


# Inspeksjonsrapport

## Inspection Report



<b>Oppdragsgiver</b> <i>Client</i> Static Seals AS Rådmann Friis vei 45, 3610 Kongsberg		<b>Utførende enhet/lab.</b> <i>Department/laboratory responsible</i> Kiwa AS PB 1019 3601 KONGSBERG	
<b>Rapportnr.</b> <i>Report no.</i> <b>24NO-00410OR01</b>			
<b>Tittel</b> <i>Title</i> <b>Third party verification of test according to EN-545 on ductile cast iron pipe with dimension DN300. At Ulefos Esco AS.</b>			
<b>Inspeksjon utført ...</b> <i>Inspection performed...</i> - i felt <i>In field</i> JA - i fabrikk i produksjon <i>in fabric in production</i> Nei No	<b>Inspeksjon utført av</b> <i>Inspection performed by</i> Asgeir Haukaas 	<b>Dato for utført inspeksjon</b> <i>Date of inspection</i> 12.12.2024	<b>Prøvetaking utført av Kiwa</b> <i>Sampling by Kiwa</i> Nei No
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Inspeksjonsresultater gjelder utelukkende de inspiserte objekter. Utdrag av rapporten må ikke gjengis uten skriftlig godkjenning fra Teknologisk Institutt as.

Inspection results relate only to the items inspected. The report shall not be reproduced except in full, without the written approval of the laboratory.

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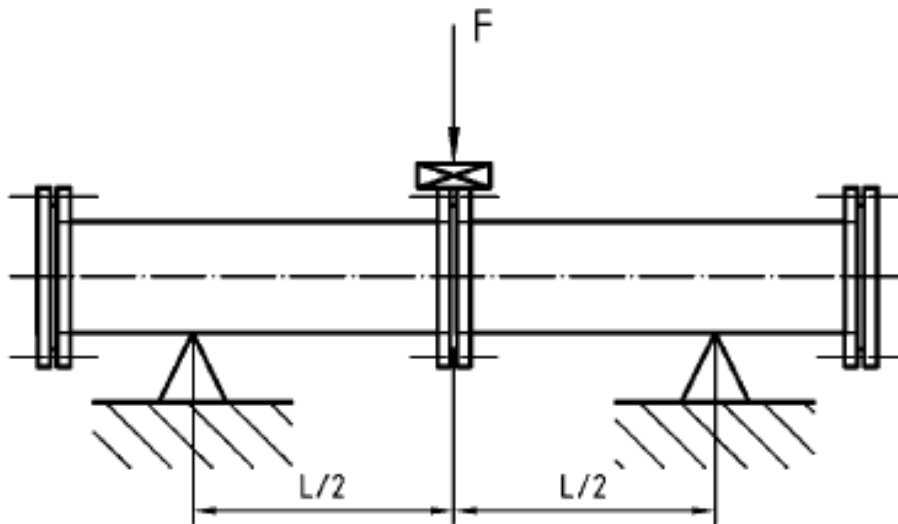
### 1. Summary

Static Seals AS has engaged Kiwa AS to verify a pressure test that includes a three-point bending test of a ductile iron pipe with Dn 300mm.

The pipe was filled with water, then vented and pressurized with 29 BARg. The pressure was held for 2 hours under a constant force of 35.4kN. The bending moment shall be according to table 12 in EN 545:2010.

The test was set up without overhang as indicated in picture 1. The bending moment shall be according to table 12 in EN 545:2010.

The length of the pipes was 2 pcs. of 500mm and 2 pcs. of 1000mm. The gaskets build approx. 5mm each. Total 5 gaskets = 25mm. Total 3025mm.



**Figure 3 — Strength and leak tightness test for flanged joints**

Table 12 — Bending moments for flange joint performance tests

DN	Bending moment kN·m	DN	Bending moment kN·m
40	0,7	500	63
50	0,9	600	87
60	1,3	700	116
65	1,4	800	146
80	1,8	900	181
100	2,3	1 000	222
125	2,9	1 100	265
150	4,0	1 200	313
200	6,0	1 400	423
250	8,6	1 500	475
300	26,0	1 600	548
350	33,8	1 800	625
400	42	2 000	770
450	51		

## 2. Reference documents

- Standard: EN 545:2010 - Ductile iron pipes, fittings, accessories and their joints for water pipelines - Requirements and test methods
- Pipe: Dn 300 EN 545, PN 10
- Flanges: DN 300 , EN 1092, PN 10
- Gasket: The gasket is in accordance with EN 1514. The rubber part is in drinking water approved EPDM in accordance with EN-681. The hard part is in glass-filled PP (PP-GF40)

## 3. Calculation

For a simply supported beam with a point load PPP at the center of the beam, the same formula for maximum bending moment is used:

$$M_{\text{max}} = P \cdot L^4$$

Solve for PPP:

$$P = \frac{4 \cdot M_{\text{max}}}{L^4}$$

Put in the values:

$$M_{\text{max}} = 26 \text{ kNm}$$

$$L = 2.87 \text{ m}$$

$$P = \frac{4 \cdot 26}{(2.87)^4} = 36.24 \text{ kN}$$

Perform the calculation:

$$P = \frac{104}{(2.87)^4} \approx 36.24 \text{ kN}$$

Answer:

The point load PPP is approximately **36.2 kN**.

### 4. Photos



Photo 1. Test setup. 3-point bending test is performed.



Photo 2. The pipe was pressurized with water up to 29 barg



Photo 3. Three-point bending force was measured 3609KG (35.4kN)



Photo 4. Gasket Dn300

## 5. Conclusion

Pressure test of gasket shows no leakage after 2 hours of constant three-point load. The test meets the requirements of EN 545:2010

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