



Department of Environmental Protection

2600 Blair Stone Road ♦ Tallahassee, Florida 32399-2400

DEP Form: 62-761.900(9)

Form Title: Storage Tank Equipment

Registration Form

Effective Date: July 2019

Incorporated in Rule 62-761.850, F.A.C.

Storage Tank System Equipment Registration Form

Fill out completely

General Information

Company Name: Contact Name:
Company Address: City, State: Zip:
E-mail: Contact Number:
Product Name: Product Type:
Model Number(s):
Rule(s) citation that registration is being requested within Chapter 62-761 (UST), and/or 62-762 (AST),

F.A.C.: Write a brief description of equipment registration request including product limitations:

Information Checklist (Choose Yes, No, or N/A - Not Applicable):

Yes No N/A

1. Third-party Certification by a Nationally Recognized Testing Laboratory? (Required)
2. Documentation of third-party evaluation that the equipment meets DEP Rules?
3. Documents included about the qualifications of the Nationally Recognized Testing Laboratory?
4. Technical information and drawings included?
5. Installation instructions included?
6. Annual Operability Testing Requirements (Rules 62-761.500, 62-762.501, & 62-762.502 F.A.C.)?
7. Integrity Testing Requirements (Rules 62-761.700, 62-762.701, & 62-762.702, F.A.C.)?
8. Compatible with fuel blends containing >10% ethanol or >20% biodiesel?
9. Has the product been approved or registered in other countries or states? (If so provide list)
10. Any requirements for company-certified installers or trainers?
11. Was this product(s) previously approved or registered by the Department? If yes, EQ-
12. Any changes or modifications to the equipment since the last submittal to DEP?

Document Information: Provide supporting documents indicated as "Yes" above including this form via email to Tanknotify@floridadep.gov, or documents can be sent to FDEP, Division of Waste Management, 2600 Blair Stone Road, MS 4560, Tallahassee, FL 32399.

Write a brief description of equipment installation and performance in the U.S.:

Equipment Registration Certification:

To the best of my knowledge and belief, all information submitted on this form is true, accurate and complete.

Marshall T. Mott-Smith

Digitally signed by Marshall T. Mott-Smith
Date: 2020.11.18 01:10:37 -05'00'

Printed Name and Title

Signature (right click to sign)

Date

For Department Use Only:

Date Application Received:

Application complete:

Yes:

No:

EQ-

Date of complete or incomplete letter sent:

Date Equipment Requires Renewal:

Storage tank system equipment requires renewal every 5 years in accordance with subsection 62-761.850(2), F.A.C.

VEGA Americas, Inc.

Equipment Registration Request

to the

**Florida Department of Environmental Protection's
Permitting and Compliance Assistance Program
Storage Tank Compliance**

by

VEGA Americas, Inc.

for

Aboveground and Underground Storage System Equipment

Submitted by

Marshall T. Mott-Smith, President
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November 18, 2020

Amanda Dorsett, Administrator
Compliance Assistance Program
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Equipment Registration Request for VEGA Americas, Inc.

Dear Amanda,

VEGA Americas, Inc. is submitting an Equipment Registration Form with supporting documentation to the Florida Department of Environmental Protection for all of its liquid level gauge models that can be used with regulated aboveground and underground storage tank system systems.

The liquid level gauges are listed by several international third-party certification organizations, and therefore provides the third-party certification for Nationally Recognized Laboratories in accordance with Rule 62-761.200(36), F.A.C.

VEGA Americas, Inc. appreciates your consideration in this matter, and please feel free to contact me if you have any questions or if we need to provide additional information.

Best Regards,

Marshall Mott-Smith, President
Mott-Smith Consulting Group, LLC

111 North Calhoun Street
Tallahassee, FL 32301

850.391.9835

888.768.2916 fax

www.mott-smithconsulting.com

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1. Introduction (All Models)

This Equipment Registration is sought in accordance with Florida Administrative Code Rule 62-762.851(2).

The request is sought by VEGA Americas, Inc. for five models for liquid level gauging in flammable liquids in stationary tanks including: 21, 31, C21, C22, and C23. The VEGAPULS 21, 31, C21, C22, and C23 are intended for use with all petroleum products and their derivatives. This series of radar level sensors can be used with solvents, alcohols, ethanol and other chemical solutions including acids. They are not intended to be used with ammonia.

The VEGA Americas, Inc. models specified above are liquid-level gauges designed to accurately determine the liquid product level in the tank and the percentage of total tank volume for most liquids in stationary-storage applications. They are constructed of materials that are compatible with petroleum products and can be easily installed at new or existing sites.

The models identified are designed to be installed in the field by experienced installers and contractors for field-erected and shop-fabricated aboveground storage tanks and underground storage tanks. The installation instructions are model-specific. The post-installation integrity of these systems can be verified using the testing procedures provided by VEGA Americas, Inc. in their product installation instruction documents. Strict quality control is provided during the manufacturing of these systems.

Photos and other technical information are provided in Appendix 7.

All of the VEGA Americas, Inc. models are designed for either monthly visual inspection or continuous electronic notification as required by Florida Underground Storage Tank Systems rules. The gauges will be mounted on the tank in accordance with the installation requirements.

All Equipment Registration Forms for each model are attached in Appendix 8.

2. Third Party Certifications (All Models)

All of the VEGA Americas, Inc. are approved by several third-party approval organizations. These include FM Approvals, CSA, the Deutsches Institut für Bautechnik, and the TUV Nord, all internationally recognized third party testing and certification organizations. The Third-Party Certifications confirm that the products meet the Department rules contained in Chapter 62-762.501, Chapter 62-762.601, and Chapter 62-762.701, F.A.C. All of the VEGA Americas, Inc. VEGAPULS 21, 31, C21, C22, and C23 models are compatible with applicable industry reference standards for field-erected and shop-fabricated aboveground storage tanks, as well as for underground storage tanks. Mott-Smith Consulting Group, LLC, certifies that the systems provide an equivalent protection to the existing rules.

The Third-Party Certifications are provided in Appendix 1 of this Request.

3. The Installation Process (All Models)

The basic information needed to properly install each of the VEGA Americas, Inc. models is provided in the installation instructions in Sections 5, 6, and 7, of Appendix 5 (Technical Description). The installation procedures contain prescribed instructions to assist equipment installers and others qualified to service liquid storage tank equipment. Training and experience are necessary to perform the installation described within the installation instructions.

Questions regarding installation or operation of the models or other components should be directed to VEGA Americas, Inc. or one of their authorized distributors for assistance. This includes the following models:

- The VEGAPULS 21
- The VEGAPULS 31
- The VEGAPULS C21
- The VEGAPULS C22
- The VEGAPULS C23

Gauges should only be installed in applications recommended by the manufacturer. The installer must verify that the gauge is the proper gauge for the correct application prior to attempting installation. The gauge, mounting equipment are constructed of materials compatible with the liquid to be measured and the service environment. The gauge and the mounting equipment are adequately rated for the specific pressure and temperature service.

Tank owners and operators have several choices between models for tank size and orientation, system power sources, product being measured, and the application.

The initial operability testing procedures are described in Section 5 of Appendix 5 (Technical Description) and must be performed after installation is completed to ensure initial performance of the system before it is put into operation.

The radar sensor must be tested insitu to verify the level measurement is valid. This can be accomplished by measuring the distance from the reference plane (the face of the antenna) of the radar level sensor to the surface of the liquid. This can be done directly or by referencing another level device that has been verified.

The system instructions recommend annual operability testing to meet the Department's requirements for annual operability testing in accordance with Rule 62-762.501(2)(e)2. a., F.A.C. (as described in Part 4 of this application below).

4. Operability Testing

The VEGA Americas, Inc. liquid-level gauges must be tested annually for operation as required by Florida Department of Environmental Protection AST System Rule 62-762.501(2)(e)2. a., F.A.C., as well as for the underground storage applications.

The radar sensor distance measurement shall be verified by measuring an object at a known distance. This can be on the bench with a fixed target, or while installed, if the level is at a verifiable distance from the radar sensor. On a bench test, the distance should be manageable in that the actual distance can be measured accurately using a calibrated tape. Usually a distance of approximately 10 feet is used.

The annual operability testing procedures are repeated in Section 8 Appendix 5 (Technical Description).

5. Compatibility (All models)

The VEGA Americas, Inc. models in this submittal are not usually in contact with petroleum products within the tanks. Nevertheless, these systems are constructed with corrosion resistant metals that are compatible with the light, middle and heavy distillate products they are designed to be in contact with for the designed application of the storage tank system gauge or gauge component.

All models are suitable for refined hydrocarbons including alternative fuels such as E10, B-20, E85 and E100.

Only parts of the level detector made of the following materials come into contact with the storage medium, its vapors or condensates:

- Process connection / antenna VEGAPULS 21, 31: Polyvinylidene fluoride (PVDF)
- Enclosure VEGAPULS C 21, 22, 23: Polyvinylidene fluoride (PVDF)
- Process gasket with G 1½" thread: Fluororubber (FKM)

All other materials of the continuous stand measuring system that do not come into contact with media can be found in the general operating instructions.

Polyvinylidene fluoride (PVDF) is the only wetted part for the PULS 21, 31, C21, C22, and C23. It is suitable for use with acids, alcohols, hydrocarbons, ketones, ethers, mineral oils, standard fuels, and salt solutions.

These models are TUV Listed for Flammable Liquids in Hazardous Locations and outdoor service applications. Gauge materials are selected according to the fuel being measured.

Fuel types that are compatible include:

- Gasoline
- E10
- E85
- E100
- Diesel
- Biodiesel
- B20 to B100
- Jet fuel
- AV gas
- Kerosene
- Refined oil
- Waste oil
- Bunker oil
- Fuel oil

Additional compatibility and product specifications can be found in Appendix 2.

6. Operation and Maintenance (All Models)

No maintenance is required for the VEGA Americas, Inc. gauges specified in this application. There are Adjustment Hints in Section 5 of the Technical Descriptions in Appendix 5.

All operations described in the Operating Instructions should be carried out only by trained, qualified personnel authorized by the facility operator. During work on and with the device, the required personal protective equipment should always be worn.

7. Technical Drawings and Information

The technical drawings, general technical data, wiring instructions, warranty information, and trouble-shooting guides for all models are provided in Appendix 4.

8. Quality Control

The Quality Control requirements and protocols are specified in Appendix 4.

Appendix 1 – Third Party Certifications

Third Party Certification – Certificate # FM20CA0003X, FM Approvals

CERTIFICATE OF CONFORMITY



Member of the FM Global Group

- HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS
- Certificate No: FM20CA0003X
- Equipment:
(Type Reference and Name) VEGAPULS 21, 31 and VEGAPULS C 21, C 22, C 23,
Level Transmitter Radar Sensors
- Name of Listing Company: VEGA Grieshaber KG
- Address of Listing Company: Am Hohenstein 113
D-77761 Schiltach, Baden-Wuerttemberg
Germany
- The examination and test results are recorded in confidential report number:
PR453628 dated 19th May 2020
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following
Approval standards and other documents:
CAN/CSA-C22.2 No. 94.2-15:2015, CAN/CSA-C22.2 No. 80079-0:2019,
CAN/CSA-C22.2 No. 80079-11-14:R2018, CAN/CSA-C22.2 No. 80079-26:2016,
CAN/CSA-C22.2 No. 80529:2016, CAN/CSA-C22.2 No. 81010-1-12:R2017
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific
conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM
Approvals surveillance audit program has further determined that the manufacturing processes and quality
control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:



J.E. Marquedant
VP, Manager – Electrical Systems

19 May 2020
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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to US Certificate Of Conformity No: FM20CA0003X

10. Equipment Ratings:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is certified to the following classification(s).

Intrinsically safe apparatus for use in Class I, Division 1, Groups A, B, C and D, with intrinsically safe process connections suitable for use in Class I, Division 1, Groups A, B, C and D, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Class I, Zone 0, Group IIC Ga, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Class I, Zone 0/1, Group IIC Ga/Gb, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual, hazardous locations, with an ambient temperature rating of -40 °C to +70 °C, indoor and outdoor (IP66/IP67) environments.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is certified to the following classification(s).

Intrinsically safe apparatus for use in Class I, Division 1, Groups A, B, C and D, Class II, Division 1, Groups E, F and G, Class III, Division 1, with intrinsically safe process connections suitable for use in Class I, Division 1, Groups A, B, C and D, Class II, Division 1, Groups E, F and G, Class III, Division 1, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Class I, Zone 0, Group IIC Ga, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Class I, Zone 0/1, Group IIC Ga/Gb, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Zone 20, Group IIIC Da, with intrinsically safe process connections "ia" suitable for use in Zone 20, Group IIIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety Ex ia for use in Zone 20/21, Group IIIC Da/Db, with intrinsically safe process connections "ia" suitable for use in Zone 20 and 21, Group IIIC, in accordance with manufacturer's operation manual, in accordance with manufacturer's operation manual, hazardous locations, with an ambient temperature rating of -40 °C to +80 °C, indoor and outdoor (Type 4X/8P, IP66/IP68 (IPX8 @ 3 bar/24 hrs)) environments.

11. The marking of the equipment shall include:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is labelled with the following marking(s).

FM20CA0003X

Intrinsic Safe for Cl I, Div 1, Gp ABCD T4; Cl I, Zn 0, 0/1 Ex ia IIC T4 Ga, Ga/Gb

Ta = -40 °C to +70 °C

Install per Drawing 62414

IP66/IP67

WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS

AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES – VOIR INSTRUCTIONS

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In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is labelled with the following marking(s).

FM20CA0003X

Intrinsic Safe for CI I, Div 1, Gp ABCD, CI II, Div 1, Gp EFG, CI III T4

CI I, Zn 0, 0/1 Ex ia IIC T4 Ga, Ga/Gb; Zn 20, 20/21 Ex ia IIC T134 °C Da, Da/Db

Ta = -40 °C to +80 °C

Install per Drawing 62412

IP66/IP68 (IPX8 @ 3 Bar/24 Hrs, Type 4X/6P)

WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS

AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES – VOIR INSTRUCTIONS

12. Description of Equipment:

General – The VEGAPULS level transmitter radar sensors are designed for industrial and hazardous location applications. Radar sensor types VEGAPULS 21, 31, C 21, C 22, C 23 are for use in explosive atmospheres caused by the presence of combustible gases or dusts, used for monitoring and control of filling levels by means of microwave technology based on the FMCW (frequency modulated continuous wave) measurement principle, which is an indirect method of distance measurement. The devices use high-frequency microwave signals in the GHz range to detect the distance between the sensor and the product surface level.

Construction – The electronics, mounted in a plastic enclosure converts the reflected microwave echo, indicating the filling level, into a two-wire 4-20 mA HART signal. Operation and control of the sensor can either be through the wired connection or via smart phone and VEGA Tools-App (Bluetooth). The sensor is either equipped with a fixed cable (VEGAPULS C 21, C 22, C 23) of 5 m, 10 m, 25 m or selectable length with a G1 inch, 1 inch NPT or R1 inch threaded connection or a two-wire terminal (VEGAPULS 21, 31) via a M20x1.5 or 1/2 inch NPT cable entry.

VEGAPULS 21 and 31 have non-metallic enclosures primarily yellow in color. The top part of the enclosure includes a solid yellow or transparent threaded window cover for accessing the wiring area and possibly viewing an optional display present on the final equipment that would use the enclosures. A single 1/2 inch NPT threaded entry or a single M20x1.5 entry with a suitably-rated cable gland is provided on the side of the enclosure for wiring entry and connection. The bottom of the enclosure is gray in color and includes a R 1-1/2 inch, G 1-1/2 inch, or 1-1/2 inch NPT male thread intended for connection to an industrial process. All seams and joints present on the enclosure employ suitable gaskets and O-rings for environmental sealing in order to maintain the ratings for degree of environmental protection IP66/IP67.

VEGAPULS 21 and 31 are electrically identical where type 21 is equipped without a display module and a blind cover and type 31 is equipped with a display module and a windowed cover.

