality as Oreco's original Top Entry -SNS® technology
- ATEX-approved by independent notified body

technical specifications

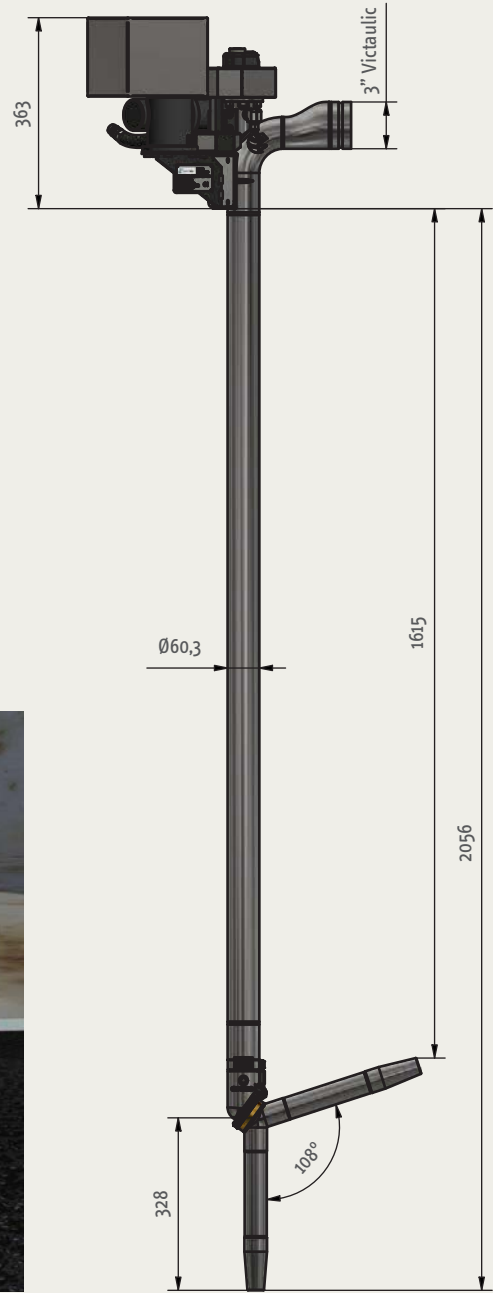
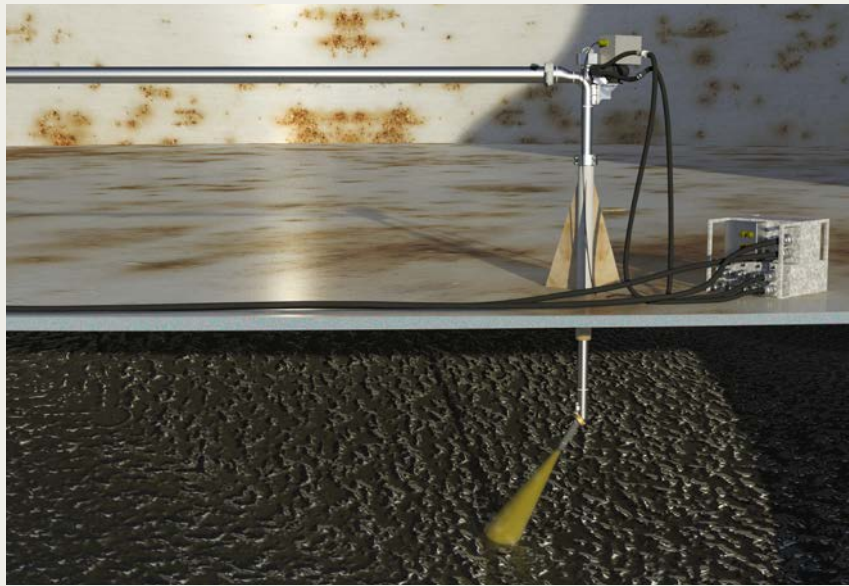
Materials	Stainless steel 304/316, NBR, bronze
Weight	RL - SNS® without drive unit: 35,5 kg (78,3 lbs) Drive unit: 11,8 kg (26 lbs)
Lubricant	Grease lubricated
Working pressure	3 - 16 bar (43,5 – 217 psi)
Max working temperature	82°C (179°F)
Tank roof types	Floating roof or Fixed roof (single or double deck)
Required min. sleeve leg opening	EU: 64,2 mm ID USA: 3" ID
Media connection flanges	Victaulic 3" (standard) DN80 PN16 Flange(option) 3" ANSI Class 150 Flange(option)
SCADA system	HMI: Explosion proof touch screen PLC: Allan Bradley PLC
Approvals	ATEX-certified for operation in 1G/2G (Zone 0/1) Category 1G (Zone 0) = Inside the tank Category 2G (Zone 1) = On the tank roof EC - Type Examination Certificate Number: Baseefa06ATEX0079X
Other	Patent pending The Oreco RL - SNS® are exclusively available with the BLABO® and MoClean® ATS systems



The user-friendly SCADA system facilitates programming, reporting and external communication for the RL - SNS®. The touch screen allows you to follow the progress of each RL - SNS®, e.g. its speed, direction, and position. Operators can pre-program up to 10 successive RL - SNS® sequences with separate cleaning patterns. Two nozzles can be in operation simultaneously.

Roof-Leg

Dimensions (mm)



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