



Oreco SNS[®] Side Entry

**Side Entry - Single Nozzle Sweeper[®]
for efficient tank cleaning**

The Side Entry - 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.

Side Entry - Single Nozzle Sweepers (SE - 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 Side Entry - Single Nozzle Sweeper (SE - SNS®) 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.

Versatile application and unique performance

The hydraulically operated nozzles can be installed in fixed roof or floating roof tanks, single or double deck.

The Side Entry - Single Nozzle Sweeper (SE - SNS®) is specially designed for cleaning of tanks with External Fixed Roof and Internal

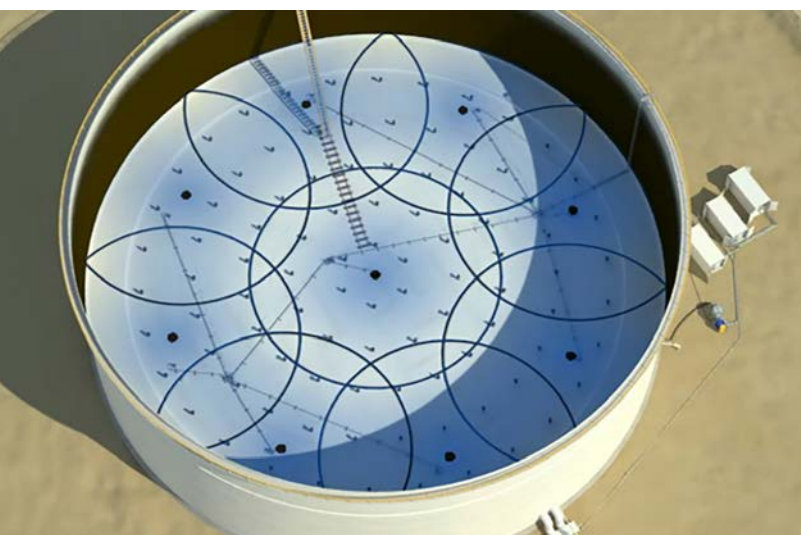
Floating Membrane, also for tanks where mechanical conditions of roofs are not safe. This type of nozzle is particularly effective for medium sized tanks. The SE - SNS® is mounted on a standard API Man-hole or mixer flange to fit standard diameters. During cleaning, it replaces the conventional flange of the man-hole or mixer.

Although there are some similar products in the market, those are used as stand-alone cleaning systems, lacking a proven process system to back-up the complete tank cleaning operation. The SE - SNS® coupled either to a BLABO® or a MoClean® ATS System, secure that the entire tank cleaning process involved at each stage will be performed with the highest process efficiency and highest safety.

Typical for all Oreco products, is the heavy-duty environment for operation and rough handling. The SE - SNS® is fully approved for operation in potentially hazardous atmospheres, as demonstrated by its ATEX-certification.

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 a PLC. The PLC allows operators to programme the nozzles to match each tank cleaning job; e.g. by concentrating special attention on specific areas.



benefits

Operational excellence in tank cleaning

The Side Entry - Single Nozzle Sweepers® are a vital part for achieving operational excellence with BLABO® or MoClean® ATS tank cleaning process. The design and operation of the nozzles give tank owners distinctive benefit regarding 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 SE - SNS® is approved for operation in potentially hazardous atmospheres category 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 crude oil media

Reduction of tank downtime and cost

- Excellent alternative for cleaning fixed roof tanks with internal floater, or when a tank presents mechanical problems in the roof floating or fixed

Easy to operate

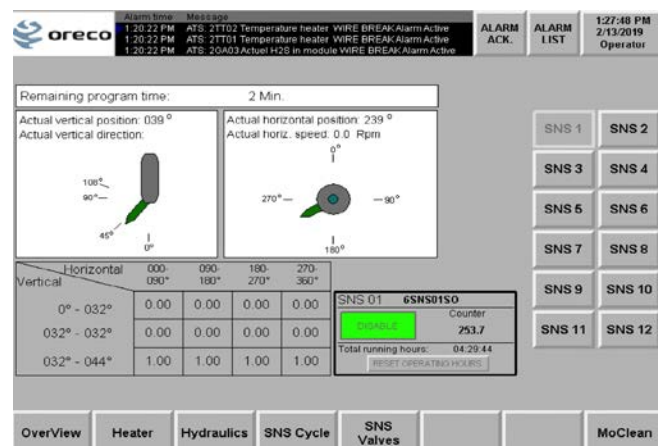
- Hydraulically driven
- PLC-operated and -controlled
- Operation of the nozzles by user-friendly touch screen
- User-friendly SCADA software facilitates programming, report-ing and external communication