VEGAPULS C 21, C 22 and C 23 have non-metallic enclosures that are gray in color. The top part of the enclosure includes an integral cable and gland as well as an R 1 inch, G 1 inch, or 1 inch NPT male thread for connection to conduit via direct connection via the NPT thread option or via a suitable coupling. The bottom of the enclosure is gray in color, and for the C 21 and C 22 enclosures, includes an R 1-1/2 inch, G 1-1/2 inch, or 1-1/2 inch NPT male thread intended for connection to an industrial process. The enclosures may offer means for wall or ceiling mounting which do not penetrate the enclosure. Gaskets and O-rings are provided for environmental sealing of the integral cable gland and there are no other seams nor joints present on these enclosures.

For more specifics concerning construction and description details of the level transmitter radar sensor, reference the manufacturer's sales literature and specification sheets.

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to US Certificate Of Conformity No: FM20CA0003X

Ratings – The equipment is certified to the following ratings.

The ambient operating temperature range is -40 °C to +70 °C or -40 °C to +80 °C, depending upon type of protection and model configuration, when properly mounted and installed.

The process temperature range of the media is -40 °C to +80 °C, with a maximum working pressure range of -0.1 to 0.3 MPa (-14.5 to 43.5 psig) within a maximum measuring range of 30 m.

The equipment is designated for installation transient overvoltages up to levels of overvoltage category III and environmentally classified as pollution degree 4.

In type of protection intrinsically safe apparatus with intrinsically safe process connections, the barrier protected radar sensor (VEGAPULS 21, 31) equipment is connected to a certified intrinsically safe circuit with the following maximum entity parameter values.

Supply and output circuit (+ (terminals 1), - (terminal 2)): only for connection to a certified intrinsically safe circuit, with the following maximum values:

$V_{max}(U_i) = 30\text{ V}$; $I_{max}(I_i) = 131\text{ mA}$; $P_i = 983\text{ mW}$; $C_i \approx 0\text{ nF}$; $L_i \approx 0\text{ }\mu\text{H}$

In type of protection intrinsically safe apparatus with intrinsically safe process connections, the barrier protected radar sensor (VEGAPULS C 21, C 22, C 23) equipment is connected to a certified intrinsically safe circuit with the following maximum entity parameter values.

Supply and output circuit (+ (Brown wire), - (Blue wire)): only for connection to a certified intrinsically safe circuit, with the following maximum values:

$V_{max}(U_i) = 30\text{ V}$; $I_{max}(I_i) = 131\text{ mA}$; $P_i = 983\text{ mW}$; $C_i = 0.18\text{ nF/m}$; $L_i = 0.65\text{ }\mu\text{H/m}$

Model Codes – The equipment is identified with the following model code structure.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is designated with the following model code(s).

VEGAPULS 21, Level Transmitter.

Reference Control Drawing No. 62414 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2

Thread type wiring side: 1/2 NPT or M20x1.5

Electronics: Two-wire 4-20 mA HART

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

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VEGAPULS 31, Level Transmitter.

Reference Control Drawing No. 62414 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2

Thread type wiring side: 1/2 NPT or M20x1.5

Electronics: Two-wire 4-20 mA HART with display

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, smartphone communication capabilities, and optional local display interface.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is designated with the following model code(s).

VEGAPULS C 21, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type process side and wiring side: G1-1/2 and G1, 1-1/2 NPT and 1 NPT or R1-1/2 and R1

Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)

Electronics: Two-wire 4-20 mA HART

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

VEGAPULS C 22, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2

Thread type wiring side: 1/2 NPT or Without

Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)

Electronics: Two-wire 4-20 mA HART

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

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VEGAPULS C 23, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type wiring side: G1, 1 NPT or R1
Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)
Electronics: Two-wire 4-20 mA HART
Maximum working pressure rating (MWPR): 3 bar
Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

13. Specific Conditions of Use:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is designated with the following specific conditions of use.

1. For Division 1, Zone 0, and Zone 1 Approvals, the radar sensors are suitable for process connections to Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC hazardous locations.
2. Maximum permissible working pressure is 3 bar (43.5 psig).
3. Potential Electrostatic Charging Hazard – To prevent the risk of electrostatic sparking, the non-metallic surface should only be cleaned with a damp cloth. The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.
4. The maximum permitted ambient temperature of the radar sensor is +70 °C.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is designated with the following specific conditions of use.

1. For Division 1, Zone 0, and Zone 1 Approvals, the radar sensors are suitable for process connections to Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC hazardous locations.
2. For Division 1, Zone 20, and Zone 21 Approvals, the level transmitter radar sensors are suitable for process connections to Class II, Division 1, Groups E, F and G, Class III, Division 1 and Zone 20 and 21, Group IIIC hazardous locations.
3. Maximum permissible custom cable length is limited by the parameters C_o and L_o of the intrinsically safe barrier. Consult the certificate of the intrinsically safe barrier to retrieve the parameters C_o and L_o , where the following must be observed at all time: $C_o \geq 0.18 \text{ nF/m} \times \text{cable length in meter}$ and $L_o \geq 0.65 \text{ } \mu\text{H/m} \times \text{cable length in meter}$.
4. Maximum permissible working pressure is 3 bar (43.5 psig).
5. Potential Electrostatic Charging Hazard – To prevent the risk of electrostatic sparking, the non-metallic surface should only be cleaned with a damp cloth. The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.
6. The maximum permitted ambient temperature of the radar sensor is +80 °C.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



to US Certificate Of Conformity No: FM20CA0003X

15. **Schedule Drawings:**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History:**

Details of the supplements to this certificate are described below:

Date	Description
19 th May 2020	Original Issue.

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Third Party Certification – Certificate # FM20CA0007X, FM Approvals

CERTIFICATE OF CONFORMITY


Member of the FM Global Group

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM20US0007X

3. **Equipment:** VEGAPULS 21, 31 and VEGAPULS C 21, C 22, C 23,
(Type Reference and Name) Level Transmitter Radar Sensors

4. **Name of Listing Company:** VEGA Grieshaber KG

5. **Address of Listing Company:** Am Hohenstein 113
D-77761 Schiltach, Baden-Wuerttemberg
Germany

6. The examination and test results are recorded in confidential report number:
PR453628 dated 19th May 2020

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:
FM Class 3600:2018, FM Class 3610:2018, FM Class 3810:2018,
ANSI/IEC 60529:R2011, ANSI/UL 60079-0:2019, ANSI/UL 60079-11:2014,
ANSI/UL 60079-26:2017, ANSI/UL 61010-1:2018, NEMA 250:2018

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:


J.E. Marquardt
VP, Manager – Electrical Systems

19 May 2020
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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to US Certificate Of Conformity No: FM20US0007X

10. Equipment Ratings:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is certified to the following classification(s).

Intrinsically safe apparatus for use in Class I, Division 1, Groups A, B, C and D, with intrinsically safe process connections suitable for use in Class I, Division 1, Groups A, B, C and D, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Class I, Zone 0, Group IIC Ga, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Class I, Zone 0/1, Group IIC Ga/Gb, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual, hazardous (classified) locations with an ambient temperature rating of -40 °C to +70 °C, indoor and outdoor (IP66/IP67) environments.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is certified to the following classification(s).

Intrinsically safe apparatus for use in Class I, Division 1, Groups A, B, C and D, Class II, Division 1, Groups E, F and G, Class III, Division 1, with intrinsically safe process connections suitable for use in Class I, Division 1, Groups A, B, C and D, Class II, Division 1, Groups E, F and G, Class III, Division 1, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Class I, Zone 0, Group IIC Ga, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Class I, Zone 0/1, Group IIC Ga/Gb, with intrinsically safe process connections "ia" suitable for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Zone 20, Group IIIC Da, with intrinsically safe process connections "ia" suitable for use in Zone 20, Group IIIC, in accordance with manufacturer's operation manual; equipment protection by intrinsic safety AEx ia for use in Zone 20/21, Group IIIC Da/Db, with intrinsically safe process connections "ia" suitable for use in Zone 20 and 21, Group IIIC, in accordance with manufacturer's operation manual, hazardous (classified) locations with an ambient temperature rating of -40 °C to +80 °C, indoor and outdoor (Type 4X/6P, IP66/IP68 (IPX8 @ 3 bar/24 hrs)) environments.

11. The marking of the equipment shall include:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is labelled with the following marking(s).

Intrinsic Safe for CI I, Div 1, Gp ABCD T4; CI I, Zn 0, 0/1 AEx ia IIC T4 Ga, Ga/Gb

Ta = -40 °C to +70 °C

Install per Drawing 62414

IP66/IP67

WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS

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to US Certificate Of Conformity No: FM20US0007X

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is labelled with the following marking(s).

Intrinsic Safe for CI I, Div 1, Gp ABCD, CI II, Div 1, Gp EFG, CI III T4

CI I, Zn 0, 0/I AEx ia IIC T4 Ga, Ga/Gb; Zn 20, 20/21 AEx ia IIIC T134 °C Da, Da/Db

Ta = -40 °C to +80 °C

Install per Drawing 62412

IP66/IP68 (IPX8 @ 3 Bar/24 Hrs), Type 4X/6P

WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS

12. Description of Equipment:

General – The VEGAPULS level transmitter radar sensors are designed for industrial and hazardous location applications. Radar sensor types VEGAPULS 21, 31, C 21, C 22, C 23 are for use in explosive atmospheres caused by the presence of combustible gases or dusts, used for monitoring and control of filling levels by means of microwave technology based on the FMCW (frequency modulated continuous wave) measurement principle, which is an indirect method of distance measurement. The devices use high-frequency microwave signals in the GHz range to detect the distance between the sensor and the product surface level.

Construction – The electronics, mounted in a plastic enclosure converts the reflected microwave echo, indicating the filling level, into a two-wire 4-20 mA HART signal. Operation and control of the sensor can either be through the wired connection or via smart phone and VEGA Tools-App (Bluetooth). The sensor is either equipped with a fixed cable (VEGAPULS C 21, C 22, C 23) of 5 m, 10 m, 25 m or selectable length with a G1 inch, 1 inch NPT or R1 inch threaded connection or a two-wire terminal (VEGAPULS 21, 31) via a M20x1.5 or 1/2 inch NPT cable entry.

VEGAPULS 21 and 31 have non-metallic enclosures primarily yellow in color. The top part of the enclosure includes a solid yellow or transparent threaded window cover for accessing the wiring area and possibly viewing an optional display present on the final equipment that would use the enclosures. A single 1/2 inch NPT threaded entry or a single M20x1.5 entry with a suitably-rated cable gland is provided on the side of the enclosure for wiring entry and connection. The bottom of the enclosure is gray in color and includes a R 1-1/2 inch, G 1-1/2 inch, or 1-1/2 inch NPT male thread intended for connection to an industrial process. All seams and joints present on the enclosure employ suitable gaskets and O-rings for environmental sealing in order to maintain the ratings for degree of environmental protection IP66/IP67.

VEGAPULS 21 and 31 are electrically identical where type 21 is equipped without a display module and a blind cover and type 31 is equipped with a display module and a windowed cover.

VEGAPULS C 21, C 22 and C 23 have non-metallic enclosures that are gray in color. The top part of the enclosure includes an integral cable and gland as well as an R 1 inch, G 1 inch, or 1 inch NPT male thread for connection to conduit via direct connection via the NPT thread option or via a suitable coupling. The bottom of the enclosure is gray in color, and for the C 21 and C 22 enclosures, includes an R 1-1/2 inch, G 1-1/2 inch, or 1-1/2 inch NPT male thread intended for connection to an industrial process. The enclosures may offer means for wall or ceiling mounting which do not penetrate the enclosure. Gaskets and O-rings are provided for environmental sealing of the integral cable gland and there are no other seams nor joints present on these enclosures.

For more specifics concerning construction and description details of the level transmitter radar sensor, reference the manufacturer's sales literature and specification sheets.

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to US Certificate Of Conformity No: FM20US0007X

Ratings – The equipment is certified to the following ratings.

The ambient operating temperature range is -40 °C to +70 °C or -40 °C to +80 °C, depending upon type of protection and model configuration, when properly mounted and installed.

The process temperature range of the media is -40 °C to +80 °C, with a maximum working pressure range of -0.1 to 0.3 MPa (-14.5 to 43.5 psig) within a maximum measuring range of 30 m.

The equipment is designated for installation transient overvoltages up to levels of overvoltage category III and environmentally classified as pollution degree 4.

In type of protection intrinsically safe apparatus with intrinsically safe process connections, the barrier protected radar sensor (VEGAPULS 21, 31) equipment is connected to a certified intrinsically safe circuit with the following maximum entity parameter values.

Supply and output circuit (+ (terminals 1), - (terminal 2)): only for connection to a certified intrinsically safe circuit, with the following maximum values:

$V_{max}(U_i) = 30\text{ V}$; $I_{max}(I_i) = 131\text{ mA}$; $P_i = 983\text{ mW}$; $C_i \approx 0\text{ nF}$; $L_i \approx 0\text{ }\mu\text{H}$

In type of protection intrinsically safe apparatus with intrinsically safe process connections, the barrier protected radar sensor (VEGAPULS C 21, C 22, C 23) equipment is connected to a certified intrinsically safe circuit with the following maximum entity parameter values.

Supply and output circuit (+ (Brown wire), - (Blue wire)): only for connection to a certified intrinsically safe circuit, with the following maximum values:

$V_{max}(U_i) = 30\text{ V}$; $I_{max}(I_i) = 131\text{ mA}$; $P_i = 983\text{ mW}$; $C_i = 0.18\text{ nF/m}$; $L_i = 0.65\text{ }\mu\text{H/m}$

Model Codes – The equipment is identified with the following model code structure.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is designated with the following model code(s).

VEGAPULS 21, Level Transmitter.

Reference Control Drawing No. 62414 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2

Thread type wiring side: 1/2 NPT or M20x1.5

Electronics: Two-wire 4-20 mA HART

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

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to US Certificate Of Conformity No: FM20US0007X

VEGAPULS 31, Level Transmitter.

Reference Control Drawing No. 62414 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2
Thread type wiring side: 1/2 NPT or M20x1.5
Electronics: Two-wire 4-20 mA HART with display
Maximum working pressure rating (MWPR): 3 bar
Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, smartphone communication capabilities, and optional local display interface.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is designated with the following model code(s).

VEGAPULS C 21, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type process side and wiring side: G1-1/2 and G1, 1-1/2 NPT and 1 NPT or R1-1/2 and R1
Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)
Electronics: Two-wire 4-20 mA HART
Maximum working pressure rating (MWPR): 3 bar
Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

VEGAPULS C 22, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type process side: G1-1/2, 1-1/2 NPT or R1-1/2
Thread type wiring side: 1/2 NPT or Without
Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)
Electronics: Two-wire 4-20 mA HART
Maximum working pressure rating (MWPR): 3 bar
Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

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to US Certificate Of Conformity No: FM20US0007X

VEGAPULS C 23, Level Transmitter.

Reference Control Drawing No. 62412 for Entity Parameter values

Thread type wiring side: G1, 1 NPT or R1

Cable material (length): PUR (1 m), PUR (5 m), PUR (10 m), PUR (25 m) or PUR (custom length)

Electronics: Two-wire 4-20 mA HART

Maximum working pressure rating (MWPR): 3 bar

Process temperature range: -40 °C to +80 °C

FM Approved equipment models also include additional options that are not related to compliance with the applicable standards as listed on the certificate; for example: measurement range, overfill protection, shipboard and/or foodstuff/pharmaceutical certification, and smartphone communication capabilities.

13. Specific Conditions of Use:

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS 21, 31) equipment is designated with the following specific conditions of use.

1. For Division 1, Zone 0, and Zone 1 Approvals, the radar sensors are suitable for process connections to Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC hazardous (classified) locations.
2. Maximum permissible working pressure is 3 bar (43.5 psig).
3. Potential Electrostatic Charging Hazard – To prevent the risk of electrostatic sparking, the non-metallic surface should only be cleaned with a damp cloth. The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.
4. The maximum permitted ambient temperature of the radar sensor is +70 °C.

