



Testing of oil separator WaterCare oil separator NS10

Test report

File number: 1367374

Carried out for:

WaterCare
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DK-Denmark

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1. Test

1.1. Test separator

The oil separator is a coalescence separator, nominal size 10 l/s, type WaterCare oilseparator NS10. There was no sludge trap combined to the separator.

All materials are HDPE, except for the filter, which is PP. All metals part is stainless steel.

Connections are \varnothing 160 mm for the 10 l/s separator. The dimensions of the separator are shown in supplement 2. Testing was carried out on a prototype-separator.

1.2. Purpose and scope of the test

The purpose of the test is to obtain CE-marking for the separator.

1.3. Test separator - sampling

The test separator was sent to the Danish Technological Institute by the manufacturer. The test was carried out in a test set-up described in EN 858-1.

1.4. Test method

The test was carried out according to:

1. EN 858 – 1, 2002 / 1/A1 - 2005
Separator systems for light liquids – Part 1. Principles of products design, performance, and testing, marking and quality control.
2. Testing of the efficiency of the separator and analyses of samples are carried out according to this standard.

1.5. Conclusion

The test shows that the separator meets all relevant requirements in EN 858-1 / 1/A1 - 2005. With a flow of 10 l/s, there is a content of residual oil at 4,9 mg/l in the discharge. The separator can be placed in class I (maximum 5 mg/l oil in the discharge). The results are shown in supplement 2.

Furthermore the separator system conforms with the requirements in 6.3.2-6.3.5 and 6.5.1-6.5.3

PIPE CENTRE

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Supplement 1: Test result

6.2

Materials

All materials are HDPE, except for the filter, which is aluminium. All other metals part will be stainless steel. There is no documentation for the properties of the materials. The testing has not included checking specific documentation for the composition and oil-resistance of the materials, and no tests of the materials' tightness and resistance to oleaginous liquids have been carried out, except for tests of the separator's efficiency with subsequent observation, which gives no reason for further comment.

6.3.2

Watertightness has been testing according to 8.2

The system has been tested by filling up water to 40 mm above the maximum operational liquid level. There were no leaks after 20 min of testing.

The tightness of the extension shaft has not been tested. If extension shafts are used, the tightness of the connections must be tested after installation.

6.3.3

Accessibility

The separator system including the inlet and outlet is accessible for maintenance and inspection.

6.3.4

Water seals

The separator has a water seal at the inlet and outlet. The water seal is the result of the inlet and outlet being run through closed pipes, which are submerged at least 100 mm under all normal operating conditions.

6.3.5

Pipe and pipe joints

The inlet and outlet of the separator is 160 mm which is correct according to table 2.

6.5.1

Safeguard against reflux

There is no risk of reflux in the inlet during normal operations.

6.5.2

Storage Capacity

WaterCare has informed, that the storage capacity is calculated to more than 500 liters. With a capacity of 500 litres there is still a safe distance to the upper edge of the outlet.

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6.5.3

Automatic closure device

The separator was not equipped with an automatic closure device. WaterCare has informed that the automatic closure device only will be installed when necessary. The closure device is calibrated to the oil used in the test, and closes automatically at the desired storage capacity.

6.5.6

Determination of the nominal size and class

The oilseparator has been testing according to 8.3.3

8.3.3

A. Surface levels in the separator

During testing with a flow of 10 l/s there is more than 60 mm from the upper edge of the separator to the water level.

B. Separator efficiency

The test was carried out as described in EN 858-1, May 2002.

The samples in the separator outlet were taken through an inclined tube to the sample bottle.

The following tests use an oil type with specifications corresponding to ISO 8217, ISO-F-DMA, with a density of $0.85 \pm 0.015 \text{ g/cm}^3$ at 12°C .

C. Method

The separator is measured and the dimensions noted on the manufacturer's drawing.

The separator is filled with water up to the outlet. The volume of water is called: $V_K = 1750$ litres.

Flow 10 l/s

Water at 10 l/s and oil at 50 ml/s (5 ml per l/s) is added for a period of:

$T_B = 4 \times V_K / Q_w \times 60$ minutes (though at least 15 minutes) plus the test period T_P , which is 5 minutes.

$T_B = 33$ minutes. **Oil is added for 15 minutes + 5 minutes, i.e. a total of 20 minutes.**

In the period T_P , samples are taken from the outlet directly to the sample bottle in the **first** minute after T_B , and then a further



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4 samples at 1-minute intervals.

The 5 samples are analysed separately, and the test results given as the arithmetic calculated mean value.

Total quantity of oil: 60000 ml

Sample glass no.	240801	240802	240803	240804	240805
Test/minutes	16	17	18	19	20

WaterCare oilseparator NS10

Sample label	Variable	Result	Unit	Method used
Sample glass 240801	Total hydrocarbon	4,4	mg/l	EN 858-1, 2002
Sample glass 240802	Total hydrocarbon	4,7	mg/l	EN 858-1, 2002
Sample glass 240803	Total hydrocarbon	4,9	mg/l	EN 858-1, 2002
Sample glass 240804	Total hydrocarbon	4,7	mg/l	EN 858-1, 2002
Sample glass 240805	Total hydrocarbon	6,2	mg/l	EN 858-1, 2002
Arithmetic mean	Total hydrocarbon	4,9	mg/l	

6.6.1

Marking

The separator is marked. The manufacturer has stated that operating and maintenance instructions are enclosed with the separator on delivery. This has not been checked.

9.2

Conformity of the test separator with the submitted drawings

The conformity of the test separator with the manufacturer's construction drawings has been controlled. The main dimensions tally with the manufacturer's drawing, a copy of which is enclosed as supplement 2.

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Supplement 2: Drawing

Drawing of the oil separator WaterCare oil separator NS10