Advanced Proven technology

- Constructed with the traditional high quality of Oreco's original Top Entry - SNS® technology
- ATEX-approved by independent notified body

technical specifications

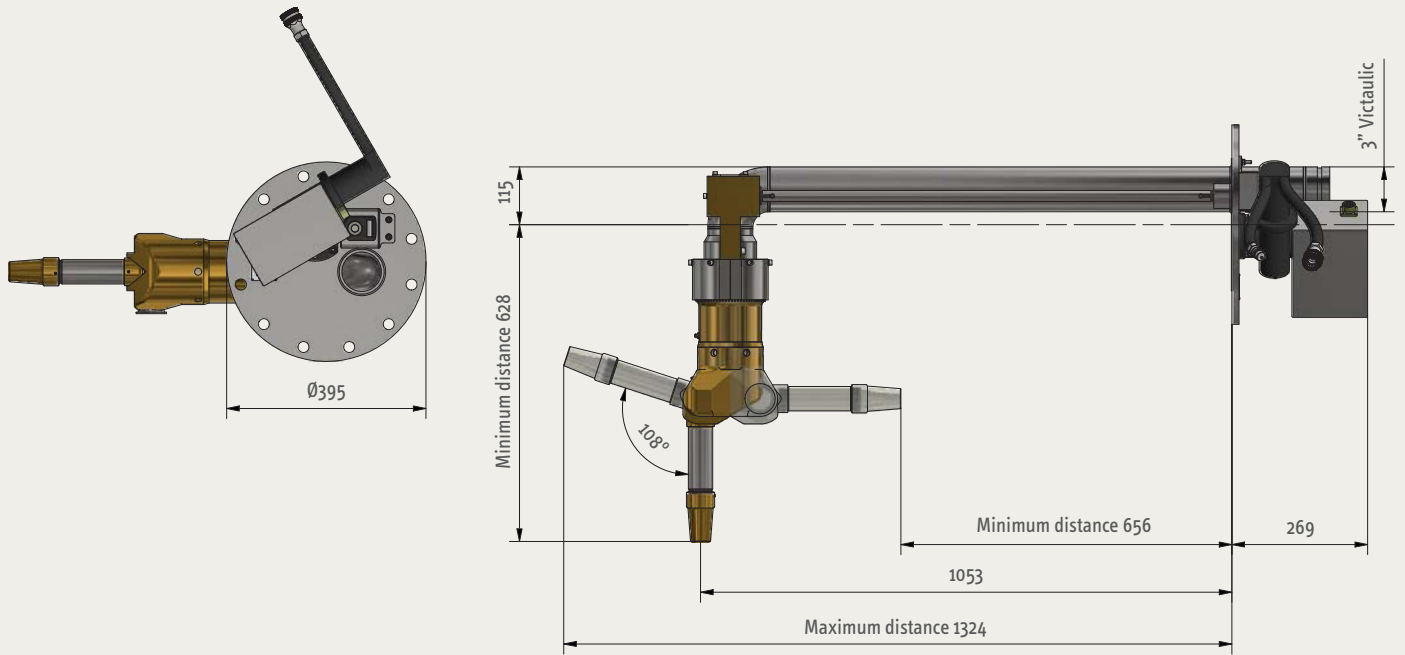
Materials	Stainless steel 304/316, NBR, bronze
Weight	SE - SNS® without drive unit: 69,5 kg (153,2 lbs) Drive unit: 11,8 kg (26 lbs)
Lubricant	Grease lubricated
Working pressure	3 - 15 bar (43,5 - 217 psi)
Max working temperature	82°C (179°F)
Tank roof types	Fixed roof with internal floater. Oil tanks with damaged roof
Man-hole Flange installation	API Ø 20" / 24" / 30"
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	The Oreco SE - SNS® are exclusively available with the BLABO® and MoClean® ATS systems



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

Side Entry

Dimensions (mm)



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