In type of protection intrinsically safe apparatus, the level transmitter radar sensor (VEGAPULS C 21, C 22, C 23) equipment is designated with the following specific conditions of use.

1. For Division 1, Zone 0, and Zone 1 Approvals, the radar sensors are suitable for process connections to Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC hazardous (classified) locations.
2. For Division 1, Zone 20, and Zone 21 Approvals, the level transmitter radar sensors are suitable for process connections to Class II, Division 1, Groups E, F and G, Class III, Division 1 and Zone 20 and 21, Group IIIC hazardous (classified) locations.
3. Maximum permissible custom cable length is limited by the parameters C_0 and L_0 of the intrinsically safe barrier. Consult the certificate of the intrinsically safe barrier to retrieve the parameters C_0 and L_0 , where the following must be observed at all time: $C_0 \geq 0.18 \text{ nF/m} \times \text{cable length in meter}$ and $L_0 \geq 0.65 \text{ }\mu\text{H/m} \times \text{cable length in meter}$.
4. Maximum permissible working pressure is 3 bar (43.5 psig).
5. Potential Electrostatic Charging Hazard – To prevent the risk of electrostatic sparking, the non-metallic surface should only be cleaned with a damp cloth. The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.
6. The maximum permitted ambient temperature of the radar sensor is +80 °C.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

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SCHEDULE



to US Certificate Of Conformity No: FM20US0007X

15. **Schedule Drawings:**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History:**

Details of the supplements to this certificate are described below:

Date	Description
19 May 2020	Original Issue.

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Certificate of Compliance

Certificate: 80000123

Master Contract: 153857

Project: 80000123

Date Issued: 2020-06-23

Issued To: Vega Grieshaber KG
Am Hohenstein 113
Schiltach, Baden-Württemberg, 77761
Germany

Attention: Udo Ressel

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: Hossein Saleh
Hossein Saleh

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations

CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations - Certified to US Standards

Intrinsic Safe for Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III T4

Ex ia IIC T4 Ga, Ga/Gb

Class I, Zone 0, 0/1 AEx ia IIC T4 Ga, Ga/Gb

Ex ia IIIC T134°C Da, Da/Db

Zone 20, 20/21 AEx ia IIIC T134°C Da, Da/Db

VEGAPULS C 21, C 22, C 23





Certificate: 80000123
Project: 80000123

Master Contract: 153857
Date Issued: 2020-06-23

Radar sensors types VEGAPULS C 21, C 22, C 23 for use in explosive atmospheres caused by the presence of combustible gases or dusts, are used for monitoring and control of filling levels by means of microwave technology. The electronics, mounted in a plastic enclosure converts the reflected microwave echo, indicating the filling level, into a 2-wire 4...20mA HART signal. Operation and control of the sensor can either be through the wired connection or via smart phone and VEGA Tools-App (Bluetooth).

The sensor is equipped with a fixed cable (VEGAPULS C 21, C 22, C 23) of 5m, 10 m, 25m or selectable length with a G1", 1" NPT or R1" threaded connection. Threaded connection at the antenna side can be of G1 ½", R1 ½" or NPT 1 ½".

Supply and output circuit (+ (Brown wire), - (Blue wire)):

In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values/entity parameters:

Ui/Vmax = 30V, Ii/Imax = 131mA, Pi/Pmax = 983mW, Ci = 180pF/m, Li = 0.65uH/m.

Ambient and process temperature range: -40°C to +80°C.

Enclosures are Type 4X/6P, IP66/68 3bar, 24hrs.

Safety Instructions document: 62412.

PULS C 21S, C 23S

Radar sensors types PULS C 21S and C 23S are identical to VEGAPULS C 21 and VEGAPULS C 23 in every aspect and are only different in enclosure shape, color, and type of connection cable.

Entity Parameter Values: Ui/Vmax = 30V, Ii/Imax = 131mA, Pi/Pmax = 983mW, Ci = 180pF/m, Li = 1uH/m.

Safety Instructions document: 62427.

Intrinsic Safe for Class I, Division 1, Groups A, B, C, D T4

Ex ia IIC T4 Ga, Gb

Class I, Zone 0, 0/1 AEx ia IIC T4 Ga, Gb

VEGAPULS 21, 31

Radar sensors types VEGAPULS 21, 31 for use in explosive atmospheres caused by the presence of combustible gases, are used for monitoring and control of filling levels by means of microwave technology. The electronics, mounted in a plastic enclosure converts the reflected microwave echo, indicating the filling level, into a 2-wire 4...20mA HART signal. Operation and control of the sensor can either be through the wired connection or via smart phone and VEGA Tools-App (Bluetooth).

The sensor is equipped with a 2-wire terminal via a M20x1.5 or ½" NPT cable entry. Threaded connection at the antenna side can be of G1 ½", R1 ½" or NPT 1 ½".

VEGAPULS 21 and 31 are electrically identical where type 21 is equipped without a display module and a blind cover and type 31 is equipped with a display module and a windowed cover.

Supply and output circuit (+ (terminals 1), - (terminal 2)):



Certificate: 80000123
Project: 80000123

Master Contract: 153857
Date Issued: 2020-06-23

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values/entity parameters:

$U_i/V_{max} = 30V$, $I_i/I_{max} = 131mA$, $P_i/P_{max} = 983mW$, $C_i \approx 0nF$, $L_i \approx 0uH$.

Ambient temperature range: $-40^{\circ}C$ to $+70^{\circ}C$.

Process temperature range: $-40^{\circ}C$ to $+80^{\circ}C$.

Enclosures are Type 4X, IP66/67.

Safety Instructions document: 62414.

Notes:

1. Environmental Conditions: 5000m max.

Conditions of Acceptability:

1. For thermal data and further safety related properties refer to the safety instructions of the model.
2. The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.

APPLICABLE REQUIREMENTS

Standard Number	Issue Date / Edition	Title
CAN/CSA C22.2 No. 61010-1-12, UPD1: 2015, UPD2: 2016, AMD1: 2018	2018	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1 General Requirements
CAN/CSA C22.2 No. 94.2	2015 / 2 nd Edition	Enclosures for Electrical Equipment, Environmental Considerations
CAN/CSA C22.2 No. 60529	2016 / 2 nd Edition	Degrees of protection provided by enclosures (IP Code)
CSA C22.2 No. 60079-0	2019 / (Ed. 7.0) **	Explosive Atmospheres - Part 0: Equipment - General Requirements
CAN/CSA C22.2 No. 60079-11	2014 / (Ed. 6.0) **	Electrical apparatus for explosive gas atmospheres - Part 11: intrinsic safety "i"
CAN/CSA C22.2 No. 60079-26	2016 / (Ed. 3.0) **	Explosive atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga
UL 61010-1 (2012), AMD1: 2018	2018 / 3 rd Edition	Standard for Safety - Electrical Equipment for Measurement, Control, and Laboratory use; Part 1: General requirements
ANSI/UL 50E	2015 / 2 nd Edition	Enclosures for Electrical Equipment, Environmental Considerations
ANSI/IEC 60529	R2011 *	Degrees of protection provided by enclosures (IP Code)
ANSI/UL 60079-0	2019 / (Ed. 7.0) **	Explosive Atmospheres - Part 0: Equipment - General Requirements
ANSI/UL 60079-11	2018 / (Ed. 6.0) **	Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i"
ANSI/UL 60079-26	2017 / (Ed. 3.0) **	Explosive Atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga

* 'R' = 'Reaffirmed'

** '(Ed. n.n)' refers to Edition No. of IEC standard for the mentioned national standard



Supplement to Certificate of Compliance

Certificate: 80000123

Master Contract: 153857

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80000123	2020-06-23	Original North American certification of the radar sensors VEGAPULS C21 C22 C23 and PULS C 21S 23S for the following markings: I.S. C1 I, Div 1, Gp ABCD; Class II, Division 1, Groups E, F, G; Class III T4; C1 I, Zn 0, 0/1 AEx/Ex ia IIC T4 Ga, Ga/Gb; Zn 20, 20/21 AEx/Ex ia IIIC T134°C Da, Da/Db; IP66/68 3bar, 24hrs, Type 4X/6P; and radar sensors VEGAPULS 21 31 for the following markings: I.S. C1 I, Div 1, Gp ABCD T4; C1 I, Zn 0, AEx/Ex ia IIC T4 Ga, Ga/Gb; IP66/67 Type 4X; Tamb as specified in Minutes of Meeting – CSA. HAZLOC assessments based on acceptance of IECEx certificates, Enclosure ratings based on acceptance of FM Approvals; Separate ORDLOC assessments conducted by CSA.



Declaration of compliance 2.1 according to EN 10204

Inspection certificate according to DIN 55350 – 18 – 4.1.1

Purchaser:

Your order no.:

Our order no.:

Item:

Product:

VEGAPULS, VEGAFLEX, VEGASON

Remarks:

Long-term drift of run-time based sensors

Measurement of the signal run-time in the sensors mentioned above is carried out via a quartz-stabilized time measurement. The employed quartz has a maximum frequency deviation of ± 10 ppm. This deviation is compensated by a factory calibration.

The quartz crystal does of course age to a certain extent, but its ageing usually slows down more and more over time. The ageing of the crystal can cause a maximum frequency deviation of ± 5 ppm in the first year of operation. With a measuring distance of 10 m, for example, this effect results in a maximum deviation of 0.05 mm. This deviation is within the specified accuracy tolerance and can be neglected in practice.

A possible zero-point drift of the measured signal run-time is compensated by the use of an internal reference path in the sensors.

From the manufacturer's point of view, repeated calibration of the instruments is not necessary due to the continuous compensation of the zero point, the factory calibration of the time measurement and the very minimal ageing of the employed time base.

The products correspond to the conditions in the purchase order.

To satisfy the correct function as well as maintain the high VEGA quality standard, the products are tested during all production stages and a final inspection is carried out.

The tests are based on the specified requirements of the applicable EN/IEC standards and regulations.

All necessary workflows are embedded in a global quality assurance system, which is certified according to the internationally valid standard ISO 9001.

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Tel.: +49 7836 50-0
Fax: +49 7836 50-201

Date


p.p. Bernd Storz
Quality Management

Certificate AE

Page 1 of 1

TÜV NORD CERT GmbH
Am TÜV 1, 30519 Hannover

8003009431
30. September 2019



Prüfbescheinigung

Nr. BPG-ÜS 19/1408

Prüfgegenstand: Kontinuierliche Standmesseinrichtung als Anlage-
teil von Überfüllsicherungen für Behälter zum
Lagern wassergefährdender Flüssigkeiten

Hersteller: VEGA Grieshaber KG
Am Hohenstein 113
77757 Schiltach
Deutschland

**Anlageteil-
bezeichnung:**

1. Standaufnehmer in Form von Radar-Sensoren
mit integriertem Messumformer (Elektronik-
Einsatz) mit proportionalem elektrischen Aus-
gangssignal
VEGAPULS
Typ 21 (integrierte Hornantenne)
Typ 31 (integrierte Hornantenne)
Typ C 21 (integrierte Hornantenne)
Typ C 22 (integrierte Hornantenne)
Typ C 23 (integrierte Hornantenne)

Beim **VEGAPULS 31** mit integrierter Bedienein-
heit

Prüfgrundlage:	Zulassungsgrundsätze für Überfüllsicherungen (ZG-ÜS) des Deutschen Instituts für Bautechnik, Berlin; Stand Juli 2012
Prüfungsunterlagen:	a) Anlageteile der v.g. Bauart b) Technische Beschreibung des Herstellers c) Zeichnungen gemäß Auflistung des Herstellers d) EU-Konformitätserklärung des Herstellers
Prüfung:	Für die Anlageteile wurden die Untersuchungen im Rahmen der Zulassung als Teile von Überfüllsicherungen von der TÜV NORD CERT GmbH durchgeführt.
Prüfergebnis:	Die v.g. Anlageteile sind in ihrem Zusammenwirken als Teile von Überfüllsicherungen entsprechend der Prüfgrundlage untersucht worden und gehen in ihrem Aufbau im wesentlichen aus den Darstellungen in der Technischen Beschreibung und den aufgeführten Zeichnungen hervor. Sie entsprechen den hier anwendbaren allgemeinen und besonderen Baugrundsätzen der ZG-ÜS und sind aufgrund ihrer Konstruktion als Teile von Überfüllsicherungen für den Einsatz an Behältern zum Lagern wassergefährdender Flüssigkeiten dann geeignet, wenn die folgenden Betriebsbedingungen eingehalten werden.
Betriebsbedingungen:	1. Die von der Lagerflüssigkeit, deren Dämpfen oder Kondensat berührten Teile der Standaufnehmer bestehen aus PVDF (Polyvinylidenfluorid). Es wird als Dichtungsmaterial der Werkstoff FKM (Viton) verwendet. Es bestehen keine Bedenken, die Standaufnehmer in solchen wassergefährdenden Flüssigkeiten einzusetzen, gegen deren Einwirkung diese Werkstoffe hinreichend beständig sind.

2. Die Standmessaufnehmer sind zum Einsatz an Lagerbehältern geeignet, die über die atmosphärischen Bedingungen hinaus mit Temperaturen von -40 °C bis $+80\text{ °C}$ betrieben werden (s. hierzu „Technische Beschreibung“, Ziffer 1.4.2).
3. Die Standaufnehmer sind auch zum Einsatz an Lagerbehältern geeignet, die mit Überdrücken bis 3 bar betrieben werden (s. hierzu „Technische Beschreibung“, Ziffer 1.4.2).
4. Bei Gefahr von Ablagerungen am Standaufnehmer (Antenne) sind die Intervalle der Betriebsprüfungen darauf abzustimmen.
5. Die Parametrierungsdaten an den Messumformern sind gegebenenfalls gegen unkontrollierte Fernparametrierung mit Hilfe des Schreisschutzes (Passwortschutz) zu sichern.
6. Nach der Parametrierung der Standmesseinrichtung sind die Parametrierungsdaten gegen Überschreiben zu sichern (s. hierzu „Technische Beschreibung“, Ziffer 6.1).

7. Die Überfüllsicherung ist dann zum Einsatz an Behältern zum Lagern wassergefährdender Flüssigkeiten geeignet, wenn sie auf der Grundlage der hier geprüften Anlageteile so eingebaut und durch entsprechende Anlageteile soweit ergänzt wird, dass die Signal- bzw. Steuerkette in ihrem Aufbau und ihrer Funktion den Anhängen 1 und 2 der Prüfgrundlage entspricht.

Anlage:

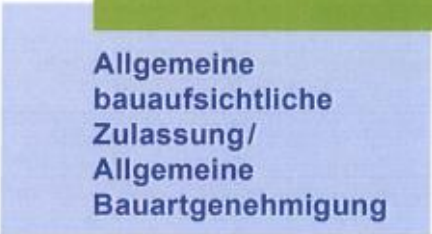
Technische Beschreibung des Herstellers sowie Auflistung der Prüfungsunterlagen.

TÜV NORD CERT GmbH
Prüfstelle für Überfüllsicherungen
Der Sachverständige




Andreas Meyer

Third Party Certification - Certificate # Z-65.16-596 - Deutsches Institut für Bautechnik – Original German Approval (Translation follows)

		
		Zulassungsstelle für Bauprodukte und Bauarten Bautechnisches Prüfamt Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts Mitglied der EOTA, der UEAtc und der WFTAO
		Datum: 20.11.2019 Geschäftszeichen: II 23-1.65.16-50/19
Nummer: Z-65.16-596 Antragsteller: VEGA Grieshaber KG Am Hohenstein 113 77761 Schiltach		Geltungsdauer vom: 20. November 2019 bis: 20. November 2024
Gegenstand dieses Bescheides: Standaufnehmer (Radar-Sensoren) "VEGAPULS" mit integriertem Messumformer als kontinuierliche Standmesseinrichtung von Überfüllsicherungen, Typen: "21", "31", "C 21", "C 22" und "C 23"		
Der oben genannte Regelungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen/ genehmigt. Dieser Bescheid umfasst sechs Seiten und eine Anlage.		
		

