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 ................................................................. 1
2 Oil separator in top view ............................................................... 2
3 Calculation of probe length for VISY-Stick Oil Separators ........... 2
4 Positioning of the VISY-Sludge sensor ......................................... 3
5 Calculation of the maximum oil volume ........................................ 3
6 Example type plate for light liquid separator ............................... 4
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 coalescence filter.

⚠️ The oil separator is Ex zone. Observe safety regulations!

\[ O_{\text{max}} = \text{maximum oil layer thickness} \]
\[ S_{\text{max}} = \text{maximum mud layer thickness} \]
\[ a_1 = \text{separator depth} \]
\[ a_3 = \text{safety distance} = 240 \text{ mm}! \]
\[ a_2 = \text{distance: Road - Overflow} \]
\[ a_4 = \text{safety distance to the ground} = 100 \text{ mm}! \]

1 = *VISY-Stick Oil Separator*
2 = *Product float*
2.1 = *Interface float*
4 = cable connector (2-1)
6 = oil layer
7 = mud layer
8 = mounting bracket

\[ S_{\text{max}} = \text{maximum mud layer thickness} \]
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"

<table>
<thead>
<tr>
<th>Maximum length</th>
<th>Minimum length</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L_{\text{max}} = a_1 - a_3 - a_4 )</td>
<td>( L_{\text{min}} = a_2 + O_{\text{max}} + k - a_3 )</td>
</tr>
<tr>
<td>( L_{\text{max}} = a_1 - 240 \text{ mm} - 100 \text{ mm} )</td>
<td>( L_{\text{min}} = a_2 + O_{\text{max}} + 50 \text{ mm} - 240 \text{ mm} )</td>
</tr>
</tbody>
</table>

**L_{\text{max}} = a_1 - 340 \text{ mm}**

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

Choice of probe length:

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

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

The distance of the **VISY-Sludge membrane** to the **oil separator bottom** must not exceed 1400 mm.

5 Calculation of the maximum oil volume

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

\[
V_{O\text{max}} = r^2 \times \pi \times O_{\text{max}} \quad \text{or} \quad V_{O\text{max}} = \frac{d^2}{4} \times \pi \times O_{\text{max}} \\
\pi = 3.14
\]

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

If only the maximum oil volume $V_{O\text{max}}$ is specified, $O_{\text{max}}$ is calculated according to the formula:

\[
O_{\text{max}} = \frac{V_{O\text{max}} \times 4}{\pi} \quad \text{or} \quad O_{\text{max}} = \frac{V_{O\text{max}} \times 4}{d^2} \quad \pi = 3.14
\]
Example type plate for light liquid separator

### Type Plate Details

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>3A-SK seglam®</td>
</tr>
<tr>
<td>Nominal Size</td>
<td>NS 15</td>
</tr>
<tr>
<td>Nominal Volume</td>
<td>5,000 liters</td>
</tr>
<tr>
<td>Maximum Oil Storage Capacity</td>
<td>575 liters</td>
</tr>
<tr>
<td>Maximum Oil Layer Thickness</td>
<td>40.0 cm</td>
</tr>
<tr>
<td>Maximum Sludge Height</td>
<td>76.0 cm</td>
</tr>
<tr>
<td>Tank Volume (without Sludge)</td>
<td>2,230 liters</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>SLV 60</td>
</tr>
<tr>
<td>Year of Construction</td>
<td>2006</td>
</tr>
</tbody>
</table>

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