Technical Documentation

FAFNIR™

COMS

Determination of probe lengths and installation positions from FAFNIR sludge and tank probes in oil separators

Table of contents

1   Oil separator in side view

Based on a schematic representation of an oil separator (single-chamber system), the installation of the probes **VISY-Stick Oil Separator** and **VISY-Sludge** and the calculation of the required probe length is shown. In a two-chamber system, the **VISY-Sludge** probe is installed in the sludge trap and the **VISY-Stick Oil Separator** probe in the coalescence separator in front of the coalescing mat.

⚠️ *The oil separator is Ex zone. Observe safety regulations!*
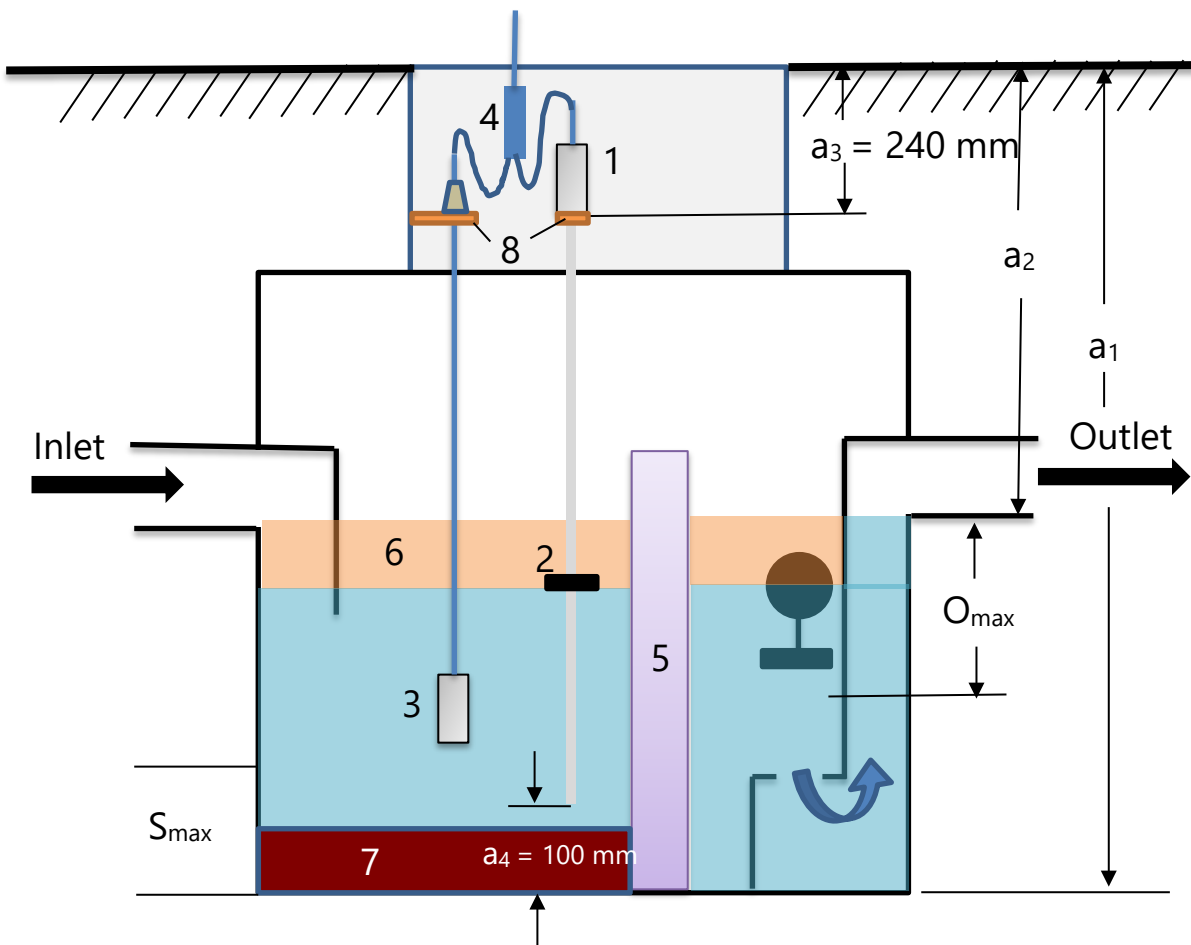
O_{max} = maximum oil layer thickness

a_1 = separator depth

a_3 = safety distance = **240 mm**!

1 = VISY-Stick Oil Separator

3 = VISY-Sludge

5 = coalescence mat

7 = mud layer

S_{max} = maximum mud layer thickness

a_2 = distance: Road - Overflow

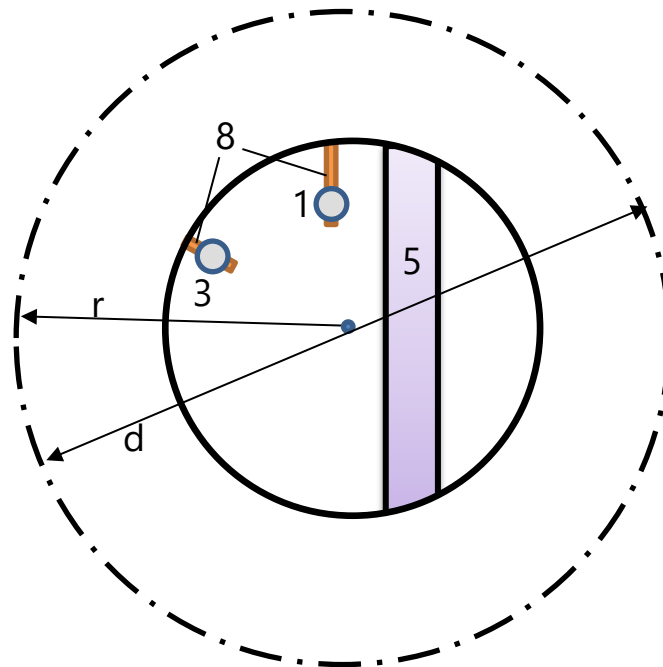a_4 = safety distance to the ground = **100 mm**!