I ALLGEMEINE BESTIMMUNGEN

- 1 Mit diesem Bescheid ist die Verwendbarkeit bzw. Anwendbarkeit des Regelungsgegenstandes im Sinne der Landesbauordnungen nachgewiesen.
- 2 Dieser Bescheid ersetzt nicht die für die Durchführung von Bauvorhaben gesetzlich vorgeschriebenen Genehmigungen, Zustimmungen und Bescheinigungen.
- 3 Dieser Bescheid wird unbeschadet der Rechte Dritter, insbesondere privater Schutzrechte, erteilt.
- 4 Dem Verwender bzw. Anwender des Regelungsgegenstandes sind, unbeschadet weitergehender Regelungen in den "Besonderen Bestimmungen", Kopien dieses Bescheides zur Verfügung zu stellen. Zudem ist der Verwender bzw. Anwender des Regelungsgegenstandes darauf hinzuweisen, dass dieser Bescheid an der Verwendungs- bzw. Anwendungsstelle vorliegen muss. Auf Anforderung sind den beteiligten Behörden ebenfalls Kopien zur Verfügung zu stellen.
- 5 Dieser Bescheid darf nur vollständig vervielfältigt werden. Eine auszugsweise Veröffentlichung bedarf der Zustimmung des Deutschen Instituts für Bautechnik. Texte und Zeichnungen von Werbeschriften dürfen diesem Bescheid nicht widersprechen, Übersetzungen müssen den Hinweis "Vom Deutschen Institut für Bautechnik nicht geprüfte Übersetzung der deutschen Originalfassung" enthalten.
- 6 Dieser Bescheid wird widerruflich erteilt. Die Bestimmungen können nachträglich ergänzt und geändert werden, insbesondere, wenn neue technische Erkenntnisse dies erfordern.
- 7 Dieser Bescheid bezieht sich auf die von dem Antragsteller gemachten Angaben und vorgelegten Dokumente. Eine Änderung dieser Grundlagen wird von diesem Bescheid nicht erfasst und ist dem Deutschen Institut für Bautechnik unverzüglich offenzulegen.
- 8 Die von diesem Bescheid umfasste allgemeine Bauartgenehmigung gilt zugleich als allgemeine bauaufsichtliche Zulassung für die Bauart.

II BESONDERE BESTIMMUNGEN

1 Regelungsgegenstand und Verwendungs- bzw. Anwendungsbereich

(1) Gegenstand dieses Bescheides ist eine kontinuierliche Standmesseinrichtung mit der Bezeichnung "VEGAPULS", bestehend aus einem Standaufnehmer (Radarantenne mit FMCW Radar) mit einem integrierten Messumformer (Elektronikeinsatz), die als Teil einer Überfüllsicherung (siehe Anlage 1) dazu dient, bei der Lagerung wassergefährdender Flüssigkeiten Überfüllungen von Behältern zu verhindern. Vom Standaufnehmer werden kontinuierliche Radarsignale ausgesendet. Das ausgesendete Signal wird beim Auftreffen auf die Flüssigkeitsoberfläche reflektiert und von der Antenne als Echo mit geänderter Frequenz empfangen. Die Frequenz ändert sich sägezahnförmig und proportional zur Distanz zwischen Antenne und Flüssigkeitsoberfläche. Die Frequenzänderung wird vom Messumformer in ein elektrisches Signal umgewandelt und in einem Grenzsinalgeber mit dem eingestellten Grenzwert verglichen, um ein binäres Signal zu gewinnen, mit dem rechtzeitig vor Erreichen des zulässigen Füllungsgrades der Füllvorgang unterbrochen oder akustisch und optisch Alarm ausgelöst wird. Die für die Melde- oder Steuerungseinrichtung erforderlichen Anlagenteile, der Grenzsinalgeber und der Signalverstärker sind nicht Gegenstand dieses Bescheides.

(2) Die mit der wassergefährdenden Flüssigkeit, deren Kondensat oder Dämpfen in Berührung kommenden Teile des Standaufnehmers bestehen aus Polyvinylidenfluorid (PVDF). Für die Dichtungen wird Fluorkautschuk (FKM) verwendet.

(3) Der Standaufnehmer mit integriertem Messumformer darf je nach Ausführung für Behälter unter atmosphärischen Bedingungen und darüber hinaus bei Überdrücken im Behälter bis 3 bar und bei Temperaturen der Flüssigkeit von -40 °C bis +80 °C verwendet werden.

(4) Mit diesem Bescheid wird der Nachweis der Funktionssicherheit des Regelungsgegenstandes im Sinne von Absatz (1) erbracht.

(5) Der Bescheid wird unbeschadet der Bestimmungen und der Prüf- oder Genehmigungsvorbehalte anderer Rechtsbereiche erteilt.

(6) Dieser Bescheid berücksichtigt die wasserrechtlichen Anforderungen an den Regelungsgegenstand. Gemäß § 63 Abs. 4 Nr. 2 und 3 WHG¹ gilt der Regelungsgegenstand damit wasserrechtlich als geeignet.

2 Bestimmungen für das Bauprodukt

2.1 Allgemeines

Die Standmesseinrichtung und ihre Teile müssen den Besonderen Bestimmungen und der Anlage dieses Bescheides sowie den beim Deutschen Institut für Bautechnik hinterlegten Angaben entsprechen.

¹ Wasserhaushaltsgesetz vom 31. Juli 2009 (BGBl. I S. 2585), das zuletzt durch Artikel 1 des Gesetzes vom 18. Juli 2017 (BGBl. I S. 2771) geändert worden ist

2.2 Eigenschaften und Zusammensetzung

(1) Der Regelungsgegenstand setzt sich aus folgenden Einzelteilen zusammen (Nummerierung siehe Anlage 1):

(1+2a) Standaufnehmer (Radarantenne mit FMCW Radar, Hornantenne) mit integriertem Messumformer (Elektronikeinsatz) mit proportionalem elektrischen Ausgangssignal:

VEGAPULS Typ 21
Typ 31 mit integrierter Bedieneinheit
Typ C 21
Typ C 22
Typ C 23

Die vollständige Typenbezeichnung ist dem Typenschlüssel gemäß der Technischen Beschreibung² zu entnehmen.

(2) Die Teile der Überfüllsicherung, die nicht Gegenstand der von dem Bescheid erfassten allgemeinen bauaufsichtlichen Zulassung sind, dürfen nur verwendet werden, wenn sie den Anforderungen des Abschnitts 3 "Allgemeine Baugrundsätze" und des Abschnitts 4 "Besondere Baugrundsätze" der ZG-ÜS³ entsprechen. Sie brauchen jedoch keine Zulassungsnummer zu haben.

2.3 Herstellung und Kennzeichnung

2.3.1 Herstellung

Die Standmesseinrichtung darf nur im Werk des Antragstellers, VEGA Grieshaber KG in 77761 Schiltach, hergestellt werden. Sie muss hinsichtlich Bauart, Abmessungen und Werkstoffen den in der im DIBt hinterlegten Liste aufgeführten Unterlagen entsprechen.

2.3.2 Kennzeichnung

Die Standmesseinrichtung, deren Verpackung oder deren Lieferschein muss vom Hersteller mit dem Übereinstimmungszeichen (Ü-Zeichen) nach den Übereinstimmungszeichen-Verordnungen der Länder gekennzeichnet werden. Die Kennzeichnung darf nur erfolgen, wenn die Voraussetzungen nach Abschnitt 2.4 erfüllt sind.

Zusätzlich sind die zulassungspflichtigen Teile selbst mit folgenden Angaben zu kennzeichnen:

- Hersteller oder Herstellerzeichen¹⁾,
- Typenbezeichnung,
- Serien- oder Chargennummer bzw. Identnummer bzw. Herstelldatum,
- Zulassungsnummer¹⁾.

¹⁾ Bestandteil des Ü-Zeichens, das Teil ist nur wiederholt mit diesen Angaben zu kennzeichnen, wenn das Ü-Zeichen nicht direkt auf dem Teil aufgebracht wird.

2.4 Übereinstimmungsbestätigung

2.4.1 Allgemeines

Die Bestätigung der Übereinstimmung der Standmesseinrichtung mit den Bestimmungen der von dem Bescheid erfassten allgemeinen bauaufsichtlichen Zulassung muss für das Herstellwerk mit einer Übereinstimmungserklärung des Herstellers auf der Grundlage einer werkseitigen Produktionskontrolle und einer Erstprüfung der Standmesseinrichtung durch eine hierfür anerkannte Prüfstelle erfolgen. Die Übereinstimmungserklärung hat der Hersteller durch Kennzeichnung der Bauprodukte mit dem Übereinstimmungszeichen (Ü-Zeichen) unter Hinweis auf den Verwendungszweck abzugeben.

² Von der TÜV NORD CERT GmbH geprüfte Technische Beschreibung des Antragstellers vom 30.08.2019 für die Überfüllsicherung ... Standmesseinrichtung VEGAPULS 21, 31, C 21, C 22, C 23

³ ZG-ÜS:2012-07 Zulassungsgrundsätze für Überfüllsicherungen des Deutschen Instituts für Bautechnik

2.4.2 Werkseigene Produktionskontrolle

(1) Im Herstellwerk ist eine werkseigene Produktionskontrolle einzurichten und durchzuführen. Unter werkseigener Produktionskontrolle wird die vom Hersteller vorzunehmende kontinuierliche Überwachung der Produktion verstanden, mit der dieser sicherstellt, dass die von ihm hergestellten Bauprodukte den Bestimmungen der von dem Bescheid erfassten allgemeinen bauaufsichtlichen Zulassung entsprechen. Im Rahmen der werkseigenen Produktionskontrolle ist eine Stückprüfung jeder Standmeseinrichtung oder ihrer Einzelteile durchzuführen. Durch die Stückprüfung hat der Hersteller zu gewährleisten, dass die Werkstoffe und Maße sowie das fertiggestellte Bauprodukt dem geprüften Baumuster entsprechen und die Standmeseinrichtung funktionssicher ist.

(2) Die Ergebnisse der werkseigenen Produktionskontrolle sind aufzuzeichnen und auszuwerten. Die Aufzeichnungen müssen mindestens folgende Angaben enthalten:

- Bezeichnung der Standmeseinrichtung,
- Art der Kontrolle oder Prüfung,
- Datum der Herstellung und der Prüfung,
- Ergebnisse der Kontrollen oder Prüfungen,
- Unterschrift des für die werkseigene Produktionskontrolle Verantwortlichen.

(3) Die Aufzeichnungen sind mindestens fünf Jahre aufzubewahren. Sie sind dem Deutschen Institut für Bautechnik und der zuständigen obersten Bauaufsichtsbehörde auf Verlangen vorzulegen.

(4) Bei ungenügendem Prüfergebnis sind vom Hersteller unverzüglich die erforderlichen Maßnahmen zur Abstellung des Mangels zu treffen. Standaufnehmer und Messumformer, die den Anforderungen nicht entsprechen, sind so zu handhaben, dass eine Verwechslung mit übereinstimmenden ausgeschlossen ist. Nach Abstellung des Mangels ist - soweit technisch möglich und zum Nachweis der Mängelbeseitigung erforderlich - die betreffende Prüfung unverzüglich zu wiederholen.

2.4.3 Erstprüfung durch eine anerkannte Prüfstelle

Im Rahmen der Erstprüfung sind die in den ZG-ÜS aufgeführten Funktionsprüfungen durchzuführen. Wenn die diesem Bescheid zugrunde liegenden Nachweise an Proben aus der laufenden Produktion erbracht wurden, ersetzen diese Prüfungen die Erstprüfung.

3 Bestimmungen für Planung und Ausführung

3.1 Planung

Vom Hersteller oder vom Betreiber der Standmeseinrichtung ist der Nachweis der hinreichenden chemischen Beständigkeit der unter Abschnitt 1 (2) genannten Werkstoffe gegenüber den wassergefährdenden Flüssigkeiten und deren Dämpfen oder Kondensat zu führen. Zur Nachweisführung können Angaben der Werkstoffhersteller, Veröffentlichungen in der Fachliteratur, eigene Erfahrungswerte oder entsprechende Prüfergebnisse herangezogen werden.

3.2 Ausführung

(1) Die Überfüllsicherung mit einer Standmesseinrichtung nach diesem Bescheid muss entsprechend Abschnitt 1.1 der Technischen Beschreibung angeordnet bzw. entsprechend deren Abschnitten 5 und 6 eingebaut und eingestellt werden. Mit dem Einbauen, Instandhalten, Instandsetzen und Reinigen der Standmesseinrichtung dürfen nur solche Betriebe beauftragt werden, die über Kenntnisse des Brand- und Explosionsschutzes verfügen, wenn diese Tätigkeiten an Behältern für Flüssigkeiten mit Flammpunkt $\leq 55^\circ\text{C}$ durchgeführt werden. Nach Abschluss der Montage der Überfüllsicherung muss durch einen Sachkundigen des einbauenden Betriebes eine Prüfung auf ordnungsgemäßen Einbau und einwandfreie Funktion durchgeführt werden. Über die Einstellung der Überfüllsicherung und die ordnungsgemäße Funktion ist eine Bescheinigung auszustellen und dem Betreiber zu übergeben.

(2) Die Parametrierungsdaten an den Messumformern sind gegebenenfalls gegen unkontrollierte Fernparametrierung mit Hilfe des Schreibschutzes (Passwortschutz) zu sichern.

(3) Nach der Parametrierung der Standmesseinrichtung sind die Parametrierungsdaten gegen Überschreibung zu sichern. (siehe Abschnitt 6.1 der Technischen Beschreibung)

4 Bestimmungen für Nutzung, Unterhalt, Wartung und wiederkehrende Prüfungen

(1) Die Überfüllsicherung mit einer Standmesseinrichtung nach diesem Bescheid muss nach den ZG-ÜS Anhang 1, "Einstellhinweise für Überfüllsicherungen von Behältern" und den ZG-ÜS Anhang 2, "Einbau- und Betriebsrichtlinie für Überfüllsicherungen" betrieben werden. Die Anhänge und die Technische Beschreibung sind vom Hersteller mitzuliefern. Die Anhänge 1 und 2 der ZG-ÜS dürfen zu diesem Zweck kopiert werden.

(2) Die Funktionsfähigkeit der Überfüllsicherung mit einer Standmesseinrichtung nach diesem Bescheid muss in angemessenen Zeitabständen, mindestens aber einmal im Jahr, nach Abschnitt 8 der Technischen Beschreibung und entsprechend den Anforderungen des Abschnitts 5.2 von Anhang 2 der ZG-ÜS geprüft werden. Es liegt in der Verantwortung des Betreibers, die Art der Überprüfung und die Zeitabstände im genannten Zeitrahmen zu wählen. Bei Gefahr von Ablagerungen von Bestandteilen der Flüssigkeit am Standaufnehmer (Antenne) ist dieser in kürzeren Zeitintervallen zu prüfen.

(3) Stör- und Fehlermeldungen sind in Abschnitt 4 der Technischen Beschreibung beschrieben.

(4) Bei Wiederinbetriebnahme des Behälters nach Stilllegung oder bei Wechsel der wassergefährdenden Flüssigkeiten, bei dem mit einer Änderung der Einstellungen oder der Funktion der Überfüllsicherung zu rechnen ist, ist eine erneute Funktionsprüfung, siehe Abschnitt 3.2 (1), durchzuführen.

