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TECHNICAL STANDARDS & SAFETY AUTHORITY
14TH FLOOR CENTRE TOWER-3300 BLOOR STREE
TORONTO ON M8X 2X4

Date: July 15, 2014
Account #: 35231
Journal #: 60130
Our File #: 5503979

Attn: TANYA FRANCIS

Re: Application for Design Registration

The design, as detailed in your, TSSA's Service Request No. 1432726, for a Fitting is accepted for registration as follows:

Registered To: ENDRESS + HAUSER GMBH + CO. KG **CRN:** 0F16950.51

Drawing #: 960016105

Conditions Of Registration:

Registration of Liquiphant Transducer FTL-OTL31-33 as per scope of registration sheets (3 pages).

This design was registered based on a technical review performed by the province of initial registration in accordance with the Association of Chief Inspectors policy on reciprocal recognition of design review.

Reviewer's Notes:

As required by CSA B51 4.2.1, this registration expires on June 19, 2024. This CRN is valid until the expiry date as long as the Manufacturer maintains a valid quality control program verified by an acceptable third-party agency until that date. Should the certification of the quality control program lapse before the expiry date, this registration shall become void.

Contact me if you have any questions. The invoice for registration will be forwarded under separate cover.

SHARON PETERS
(778) 396-2027
Sharon.Peters@safetyauthority.ca
Design Administration

cc:

1.2.2 Scope of Registration

Table 1.2.2 – Scope of Registration Summary - Notes: Refer to drawing E+H drawing 960015905 - -.

	Process connection (please refer to drawing 960015905--)		Materials of Construction	Maximum Design Pressure (bar) and Temperature (°C)
	Design	**Pressure components**		
LIQUIPHANT FTL31 FTL33 OTL31 OTL33	ISO 2852	DN25-38 (1" to 1-1/2"), DN40-51 (2")	UNS S31603, SA-479, (316L, 1.4435, 1.4404) UNS S31603, SA-312, (TP316L, 1.4435, 1.4404)	25 bar @ -40°C…+150°C
	DIN 11851 Tube connection and slotted nut	DN25, DN32, DN40, DN50		DN25, DN32, DN40: 40 bar @ -40°C…+100°C 25 bar @ -40°C…+140°C DN50: 25 bar @ -40°C…+140°C
	SMS Adapter connection and slotted nut	≤ 1-1/2"		25 bar @ -40°C…+150°C
	E+H proprietary weld adapter	≤ ø65mm		25 bar @ -40°C…+150°C
	Varivent	F (DN25), N (DN32-DN162)		25 bar @ -40°C…+150°C
	Pipe Thread standard DIN/ISO 228	G1/2", G3/4", G1"		40 bar @ -40°C…+150°C
	Pipe Thread standard DIN/ISO 228	G3/4", G1" (including welding boss)		40 bar @ -40°C…+100°C 25 bar @ -40°C…+150°C
	ASME B1.1 DIN/ISO 13	M24 x 1.5		40 bar @ -40°C…+150°C
	ASME B1.20.1-1983 NPT Thread	NPT 1/2", NPT 3/4", NPT 1"		40 bar @ -40°C…+150°C
	DIN EN 10226-1 Thread	Threaded: R 1/2", R3/4", R1"		40 bar @ -40°C…+150°C
	Flush mounted for welding neck 1"	G1" aligned (including welding boss) Rd52 (including welding boss)		40 bar @ -40°C…+100°C 25 bar @ -40°C…+150°C
		Extension Tube	UNS S31603, SA-312, (TP316L, 1.4435, 1.4404) UNS S31603, SA-479, (316L, 1.4435, 1.4404)	40 bar @ -40°C…+150°C
		Fork	MIM-316L (B 883-97)	40 bar @ -40°C…+150°C

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Technical Standards & Safety Authority
Boilers & Pressure Vessels Safety Division