2 = Interface float

4 = cable connector (2-1)

6 = oil layer

8 = mounting bracket

2   Oil separator in top view

1 = VISY-Stick Oil Separator

3 = VISY-Sludge

5 = Coalescing mat

8 = Mounting bracket

r = Radius

d = Diameter

3   Calculation of probe length for VISY-Stick Oil Separators

Note: There is also an Excel spreadsheet for determining the probe length "**Formula-COMS-probe-length**"

Maximum length

$L_{max} = a_1 - a_3 - a_4$

$L_{max} = a_1 - 240\ mm - 100\ mm$

$L_{max} = a_1 - 340\ mm$

Minimum length

$L_{min} = a_2 + O_{max} + k - a_3 \qquad k = 50\ mm$

$L_{min} = a_2 + O_{max} + 50\ mm - 240\ mm$

$L_{min} = a_2 + O_{max} - 190\ mm$

Choice of probe length:

Please check if one of our standard lengths can be used for the calculated range between L_{min} and L_{max}. Standard lengths for the probes are: 1500 mm; 1900 mm; 2300 mm; 2800 mm; 3200 mm. If the standard lengths do not fit between L_{min} and L_{max}, other lengths can be ordered for a surcharge.

4 Positioning of the VISY-Sludge sensor

The membrane of the VISY-Sludge sensor must be <u>below</u> the maximum permissible oil layer thickness **O_{max}** and at least 100 mm <u>above</u> the maximum permissible mud layer thickness **S_{max}**.

The membrane of the **VISY-Sludge** sensor must be positioned at a maximum height of 1400 mm above the oil separator **bottom**!

5 Calculation of the maximum oil volume

Since almost all current oil separators are standing, round cylinders, the maximum oil volume **VO_{max}** can be calculated as follows, for this there is also the Excel calculation form "COMS-oil-layer-table":

$$VO_{max} = r^2 \times \pi \times O_{max}$$ or $$VO_{max} = \frac{d^2}{4} \times \pi \times O_{max}$$ $\bigg|$ $\pi = 3{,}14$

☞ ***O_{max}*** *is usually stated on the type plate or in the corresponding documentation of the oil separator.*

If only the maximum oil volume **VO_{max}** is specified, **O_{max}** is calculated according to the formula:

$$\ddot{O}_{max} = \frac{V\ddot{O}_{max}}{r^2 \ \pi}$$ or $$\ddot{O}_{max} = \frac{V\ddot{O}_{max} \times 4}{d^2 \ \pi}$$ $\bigg|$ $\pi = 3{,}14$

6   Calculation of the tank table "Oil separator"

☞   *To determine the oil separator tank table, there is the Excel calculation form
"**COMS-Oil-Layer-Table**".*

Since oil separators are usually standing cylinders, the tank table is linear and graphical representation is therefore a straight line. The creation of the tank table is therefore relatively simple and consists of a total of 11 pairs of values (oil layer thickness [mm] and oil layer volume [ltr]):

- The first value pair as start value is always "zero" [0 mm / 0 litre].
- The last value pair (No. 11) is the max. Oil layer thickness and volume [O_{max} / VO_{max}].
- The second pair of values is $^1/_{10}$ of the max. Oil layer thickness and volume
  $[\frac{Ömax}{10} / \frac{VÖmax}{10}]$
- The third value pair is the "second pair of values x 2"
- The fourth value pair is the "second pair of values x 3", etc.

⇨   see the following example:

No.	mm	Vol.	Comment
1	0	0	is always the first value
2	30	8	O_{max}/10 and VO_{max}/10
3	60	16	Pair of values 2 x 2
4	90	24	Pair of values 2 x 3
5	120	32	Pair of values 2 x 4
6	150	40	Pair of values 2 x 5
7	180	48	Pair of values 2 x 6
8	210	56	Pair of values 2 x 7
9	240	64	Pair of values 2 x 8
10	270	72	Pair of values 2 x 9
11	300	80	O_{max}/ VO_{max}

Oil separator tank table

7 Example type plate for light liquid separator

ABSCHEIDERANLAGE FÜR LEICHTFLÜSSIGKEITEN nach DIN EN 858 und DIN 1999-100

Abscheider Klasse I und Schlammfang
(Kompaktanlage: Koaleszenzabscheider mit integriertem Schlammfang)

CE

DIN EN 858 /
DIN 1999-100
Z-54.3-388

Typ:	3A-SK seglam®
Nenngröße:	NS 15
Nenninhalt Schlammfang:	5.000 Liter
max. Ölspeichermenge:	575 Liter
max. zul. Ölschichtdicke:	40,0 cm
max. Schlammhöhe:	76,0 cm
Behältervolumen (ohne S):	2.230 Liter
Tragfähigkeit:	SLW 60
Baujahr:	2006

3A Wassertechnik GmbH & Co. KG, Augsburg

3A WASSERTECHNIK

Blank Page

Blank Page

Blank Page

FAFNIR GmbH

Schnackenburgallee 149 c

22525 Hamburg, Germany

Tel.: +49 / 40 / 39 82 07-0

Fax: +49 / 40 / 390 63 39

E-mail: info@fafnir.com

Web: www.fafnir.com