Holger Eggert
Referatsleiter



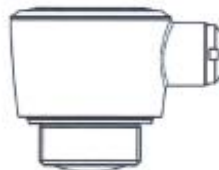
VEGAPULS 21, 31



VEGAPULS C 21



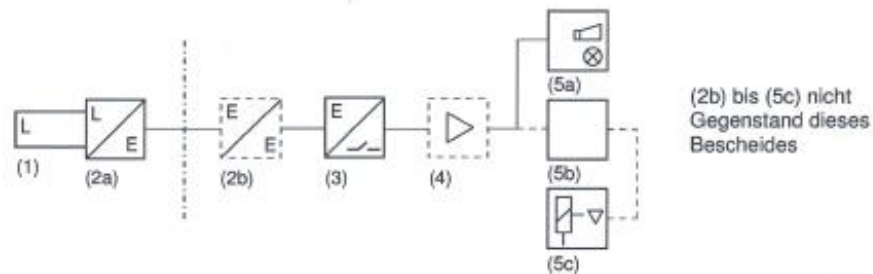
VEGAPULS C 22



VEGAPULS C 23



Schema der Überfüllsicherung



(1) Standaufnehmer (FMCW Radar)
(2a) Messumformer (integrierte Elektronik)

(2b) Messumformer (Ex-Speisetrenner)
(3) Grenzsingalgeber
(4) Signalverstärker
(5a) Meldeeinrichtung
mit Hupe und Lampe
(5b) Steuerungseinrichtung
(5c) Stelliglied

Standaufnehmer (Radar-Sensoren) "VEGAPULS" mit integriertem Messumformer als
kontinuierliche Standmesseinrichtung von Überfüllsicherungen,

Übersicht

Anlage 1

Translation of DIBt certificate Z-65.16-596

Translation of the German original version not checked by Deutsches Institut für Bautechnik

General technical approval /

General type approval

Number:

Z-65.16-596

Validity

From: November 20th 2019

To: November 20th 2024

Applicant:

VEGA Grieshaber KG

Am Hohenstein 113

77761 Schiltach

Subject of approval:

Level sensor (radar sensors) "VEGAPULS" with integrated measuring transducer as continuous level measuring device of overfill protection,

types: "21", "31", "C 21", "C 22" and "C 23"

The above-mentioned subject of regulation is hereby generally approved/approved by the building authorities. This notice comprises six pages and one annex.

Translation of DIBt certificate Z-65.16-596

Translation of the German original version not checked by Deutsches Institut für Bautechnik

I GENERAL PROVISIONS

- 1 With this notice, the usability or applicability of the subject matter of the regulation in terms of the state building codes is proven.
- 2 This notice does not replace the permits, approvals and certificates required by law for the execution of construction projects.
- 3 This notice is issued without prejudice to the rights of third parties, in particular private property rights.
- 4 Copies of this notice shall be made available to the user or user of the subject matter of the regulation, without prejudice to further provisions in the "Special Provisions". In addition, the user of the subject matter of the regulation must be informed that this notification must be available at the place of use or application. Copies must also be made available to the authorities involved on request.
- 5 This notice may only be reproduced in full. Publication in extracts requires the consent of Deutsches Institut für Bautechnik. Texts and drawings of advertising material may not contradict this notice. Translations must contain the note "Translation of the German original version not checked by Deutsches Institut für Bautechnik".
- 6 This decision is revocable. The provisions may be supplemented and amended subsequently, in particular if new technical findings make this necessary.
- 7 This decision refers to the information and documents provided by the applicant. A change of these fundamentals is not covered by this notification and must be disclosed to Deutsches Institut für Bautechnik without delay.
- 8 The general type approval covered by this decision is at the same time a general technical approval for the type of construction.

II SPECIAL PROVISIONS

1 Object of regulation and use or area of application

(1) The object of this notification is a continuous level measuring system with the designation "VEGAPULS", consisting of a level sensor (radar antenna with FMCW radar) with an integrated transmitter (oscillator), which is used as part of an overfill protection system (see appendix 1) to prevent overfilling of vessels when storing water-endangering liquids. Continuous radar signals are emitted by the level sensor. The emitted signal is reflected when it hits the surface of the liquid and is received by the antenna as an echo with a changed frequency. The frequency changes in a sawtooth shape and is proportional to the distance between the antenna and the liquid surface. The change in frequency is converted into an electrical signal by the transmitter and compared with the set limit value in a limit switch in order to obtain a binary signal which can be used to interrupt the filling process in time before the permissible filling level is reached or to trigger an acoustic and optical alarm. The plant components required for the signaling or control system, the limit switch and the signal amplifier are not subject of this notice.

(2) The parts of the level sensor that come into contact with the water-polluting liquid, its condensate or vapours are made of polyvinylidene fluoride (PVDF). Fluoro rubber (FKM) is used for the seals.

(3) The level sensor with integrated measuring transducer may be used, depending on the version, for tanks under atmospheric conditions and beyond that for overpressures in the tank of up to 3 bar and at liquid temperatures of -40 °C to +80 °C.

(4) This notification shall constitute proof of the functional safety of the subject matter of the regulation within the meaning of paragraph (1).

(5) The notice shall be issued without prejudice to the provisions and the testing or approval reservations of other areas of law.

(6) This notice shall take into account the requirements of water law regarding the subject matter of the regulation. Pursuant to Section 63 (4) Nos. 2 and 3 WHG¹, the subject matter of the regulation is thus deemed suitable under water law.

(7) The period of validity of this notice (see page 1) refers to use in the sense of installation of the subject matter of the regulation and not to use in the sense of subsequent use.

2 Provisions applicable to the construction product

2.1 General

The level measuring equipment and its parts must comply with the Special Provisions and the Annex to this notice and the information deposited with Deutsches Institut für Bautechnik.

¹ Water Resources Act of 31 July 2009 (BGBl. I p. 2585), last amended by Article 1 of the Act of 18 July 2017 (BGBl. I p. 2771)

Translation of DIBt certificate Z-65.16-596

Translation of the German original version not checked by Deutsches Institut für Bautechnik

2.2 Properties and composition

(1) The subject matter of the regulation consists of the following individual parts (numbering see Annex 1):

(1+2a) Level detector (radar antenna with FMCW radar, horn antenna) with integrated measuring transducer (oscillator) with proportional electrical output signal:

VEGAPULS Type 21
 Type 31 with integrated adjustment module
 Type C 21
 Type C 22
 Type C 23

The complete type designation can be found in the type code according to the technical description².

(2) The parts of the overfill prevention system which are not subject of the general construction supervision approval covered by the notice may only be used if they comply with the requirements of section 3, "General principles of construction" and section 4, "Special principles of construction" of ZG-ÜS³. However, they need not have an approval number.

2.3 Production and marking

2.3.1 Production

The stand measuring system may only be manufactured in the factory of the applicant, VEGA Grieshaber KG in 77761 Schiltach. It must correspond to the documents in the list deposited in the DIBt with regard to type, dimensions and materials.

2.3.2 Marking

The stand measuring equipment, its packaging or its delivery bill must be marked by the manufacturer with the conformity mark (Ü mark) in accordance with the conformity mark regulations of the countries. The marking may only be carried out if the requirements according to Section 2.4 are met.

In addition, the parts subject to approval must themselves be marked with the following information:

- Manufacturer or manufacturer's mark¹⁾
- Type designation
- Serial or batch number or identification number or date of manufacture
- Certification Number¹⁾

¹⁾ Part of the Ü-mark, the part must only be repeatedly marked with this information if the Ü-mark is not applied directly to the part.

2.4 Confirmation of conformity

2.4.1 General

Confirmation of the conformity of the stand measuring equipment with the provisions of the general technical approval covered by the notice must be provided for the manufacturing plant with a declaration of conformity by the manufacturer on the basis of a factory production control and an initial inspection of the stand measuring equipment by a testing agency recognized for this purpose. The declaration of conformity must be made by the manufacturer by marking the construction products with the conformity mark (Ü mark) with reference to the intended use.

² Technical description of the applicant of 30.08.2019 for the overfill protection system, certified by TÜV NORD CERT GmbH ... Level measuring system VEGAPULS 21, 31, C 21, C 22, C 23

³ ZG-ÜS: 2012-07 Approval principles for overfill prevention systems of the German Institute for Structural Engineering

Translation of DIBt certificate Z-65.16-596

Translation of the German original version not checked by Deutsches Institut für Bautechnik

2.4.2 Factory production control

(1) A factory production control shall be established and performed at the manufacturing plant. Factory production control means the continuous surveillance of production to be carried out by the manufacturer to ensure that the construction products manufactured by him comply with the provisions of the general building approval covered by the notification. Within the scope of the factory production control a routine test of each level measuring system or its individual parts shall be performed. By means of the routine test, the manufacturer shall ensure that the materials and dimensions as well as the finished construction product correspond to the tested type and that the level measuring system is functionally reliable.

(2) The results of factory production control shall be recorded and evaluated. The records shall contain at least the following information:

- Designation of the level measuring system
- Type of control or test
- Date of manufacture and test
- Results of controls or tests
- Signature of the person responsible for factory production control

(3) The records shall be kept for at least five years. They shall be presented to Deutsches Institut für Bautechnik and the responsible supreme building supervisory authority on request.

(4) If the test result is unsatisfactory, the manufacturer shall immediately take the necessary measures to remedy the defect. Level sensors and measuring transducers which do not meet the requirements shall be handled in such a way that confusion with matching ones is ruled out. After the defect has been remedied, the test in question must be repeated without delay - insofar as this is technically possible and necessary to prove that the defect has been remedied.

2.4.3 Initial testing by a recognized testing laboratory

The functional tests listed in the ZG-ÜS must be performed as part of the initial test. If the evidence on which this decision is based has been provided on samples from current production, these tests shall replace the initial test.

3 Regulations for planning and execution

3.1 Planning

The manufacturer or operator of the level measuring system must provide evidence of the adequate chemical resistance of the materials mentioned in section 1 (2) to the water-polluting liquids and their vapours or condensate. For verification purposes, information provided by the material manufacturers, publications in technical literature, own empirical values or corresponding test results may be used.

Translation of DIBt certificate Z-65.16-596

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3.2 Execution

(1) The overfill protection with a level measuring system in accordance with this notice shall be arranged in accordance with Section 1.1 of the Technical Description or installed and adjusted in accordance with Sections 5 and 6 thereof. The installation, maintenance, repair and cleaning of the level measuring system may only be carried out by companies that have knowledge of fire and explosion protection if these activities are carried out on containers for liquids with a flash point of ≤ 55 °C. After completion of the installation of the overfill protection, a check for proper installation and perfect function must be carried out by an expert of the installing company. A certificate must be issued and handed over to the operator regarding the adjustment of the overfill protection and its proper function.

(2) If necessary, the parameterization data on the transmitters must be secured against uncontrolled remote parameterization by means of write protection (password protection).

(3) After the level measuring system has been parameterized, the parameterization data must be secured against overwriting. (see section 6.1 of the technical description)

4 Provisions for use, maintenance, servicing and periodic inspections

(1) The overfill prevention system with a level measuring system in accordance with this notice shall be operated in accordance with ZG-ÜS Annex 1, "Setting instructions for overfill prevention systems of containers" and ZG-ÜS Annex 2, "Installation and operating guidelines for overfill prevention systems". The appendices and the technical description must be supplied by the manufacturer. Appendices 1 and 2 of the ZG-ÜS may be copied for this purpose.

(2) The functionality of the overfill prevention system with a level measuring system according to this notice shall be tested at appropriate intervals, but at least once a year, in accordance with Section 8 of the Technical Description and in accordance with the requirements of Section 5.2 of Annex 2 of the ZG-ÜS. It is the responsibility of the operator to choose the type of inspection and the intervals within the specified time frame. If there is a risk of deposits of components of the liquid on the level detector (antenna), it must be checked in shorter time intervals.

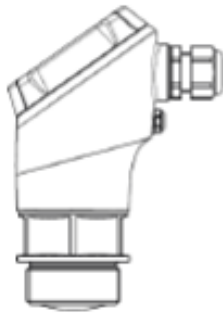
(3) Fault and error messages are described in Section 4 of the Technical Description.

(4) A new functional test, see Section 3.2 (1), shall be performed if the tank is put back into operation after it has been shut down or if the water-endangering liquids are changed and a change in the settings or the function of the overfill protection is to be expected.

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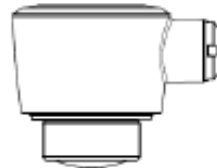
VEGAPULS 21, 31



VEGAPULS C 21



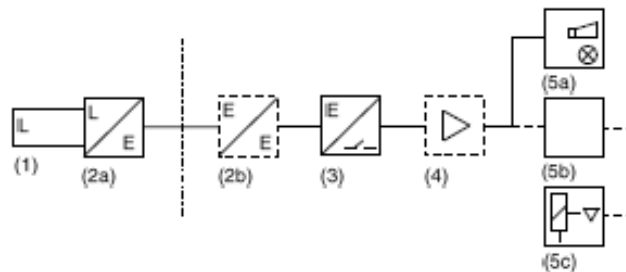
VEGAPULS C 22



VEGAPULS C 23



Scheme of the overfill protection



(2b) to (5c) not
subject of this
general technical
approval

(1) Level detector (FMCW radar)
(2a) Transducer (integrated electronics)

(2b) Transducer (Ex supply isolator)
(3) Limit switch
(4) Signal amplifier
(5a) Signaling device
(5b) Control device
(5c) Control element

Level sensor (radar sensors) "VEGAPULS" with integrated transducer as continuous level measuring system of overfill protection systems

Annex 1

Appendix 2 – Compatibility and Product Specifications

KYNAR® 720

Kynar® resins are fluorinated thermoplastic homopolymers.

Outstanding characteristics: chemical resistance, imperviousness to UV, high barrier properties, high purity, good mechanical and thermo-mechanical properties.

Kynar® 720 resin is a standard grade of granules for injection molding. This product is ANSI/NSF Standard 61 certified.

A powder form is available as **Kynar® 721 resin**.