OF16950.51 Safety Authority British Columbia JULY 14, 2014 BCSA J # 60130

	Process connection		Method qualifying to CSA B51(Please refer to drawing 960015905--) Proof tests results and calculations in Appendix B of this report
	Design	**Pressure components**	
	ISO 2852	DN25-38 (1..1-1/2"), DN40-51 (2")	o Valid CRN 0F15498.5C o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii) o Proof test reports: 970004359, 970004360, 970004361 (Appendix B of this report)
	DIN 11851 Tube connection and slotted nut	DN25, DN32, DN40, DN50	o Valid CRN 0F15498.5C o Pressures and temperatures per DIN 11851 published standard. (section 1.5 of report)
	SMS Adapter connection and slotted nut	≤ 1-1/2"	o Valid CRN 0F15498.5C o ASME B31.3 304.7.2 (d) detailed stress analysis (Section 1.8 of this report)
	E+H proprietary weld adapter	≤ ø65mm	o Valid CRN 0F15498.5C o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii) o Proof test result: 970004363 (Appendix B of this report)
LIQUIPHANT	Varivent	F (DN25), N (DN32-DN162)	o Valid CRN 0F15498.5C o Detailed stress analysis - B31.3 para. 304.7.2 (d) (Section 1.6.1 of this report)
	Pipe Thread standard DIN/ISO 228	G1/2", G3/4", G1"	o Valid CRN 0F15498.5C o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii) o Proof test reports: 970004356, 970004357 (Appendix B of this report)
FTL31 **FTL33** **OTL31** **OTL33**	Pipe Thread standard DIN/ISO 228	G3/4", G1" (including welding boss)	o Valid CRN 0F15498.5C o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii) o Proof test report: 970004358 (Appendix B of this report)
	ASME B1.1 DIN/ISO 13	M24 x 1.5	o Valid CRN 0F15498.5C o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii) o Proof test report: 970004363 (Appendix B of this report) o ASME B31.3 table 326.1: ASME B1.13M Non-Mandatory Appendix B (Section 1.3.2 and 1.3.3 of this report)
	ASME B1.20.1-1983 NPT Thread	NPT 1/2", NPT 3/4", NPT 1"	o Valid CRN 0F15498.5C o ASME B31.3 paragraph 314.2.1(Section 1.3.1 of this report)
	DIN EN 10226-1 Thread	Threaded: R 1/2", R3/4", R1"	o ASME B31.3 paragraph 314.2. (Section 1.3.1 of this report)
	Flush mounted for welding neck 1"	G1" aligned (including welding boss) Rd52 (including welding boss)	o Valid CRN 0F15498.5C (full version) & 0F11261.5C (Aligned) o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii) o Proof test report: 970004362, 970004357, 970004361, 970004359, 970004363 (Appendix B of this report)
		Extension Tube	o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii) o Proof test results: 970004356 (Appendix B of this report)
		Fork	o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii) o Proof test results: All of the above. (Appendix B of this report)

OF16950.5

OF16950.51 Safety AUTHORITY Barrie, British Columbia JULY 14, 2014 BCSA J #60130

1.2.3 Material Specifications

Table 1.2.3 Material Specifications and Design Temperatures

Part	Listed Material	Temperature Range
Liquiphant Transducer	UNS S31603, A-479, (316L, 1.4435, 1.4404) UNS S31603, A-312, (TP316L, 1.4435, 1.4404) ASTM B883, MIM-316L	-40 °C to 150°C

Name and Form [1,2]	UNS	Min. Tensile (ksi) [1]	Min. Yield (ksi) [1]	Maximum Allowable Stress (psi) up to 302°F [1]
ASTM B883, MIM-316L	--	65	20	13,300
UNS S31603, A-479, (316L, 1.4435, 1.4404)	S31603	70	25	16,676
UNS S31603, A-312, (TP316L, 1.4435, 1.4404)	S31603	70	25	16,676

NOTES

[1] Per ASME B31.3-2012 table A-1

[2] Alloy types and grades with superior physical and chemical properties permissible.

[3] Note that all E+H alloys are dual listed, and comply to International, European and ASME standards.

OF16950.51
British Columbia Safety AUTHORITY
JULY 14, 2014
BCSAJ # 60130

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