MAIN CHARACTERISTICS

PROPERTIES	VALUE	UNIT	TEST STANDARD
RHEOLOGICAL PROPERTIES			
Melt Volume-Flow Rate	10	cm ³ /10min	ISO 1133
Temperature	230	°C	-
Load	5	kg	-
Melt Flow Rate	5 - 26.5	g/10min	ASTM D1238
Temperature	230	°C	-
Load	3.8	kg	-
Molding Shrinkage, parallel	2.0	%	ISO 294-4, 2577
Molding Shrinkage, normal	2.0	%	ISO 294-4, 2577
Melt Viscosity, 230°C, 100 s-1	6 - 12	kPoise	ASTM D3835
MECHANICAL PROPERTIES			
Tensile Modulus	2200	MPa	ISO 527-1/-2
Tensile Modulus, 73 °F	1380 - 2310	MPa	ASTM D638
Yield stress	54	MPa	ISO 527-1/-2
Tensile Strength at Yield, 73 °F	44.8 - 55.2	MPa	ASTM D638
Yield strain	8	%	ISO 527-1/-2
Elongation at Yield, 73 °F	5 - 10	%	ASTM D638
Nominal Strain at Break	> 50	%	ISO 527-1/-2
Tensile Strength at Break, 73 °F	34.5 - 55.2	MPa	ASTM D638
Elongation at Break, 73 °F	20 - 100	%	ASTM D638
Taber Abrasion, CS 17 1000g:pad	5 - 9	mg/1000 cycles	ASTM-G195-13A
Hardness, Shore D, 73 °F	76 - 80	-	ASTM D2240
Flexural Modulus, 73 °F	1380 - 2310	MPa	ASTM D790
Flexural Strength @ 5% Strain, 73 °F	58.6 - 75.8	MPa	ASTM D790
Compressive Strength, 73 °F	68.9 - 103	MPa	ASTM D695
Charpy Impact Strength, +23°C	208	kJ/m ²	ISO 179/1eU
Charpy Impact Strength, -30°C	189	kJ/m ²	ISO 179/1eU
Charpy Notched Impact Strength, +23°C	8	kJ/m ²	ISO 179/1eA
Charpy Notched Impact Strength, -30°C	5	kJ/m ²	ISO 179/1eA

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KYNAR®
by ARKEMA

KYNAR® 720

Unnotched Impact Strength, 73 °F	1.07 - 4.27	kJ/m	ASTM D256
Notched Impact Strength, 73 °F	0.0801 - 0.214	kJ/m	ASTM D256
Coefficient of Friction, Static vs. Steel, 73 °F	0.2	-	ASTM D1894
Coefficient of Friction, Dynamic vs. Steel, 73 °F	0.14	-	ASTM D1894
THERMAL PROPERTIES			
Melting Temperature, 10°C/min	168	°C	ISO 11357-1/-3
Melting Point, 73 °F	165 - 172	°C	ASTM D3418
Glass Transition Temperature, 10°C/min	-40	°C	ISO 11357-1/-2
Glass Transition Temperature (T _g)	-40.6 - -38.3	°C	ASTM D7028
Temperature Rating	150	°C	UL RTI
Temp. of Deflection Under Load, 1.80 MPa	110	°C	ISO 75-1/-2
Heat Deflection Temperature, 264 Psi, 248 °F/hr	105 - 115	°C	ASTM D648
Temp. of Deflection Under Load, 0.45 MPa	132	°C	ISO 75-1/-2
Heat Deflection Temperature, 66 Psi, 248 °F/hr	125 - 140	°C	ASTM D648
Vicat Softening Temperature, 50°C/h 50N	139	°C	ISO 306
Coef. of Linear Thermal Expansion, parallel	150	E-6/K	ISO 11359-1/-2
Coefficient of Thermal Expansion, 73 °F	11.9 - 14.4	10E-5/°C	ASTM D696
Burning Behav. at 1.5 mm Nominal Thickness	V-0	class	IEC 60695-11-10
Thickness Tested	1.6	mm	-
Yellow Card available	yes	-	-
Burning Behav. at Thickness h	V-0	class	IEC 60695-11-10
Thickness Tested	0.8	mm	-
Oxygen Index	43	%	ISO 4589-1/-2
Limiting Oxygen Index, 73 °F	44	%	ASTM D2863
Thermal Conductivity	0.17 - 0.19	W/(m K)	ASTM D433
Specific Heat	745 - 958	J/(kg K)	DSC
Thermal Decomposition TGA, in air	375	°C	1% wt. loss
Thermal Decomposition TGA, in nitrogen	410	°C	1% wt. loss
Relative Thermal Index, Mechanical	150	°C	UL 746B
Relative Thermal Index, Electrical	150	°C	UL 746B
ELECTRICAL PROPERTIES			
Relative Permittivity, 100Hz	9	-	IEC 60250
Relative Permittivity, 1MHz	7	-	IEC 60250
Dielectric Constant, 1 kHz	4.5 - 9.5	-	ASTM D150
Dissipation Factor, 100Hz	320	E-4	IEC 60250
Dissipation Factor, 1MHz	2140	E-4	IEC 60250
Dissipation Factor, 100 kHz	0.01 - 0.21	-	ASTM D150

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KYNAR®
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KYNAR® 720

Volume Resistivity	2E12	Ohm*m	IEC 60093
Volume Resistivity, DC 68 °F, 65% R.H.	2E14	Ohm*cm	ASTM D257
Surface Resistivity	>1E15	Ohm	IEC 60093
Dielectric (Electric) Strength	21	kV/mm	IEC 60243-1
Dielectric (Electric) Strength, 73°F	≥ 1.7	kV/mil	ASTM D149
Comparative Tracking Index	600	-	IEC 60112
OTHER PROPERTIES			
Water Absorption	0.03	%	Sim. to ISO 62
Water Absorption	0.01 - 0.03	%	ASTM D570
Humidity Absorption	0.015	%	Sim. to ISO 62
Density	1.780	kg/m³	ISO 1183
Specific Gravity, 73 °F	1.77 - 1.79	-	ASTM D792
OPTICAL PROPERTIES			
Refractive Index @ sodium D line	1.42	-	ASTM D542

MAIN APPLICATIONS:

- corrosion protection in the chemical industry
- wire and cable
- coating (painting, co-extrusion)
- off shore

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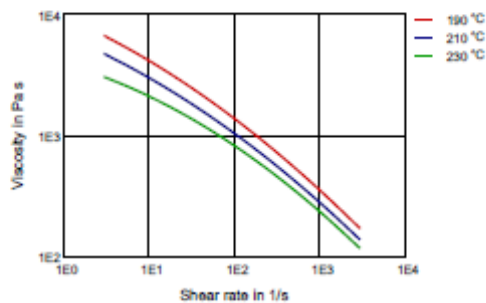
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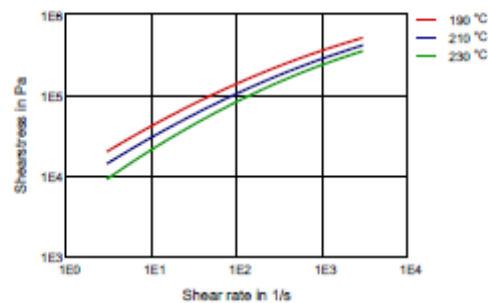
KYNAR® 720

DIAGRAMS

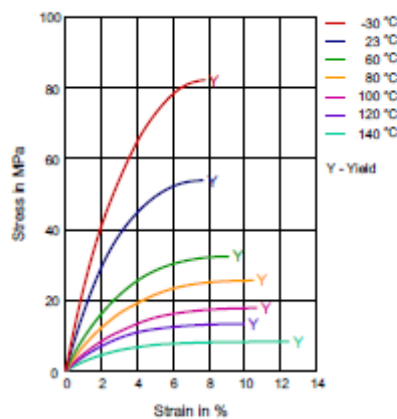
VISCOSITY-SHEAR RATE



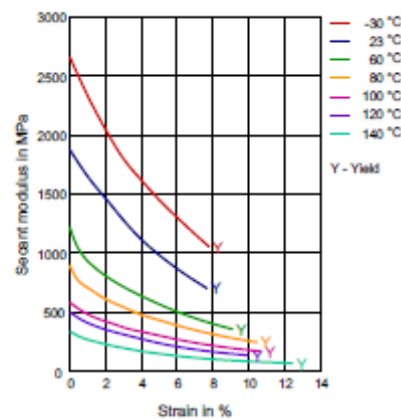
SHEARSTRESS-SHEAR RATE



STRESS-STRAIN



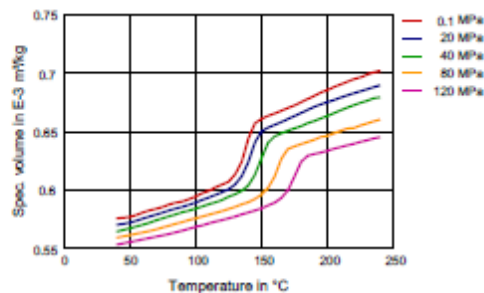
SECANT MODULUS-STRAIN



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KYNAR® 720

SPECIFIC VOLUME-TEMPERATURE (PVT)



PROCESSING

Injection Molding, Film Extrusion, Sheet Extrusion, Casting, Thermoforming

DELIVERY FORM

Pellets

SPECIAL CHARACTERISTICS

Heat Stabilized, Light Stabilized, UV Stable

REGIONAL AVAILABILITY

North America, Europe, Asia Pacific, South and Central America, Near East/Africa

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Appendix 3 – Installation Instructions:

(See Sections 5,6, & 7 of the Technical Description in Appendix 5)

Quality Manual

VEGA Americas, Inc.
Cincinnati, OH 45209



Quality Manual

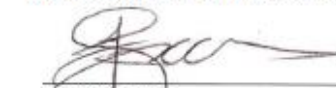
Document: QM-0001

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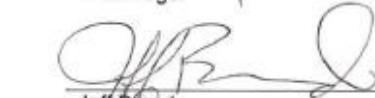
We, the leadership of VEGA Americas, Inc. endorse this Quality Manual as an accurate summary of the quality program of VEGA Americas.

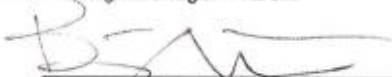
All VEGA Americas employees are expected to understand, implement and maintain the quality policies of the organization.

We pledge our support to the VEGA Americas quality program through our leadership, planning, implementation, and review activities.

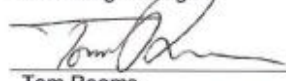

John Groom
Co-CEO


Dennis Arnold
IT Manager

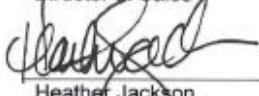

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Product Manager - VEGA


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Insides Sales Manager


Jasilyn Fuller
Marketing Manager


Tom Reams
Field Service Manager


Scott Rollman
Director of Sales


Heather Jackson
Human Resources Manager

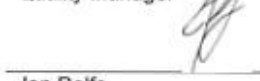

John Kronenberg
Co-CEO

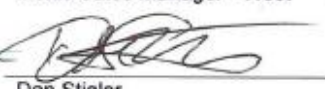

Will Bailey
National Sales Manager - Americas


Lee Dailman
Director of Engineering


Ron Foltz
Operations Manager


Gretchen Lisi
Quality Manager


Jon Rolfe
Inside Sales Manager - West


Dan Stigler
Business Development - Projects

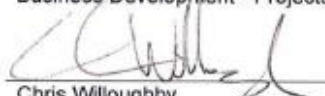

Chris Willoughby
Strategy & Innovation Manager

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Journey Map

VEGA Americas, Inc. develops, markets, and manufactures industrial measurement systems for process industries. We are a global supplier of both standard and custom level measurement solutions, as well as a wide array of other measurement instruments.

Our products are available around the world through a network of VEGA Americas sales persons, affiliated sales organizations, and strategic partners. Application assistance is provided by VEGA Americas engineers and sales affiliates. Service is available throughout the useful life of our products.

VEGA Americas is committed to providing level and pressure measuring products and services that meet its customers' expectations.

Mission – Why we exist

To deliver high quality measurement technology solutions to improve our customers safety, reliability and efficiency.

Values:

Excellence

We believe that deep satisfaction comes from doing meaningful work to the best of our abilities. Every employee will provide the highest levels of quality products and services to our customers with a sense of urgency. We will foster a culture of Excellence within our organization. We want to associate with people and organizations that share this commitment.

Respect

We will be an organization where Respect for the individual and the organization are of the highest priority. We will treat our employees, representatives, customers, community, associates, and shareholders with the highest moral and ethical standards at all times. Through our actions we will actively work to promote and maintain Respect within, and of, our organization

Continuous Improvement

We will be an organization dedicated to the ideals of Continuous Improvement. We will be enthusiastic about change and will constantly look for ways to improve our business and the lives of those it touches. We will be accountable for our mistakes and will learn from them. We will constantly evaluate our internal processes, products, programs, and people and will always evaluate the effect they have on the external experience had by our customers and representatives.

We never stop improving our processes, our product, and our people. We use creativity and innovation to elevate beyond our competition and our customers' expectations.

Lasting Relationships

Reaching our business goals is dependent on developing and maintaining quality lasting relationships with our marketplace and our stakeholders. We want our customers and employees to not only continue our relationship by their choice, but because they are delighted to do so. We will set goals that are forward looking and invest in long term ideas and success.

Responsiveness

We believe that meeting the needs of our customers and our channel is defined by our ability to listen, and to be responsive, to those needs. The measure of responsiveness will be set by our customer's needs, and those of our market. We will be an organization where responsiveness in any stage of our business process is expected, and where we strive to continually improve our ability to respond. We recognize that responsiveness must integrate, not replace, all other values. We understand that every company action is a link to our customers, and that a high level of responsiveness is key in improving, and differentiating, our value to them.

Quality Manual

Document: QM-0001

Page: 5 of 13

Vision

Customer

We are our markets' trusted advisor, our customers think of us as their partner, not their supplier.

Growth

We have grown our top line faster than market pace while responsibly growing our bottom line.

Personnel

Our employees reach their highest potential.

We are recognized in our community and by our employees as a great place to work with a progressive culture.

Products

Our radiometric and level products consistently lead their markets.

We are recognized for our pressure, switching, and other products.

Quality

We never stop improving our business.

Interested Parties

Interested Party	Requirements	Examples at VEGA Americas
Customers	Orders entered & processed accurately Product meets quality specifications Product arrives on time	Dow Chemicals GK Techstar BinMaster VEGA Measurement Mexico
Suppliers	Accurate purchase orders Timely payment Fair Evaluation	M&S Machine Company VEGA Grieshaber KG
Employees	Clear job expectations Safe work environment Fair Evaluation	Mechanical Assembler Shipping Personnel Order Administrator
Regulatory Agencies	Products meet certified standard Engage agency on product changes	CSA, FM ODH
Board of Directors & Ownership	Fair rate of return Long-term strategy Listen to advice & direction	Grieshaber Verwaltungs GmbH Isabel Grieshaber Rainer Waltersbacher
Community	Good community stewards Positive neighbors	Rosslyn & Allendorf neighbors Greater Cincinnati residents & business community

VEGA Americas, Inc. 2020 JOURNEY

Purpose

Working together for our customers, celebrating success!

Mission

To deliver high quality measurement technology solutions to ensure our customers' safety, reliability, and efficiency.

Values

Excellence

We believe that deep satisfaction comes from doing meaningful work to the best of our abilities.

Respect

We will be an organization where Respect for the individual and the organization are of the highest priority.

Continuous Improvement

We never stop improving our processes, our product, and our people. We use creativity and innovation to elevate beyond our competition and our customers' expectations.

Lasting Relationships

Reaching our business goals is dependent on developing and maintaining quality lasting relationships with our marketplace and our stakeholders.

Responsiveness

We believe that meeting the needs of our customers and our channel is defined by our ability to listen, and to be responsive, to those needs.

Strategic Position (Our Unique Offering)

- Engineered instrument solutions
- Quick response and fast delivery
- Innovation
- High level Personal Service
- Performance Guarantee

Looking Forward **VEGA**

Vision Category	Vision Description	Objective
Customer	We are our markets' trusted advisor; our customers think of us as their partner, not their supplier.	Maintain or improve customer and rep satisfaction
Growth	We have grown our top line faster than market place while responsibly growing our bottom line.	Grow market share
		Utilize TopVie to strategically manage growth and prepare for new product launch
Personnel	Our employees reach their highest potential. We are recognized in our community and by our employees as a great place to work with a progressive culture.	Train and develop team members
		Hire and retain top talent and improve team member satisfaction
Products	Retain market leadership with radar and radarmatic and become a high-volume supplier of pressure and switching.	Meet customers' expected demand Be a local and pressure company
Quality	We never stop improving our business.	Operate efficiently
		Deliver world-class quality
2024 Vision		

Scope

The Quality Management System is applicable to:

Design, Manufacturing and Servicing (including Radiation Safety Training) of Nuclear Measurement Systems.

Manufacture, Distribution, Testing and Servicing of VEGA Measurement Systems.

No exclusions have been requested.

SWOT

Annually, the Management Team, Sales Management Team, and Operations Management Team meet to discuss the status of the business. We identify our Strengths, Weaknesses, Opportunities, and Threats. We rank and discuss them to identify actions or initiatives we need to take to address issues.

Quarterly these same groups review the status of the actions and identify any adjustments that need to be taken due to changes in the industries and markets or with our Interested Parties.

STRENGTH	WEAKNESS	OPPORTUNITY	THREATS
Strong parent company	New Direct Sales Force**	New Devices = New markets**	Sales strategy
Culture	New Devices = Unfamiliar markets**	Digital IOT market capability	Economic Uncertainty
Reliable high quality product	Introduction of New Devices**	Direct Sales strategy into new territories**	Competitor focus & price strategy
New direct sales force	Space constraints**	New sales techniques	Loss of labor & experience
Best in class lead times	Weak project scope	MLI global growth**	Change in buying habits/behaviours

*Top five items from each category: 6-D SWOT meeting December, 2018

** Strategic Initiative

Quality Manual

Document: QM-0001

Page: 8 of 13

Leadership

We the leadership of VEGA Americas, Inc. endorse this Quality Manual as an accurate summary of the quality program of VEGA Americas.

All VEGA Americas employees are expected to understand, implement and maintain the quality policies of the organization.

We pledge our support to the VEGA Americas quality program through our leadership, planning, implementation, and review activities.

Management Review

Meeting	Frequency	Purpose	Evidence
6D Strategy and SWOT Meeting	Annually	To review strategy, set future goals and initiatives. Address paragraph 4.X in ISO 9001:2015	Meeting minutes (Sharepoint) SWOT
MT Quarterly Meeting	Quarterly	Detailed review of Initiatives, ISO requirements. Address paragraph 9.3 of ISO 9001:2015	Management Review Template

Quality Policy

Everyone at VEGA Americas, Inc. is part of the quality system. We strive for customer satisfaction through continuous improvement and by meeting and exceeding our customer's expectations.

- "Quality" measures how VEGA Americas, Inc. products and services meet customer expectations and are free from defects.
- Understanding and satisfying the expectations of VEGA Americas customers are our highest priorities.
- Every employee is part of our quality system.
- We will strive as individuals and as a Company to provide products and services that consistently meet all quality, schedule, and cost objectives.
- We are dedicated to continually improving the quality of our products and services by improving our business processes and operating procedures.

Quality Objectives

Metrics are vital to VEGA Americas; they monitor the pulse of our business. They reflect the customer's experience and perception of our business. They help direct our decision making in an fact-based direction.

Quality Manual

Document: QM-0001

Page: 9 of 13

The objectives are determined on an annual basis and the entire company is held accountable to meet them.

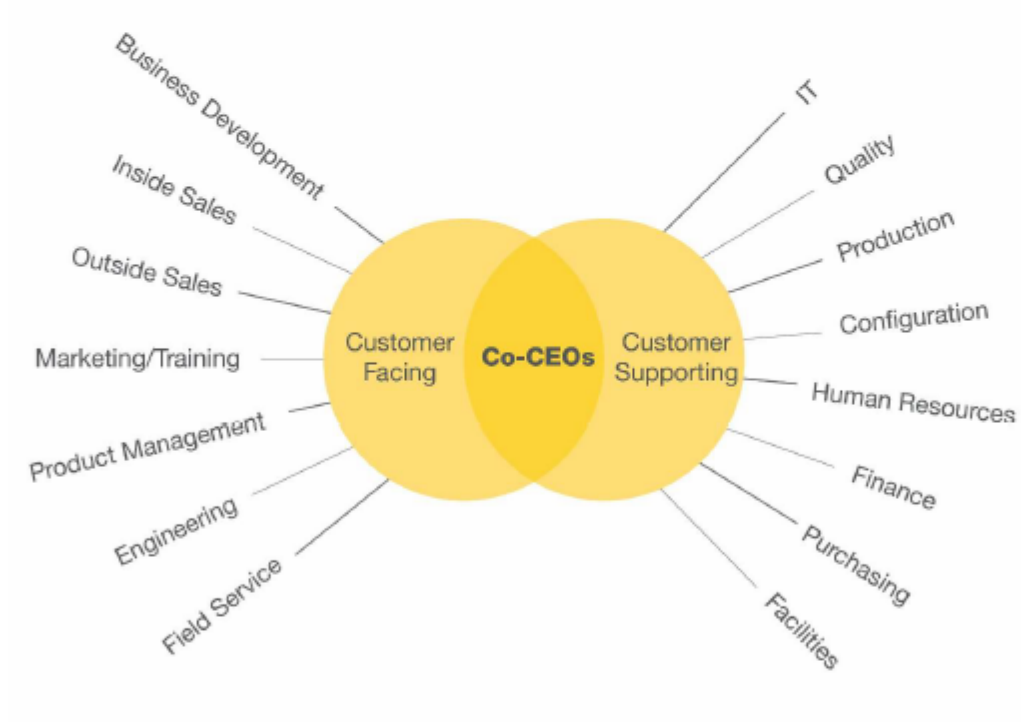
They include:

Improve Efficiency

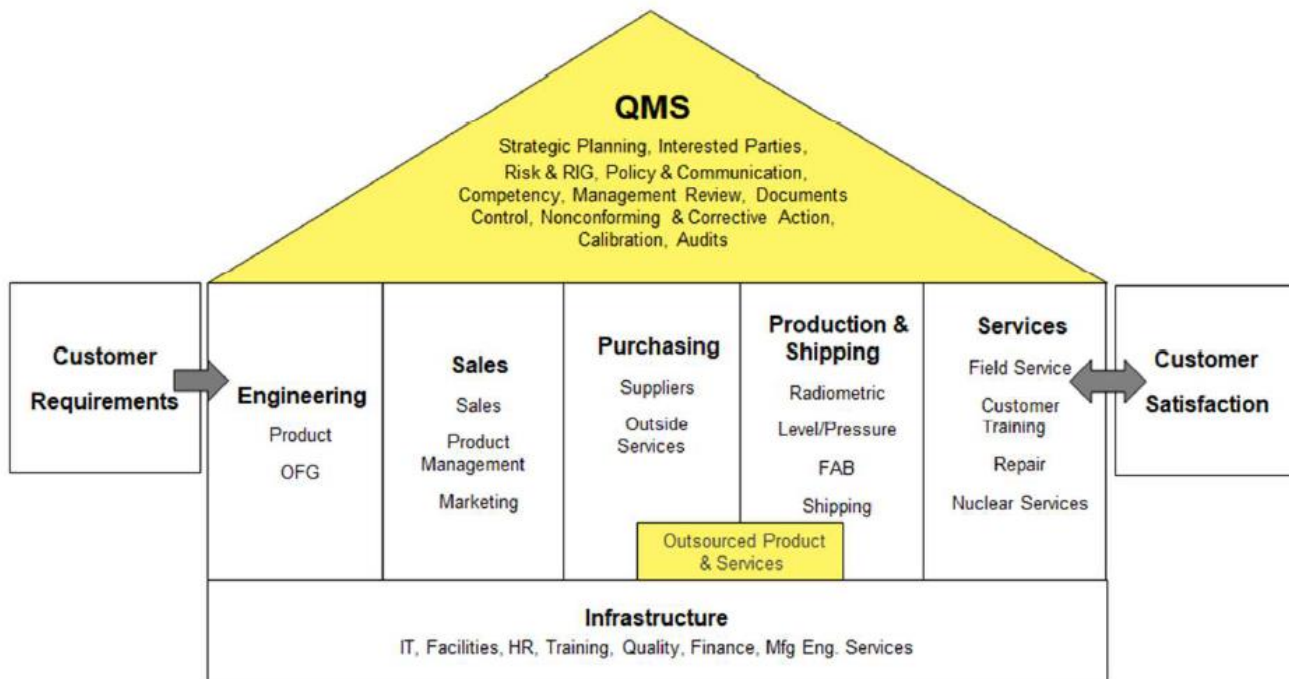
- ▲ On Time Delivery
- Revenue \$/Employee

Improve Overall Quality

- Defects per Thousand (DPT)
- CAR Cause Identified
- Supplier Performance



VEGA Americas Processes



Processes

Process	Inputs	Criteria & Methods	Resources	Outputs	Risks	Measures & KPI's
Engineering Owner: Dir. of Engineering	- Customer Communication - NCPs - CARs - Research - ECNs	- Feasibility Studies - Approval through Mgmt	- Engineering - CAD Software - MRP/TopVis	- Drawings - Product Specs - BOM - Routers	- Poor scope definition - Poor communication - Incompatibility with VEGA Germany	ECN Closure
Sales Owner: Inside Sales Mgr	- Customer requests - Product Specs - Production/Engineering constraints	- App Data Sheets - Quotes	- Inside Sales - Outside Sales - Order Entry - TopVis	- Quote - Customer Order	- Instrument doesn't perform - TopVis limitations - Order Entry Errors - Disruption of resources	- On-time Entry - Customer Survey - Quotes to Orders - Customer visits
Purchasing Owner: Materials Mgr	- Customer Order - Mfg order drawings - Bill of Materials - Vendor capability & qualification - Supplier audits	- Purchase requisitions - Part drawings - Inspection	- Purchasing - PPSV - NCP System	Purchase Order	- Supplier disruptions - Network problems - Sole Source Supplier	- Supplier Quality Score - Audits completed
Production & Shipping Owner: Mfg Mgr	- Drawings - Work order - Component parts - Fixtures/Tools - Work Instructions - PM Schedule	- Part Specs - Customer Orders - Regulatory Req't	- Production - PPSV - IQS	- Product - Test results - Documentation	- Network reliability - Unbalanced capacity - Equipment downtime	- Mfg On-Time - Shipping on-time - DPH - Internal Qual Index
Services & Training Owner: Field Service Mgr	- Customer calls - Orders - ECNs - CARs/NCPs	- Customer feedback - Training tests	- Field Service - TopVis - Training guides	- Call records - Installed equipment - CARs/ECNs - Training Certificates	- Lack of resources - TopVis down - Widespread product problem/recall - Unsafe conditions	- Customer survey - Customer feedback

Performance and Improvements

Process	Inputs	Criteria & Methods	Resources	Outputs	Risks	Measures & KPI's
Continuous Improvement	- Quality goals - NCP's/CARs - RIG Log - Customer feedback - Audits	- Non-conforming product - Customer feedback - RIG process	- Everyone - IQS	- New procedures - Improved processes - RIG projects - Initiative projects	Lack of training on CI process	- Journey Map Success - Audit results
Management Review	6D Plan data - SWOT feedback - MT/SMT/OMT meeting data	- Monthly MT meetings - Quarterly meetings	- Powerpoint - Management Team	Annual Initiative list & projects	Lack of MT/SMT/OMT engagement	Journey Map Goal Success
Audits	- Standards - Work Instructions - Orders	- Standards - Specification - Schedule	- Trained auditors - IQS	- Audit report - CARs - Mgmt Review	- Qualified Auditors - Auditor availability	- ISO Certification - Agency Approvals

Revision Notes

Revision 17

- Updated SWOT information from 2020 planning meeting.
- Updated Quality Objectives for 2020.
- Updated HR Manager.

Appendix 5 – Technical Description

VEGAZW-6-55996

Overfill protection with continuous
level measuring device for containers
for the storage of substances hazardous to water

VEGA

VEGAPULS 21

VEGAPULS 31

VEGAPULS C 21

VEGAPULS C 22

VEGAPULS C 23

Technical Description

Rev.: 30.08.2019

1 Design of the overfill protection

The continuous level measuring system consists of the following parts:

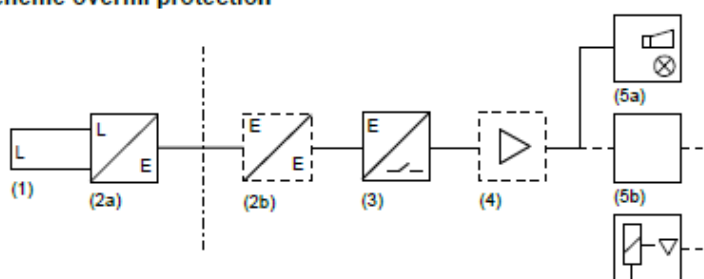
- a level sensor (radar antenna with FMCW radar) (1), which determines the time interval between the transmission of the signal and the detection of the reflected signal.
- a built-in measuring transducer (2a), which converts the time interval into an analog or digital output signal.

Optionally, the output signal can be fed via a further measuring transducer (supply isolator) (2b) or it is fed directly via a limit switch (3).

If required, the output signal is fed via a signal amplifier (4) to the signalling device (5a) or the control device (5b) with its actuator (5c).

The non-tested system parts of the overfill prevention system, such as the supply isolator (2b), limit switch (3), signal amplifier (4), the signaling device (5a) or the control device (5b) with the final control element (5c) must comply with the requirements of sections 3 and 4 of the approval principles for overfill prevention systems (ZG-ÜS).

1.1 Scheme overfill protection



- (1) Level sensor
- (2a) Measuring transducer with binary output/digital output
- (2b) Ex supply isolator
- (3) Limit switch
- (4) Signal amplifier
- (5a) Signaling device
- (5b) Control device
- (5c) Control element

1.2 Description of function

The device transmits a continuous radar signal via its antenna. The frequency of this signal changes in a sawtooth shape. The transmitted signal is reflected by the medium and received by the antenna as an echo with a changed frequency. The frequency change is proportional to the distance and is converted into the level.

1.3 Type code

The type code is not located on the level switch, but is stored via the serial number which is located on the instrument (see chapter 7 for further information).

VEGAPULS 21 and VEGAPULS 31

PS21.ab-c-d-e-f-g-h

PS31.ab-c-d-e-f-g-h

ab	Explosion protection
XX	without, for Ex free area (CE, c-CSA-us, FM-us, EAC, RCM)
*	additional approvals
c	Approval Overfill Protection
W	with
d	Ship approval
X	without
*	with
e	Foodstuff/Pharmaceutical certificate
X	without
*	with
f	Process connection
G	Thread G 1½"
N	Thread NPT 1½"
R	Thread R 1½"
g	Electronic
H	Two-wire 4...20 mA/HART
h	Sensor setting via smartphone and VEGA Tools app
X	without
B	with

* Approval has no influence on tested device design

The difference between VEGAPULS 21 and VEGAPULS 31 is the integrated indicating and adjustment unit that is installed in VEGAPULS 31. With this unit, the instrument can be adjusted directly and measured values can be read out through the inspection window in the housing cover.

VEGAPULS C 21 and VEGAPULS C 22

PSC21.ab-c-d-e-f-g-h-i

PSC22.ab-c-d-e-f-g-h-i

ab	Explosion protection
XX	without, for Ex free area (CE, c-CSA-us, FM-us, EAC, RCM)
*	additional approvals
c	Approval Overfill Protection
W	with
d	Ship approval
X	without
*	with
e	Foodstuff/Pharmaceutical certificate
X	without
*	with
f	Thread process connection / cable entry**
G	Thread G 1½" / G 1"
N	Thread NPT 1½" / NPT 1"
R	Thread R 1½" / R 1"
g	Cable material / length
A	PUR / 5m
***	Additional options
h	Electronic
H	Two-wire 4...20 mA/HART
i	Sensor setting via smartphone and VEGA Tools app
X	without
B	with

* Approval has no influence on tested device design

** PULS C 22 has no cable entry thread

*** Cable length and material have no influence on the device function

VEGAPULS C 23

PSC23.ab-c-d-e-f-g-h-i

ab	Explosion protection
XX	without, for Ex free area (CE, c-CSA-us, FM-us, EAC, RCM)
*	additional approvals
c	Approval Overfill Protection
W	with
d	Ship approval
X	without
*	with
e	Foodstuff/Pharmaceutical certificate
X	without
*	with
f	Process connection
F	Thread G 1"
M	Thread NPT 1"
Q	Thread R 1"
g	Cable material / length
A	PUR / 5m
**	Additional options
h	Electronic
H	Two-wire 4...20 mA/HART
i	Sensor setting via smartphone and VEGA Tools app
X	without
B	with

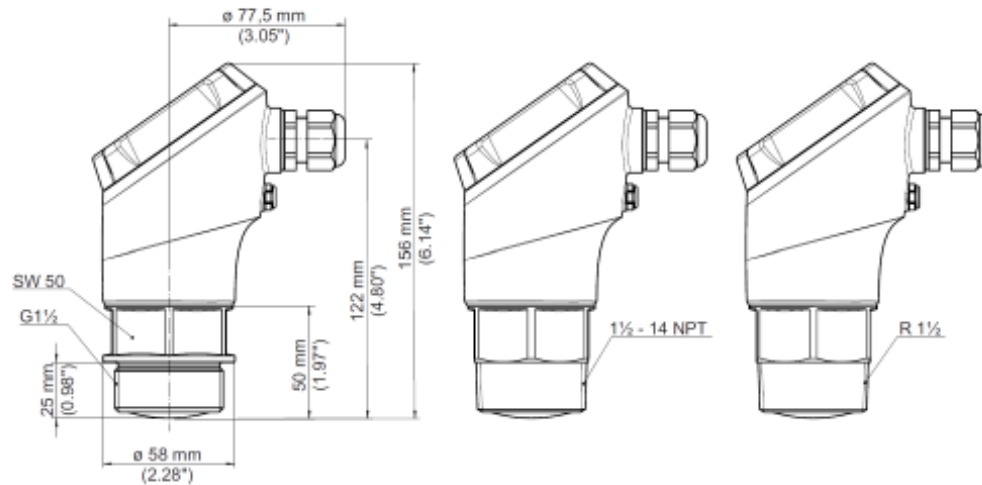
* Approval has no influence on tested device design

** Cable length and material have no influence on the device function

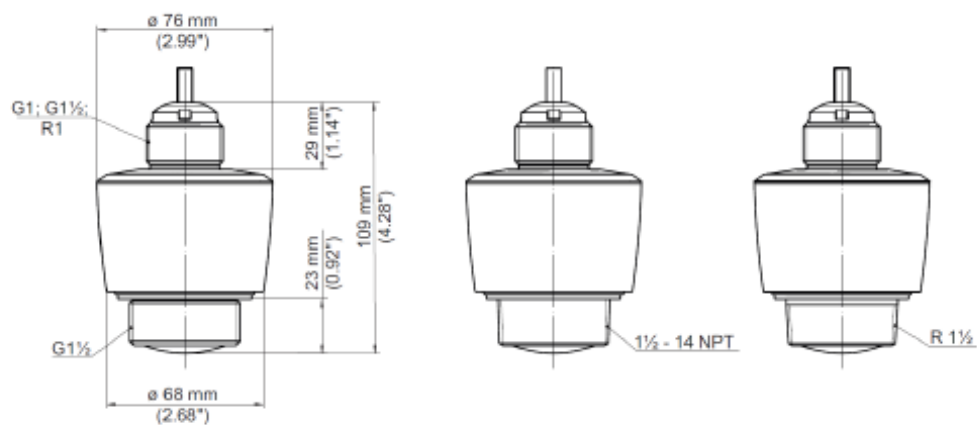
1.4 Dimension drawings and technical data

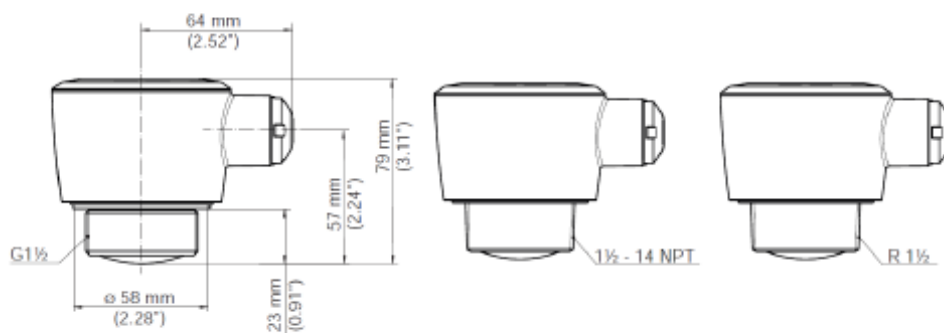
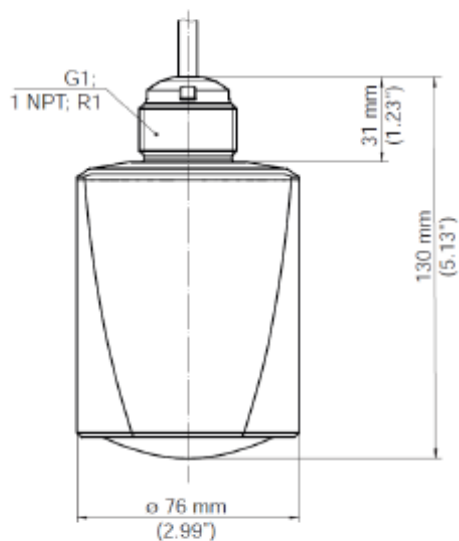
1.4.1 Dimension drawings

VEGAPULS 21 and VEGAPULS 31:



VEGAPULS C 21:



VEGAPULS C 22:**VEGAPULS C 23:**

1.4.2 Technical data

If not mentioned additionally, the following information is valid for VEGAPULS 21, 31 as well as for VEGAPULS C 21, 22, 23. For Ex instruments, the supplied safety instructions must be strictly observed.

Environmental conditions

Ambient temperature

- | | | |
|---|-----------------------|--------------|
| - | VEGAPULS 21, 31 | -40...+70 °C |
| - | VEGAPULS C 21, 22, 23 | -40...+80 °C |

Electrical protective measures

Ingress Protection

- | | | |
|---|-----------------------|-----------------|
| - | VEGAPULS 21, 31 | IP66/67 |
| - | VEGAPULS C 21, 22, 23 | IP66/68 (3 bar) |

Process parameters

Process pressure	-1...+3 bar
------------------	-------------

Process temperature	-40...+80 °C
---------------------	--------------

Power supply

Operating voltage	12...35 V DC
-------------------	--------------

Operating voltage with illuminated display (PULS 31)	15...35 V DC
--	--------------

Data current output

Output signal	4...20 mA/HART
Range of output signal (default)	3,8...20,5 mA/HART
Failure signal current output (adjustable)	20,5 mA, 22 mA or <3,6 mA

Measurement characteristics

Measuring cycle time (with 24 V DC power supply)	≤ 500 ms
--	----------

Step response time (with 24 V DC power supply)	≤ 3 s
--	-------

Additional information can be taken from the general operating instructions.

2 Materials

Only parts of the level detector made of the following materials come into contact with the storage medium, its vapours or condensates:

Process connection / antenna VEGAPULS 21, 31:	Polyvinylidene fluoride (PVDF)
Enclosure VEGAPULS C 21, 22, 23:	Polyvinylidene fluoride (PVDF)
Process gasket with G 1½" thread:	Fluororubber (FKM)

All other materials of the continuous stand measuring system that do not come into contact with media can be found in the general operating instructions.

3 Field of application

The continuous level measuring devices can be used at the pressures and temperatures specified under "Technical data" (1.4.2).

The protection class of the enclosure depends on the selected instrument version (see 1.3).

The installation instructions (Section 5) and the general operating instructions must be observed.

4 Fault and error message

Failure of the supply voltage and line breakage lead to a drop in the measurement signal. The drop of the measuring signal must be reported as a fault.

The fault signal current ($< 3.6 \text{ mA}$ or $\geq 20.5 \text{ mA}$) set in the device during installation must be recognized as a fault signal by the downstream system parts of the overfill protection. In case of a digital evaluation, the fault signal must also be evaluated.

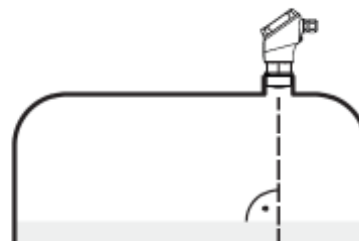
In general, any exceeding or falling below the set measuring signal must be detected as a fault.

5 Installation Instructions

5.1 Installation

The continuous level measuring system must be installed in such a way that the radar signal impinges as perpendicularly as possible on the medium to be measured.

There must be no interfering surface (e.g. an agitator) on the direct path between the antenna (process connection) and the medium, which could erroneously reflect the radar signal.



If interference surfaces cannot be avoided, an interference signal suppression must be set in the device (see general operating instructions).

Further notes and information can be taken from the general operating instructions.

5.2 Wiring and connection instructions

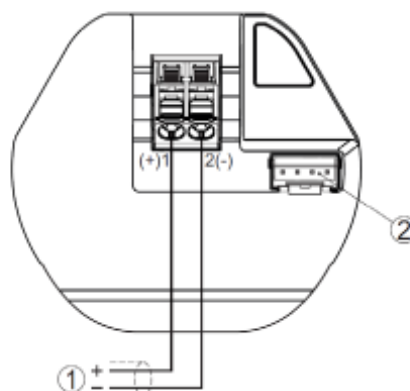
VEGAPULS 21 and VEGAPULS 31

The devices are connected with a two-core cable. If external interference is expected, a shielded cable must be used.

The marking of the terminals in the terminal compartment must be observed.

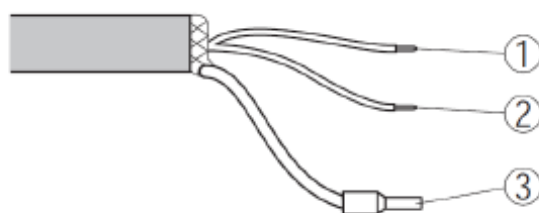
Anschlussplan VEGAPULS 21 und VEGAPULS 31

- 1 Supply voltage +/-
- 2 Plug connector for display and adjustment module (VEGAPULS 31)



VEGAPULS C 21, 22, 23

The units are supplied with a permanently connected PUR cable. This cable has either a black cable sheath (standard) or a blue cable sheath (Ex ia device). If external interferences are expected, the shielding must be connected.

Connection diagram VEGAPULS C 21, 22, 23

	Wire colour	Function	Polarity
1	Brown	Voltage supply, signal output	Plus (+)
2	Blue	Voltage supply, signal output	Minus (-)

	Wire colour	Function	Polarity
3		Shielding	

6 Adjustment hints

6.1 Adjustment

The level measurement sensors can be adjusted with

- Bluetooth-Communication (Smartphone/Tablet/Notebook/PC)
- PC/Notebook together with a VEGACONNECT
- the integrated display and adjustment module (only with VEGAPULS 31)

If a VEGAPULS 31 with adjustment unit is used, an instrument code must be entered after the adjustment, no matter of which type, under the menu item "Parameter adjustment protection" to protect the sensor against unwanted or unintentional changes.

The exact procedure for the individual adjustment options must be taken from the general operating instructions. This is available at any time via the serial number of the unit digitally on www.vega.com (see chapter 7 for further information).

6.2 Device access via Bluetooth

If the Bluetooth communication was not deactivated when ordering the continuous stand measuring device, it can be set by connecting it to the appropriate power supply (see type plate on the device) via Bluetooth.

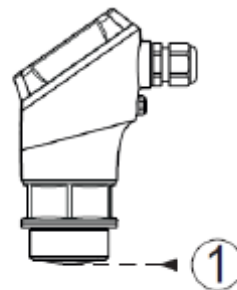
This requires either the VEGA Tools app (Apple App Store, Google Play Store) in combination with a Smartphone/Tablet or a PC/Notebook (Bluetooth capable) in combination with the current VEGA project assistant.

To access the device, the Bluetooth access code is required. This is supplied with the continuous stand measuring device on the information sheet "PINs and codes". Afterwards, the stand level switch can be adjusted to suit the application.

Further information can be taken from the general operating instructions.

6.3 Reference plane for min/max adjustment

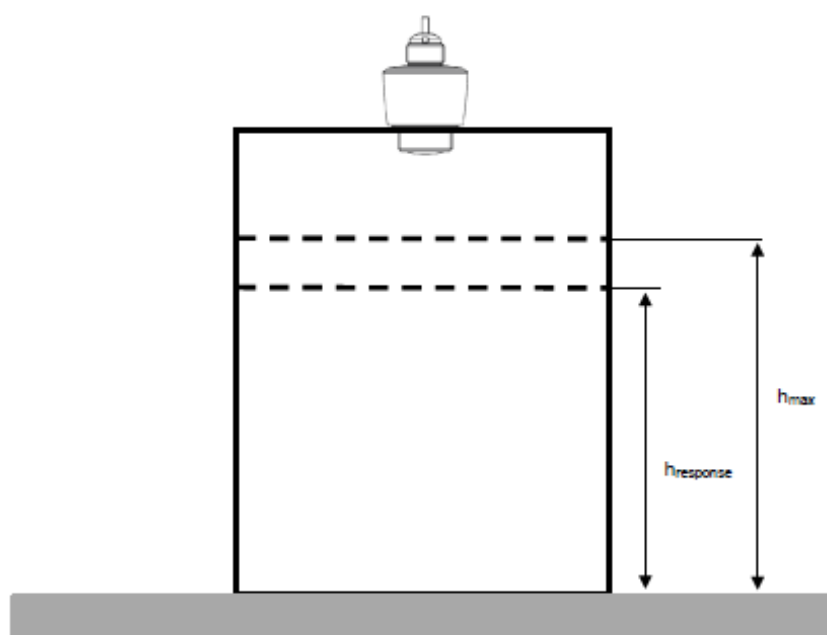
The antenna edge (1, picture right) is the beginning of the measuring range and at the same time the reference plane for the min/max adjustment.



6.4 Calculation of the response level

To determine the response level of the overfill prevention system, the overrun quantity and the cycle times shall be taken into account according to Annex 1 of the ZG-ÜS to ensure that the permissible filling level of the tank is not exceeded.

The measuring cycle time of VEGAPULS 21, 31 and VEGAPULS C 21, 22, 23 instruments is approx. 0.5 seconds in the basic adjustment. If extremely fast level changes can occur in the vessel, the step response time of approx. 3 seconds must be taken into account.



An example for the calculation of the response level for a 4 to 20 mA standard signal can be found in appendix 1 of the approval principles for overfill protection systems (ZG-ÜS).

7 Operating Instructions

The tested system components of the overfill protection system must be connected to a signal or control device. If necessary, the signalling and control devices shall be controlled by a signal amplifier (e.g. a contactor or an evaluation unit, depending on the output signal variant).

If the continuous stand measuring system, if certified for it, is used in a potentially explosive area, the corresponding safety instructions must be observed.

The general operating instructions of the equipment used as well as the requirements of appendices 1 and 2 of the approval principles for overfill prevention systems (ZG-ÜS) must be observed.

Note:

All documents belonging to the level limit switch (operating instructions, safety instructions, etc.) can be called up at any time via the device search on www.vega.com using the serial number on the level limit switch. The serial number can also be read out from the functioning instrument via Bluetooth with the VEGA Tools app (Tablet/Smartphone) or PACTware/VEGA DTM (Windows PC).

Before commissioning, all devices of the overfill protection system must be checked for correct connection and correct function.

8 Periodic inspection

The functionality of the overfill protection system must be checked at appropriate intervals, but at least once a year. It is the responsibility of the operator to choose the type of inspection and the intervals within the specified time frame.

The test is to be carried out in such a way that the proper function of the overfill prevention system is verified in the interaction of all components. This is guaranteed when the response height is approached during a filling process. If a filling up to the response height is not practicable, the continuous level measuring device shall be made to respond by suitable simulation of the filling level or the physical measuring effect. If the functionality of the level sensor/measuring transducer can be recognized in some other way (exclusion of function-locking faults), the test can also be carried out by simulating the corresponding output signal. Further information on the test method can be found, for example, in the VDI/VDE 2180 guideline, Sheet 4.

Appendix 6 – Annual Operability

A function test should be performed annually. The radar sensor distance measurement shall be verified by measuring an object at a known distance. This can be on the bench with a fixed target, or while installed, if the level is at a verifiable distance from the radar sensor. On a bench test, the distance should be manageable in that the actual distance can be measured accurately using a calibrated tape. Usually a distance of approximately 10 feet is used. See Section 8 of the Technical Description for additional information.

Appendix 7 - Technical Information and Photos

12.08.2019	Prüfprotokoll Projekt-Nr. „Prüfung nach ZG-ÜS“	VEGA
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WHG-Prüfung VEGAPULS C 2x, 31 mit VEGAMET8xx

Beschreibung Testobjekt 1	
Testobjekt (DUT)	VEGAPULS 31 mit 4...20mA/HART-Elektronik → Radarsensor zur kontinuierlichen Füllstandmessung 
Baugruppe/-teil	---
Artikel-Nr.	PS31.XXXXXGMHB
Kennzeichnung	s/n: 44351293 → PM1 (Prüfmuster 1)
Beschreibung Testobjekte 2.1 und 2.2	
Testobjekt (DUT)	VEGAPULS C 21 mit 4...20mA/HART-Elektronik → Radarsensor zur kontinuierlichen Füllstandmessung 
Baugruppe/-teil	---
Artikel-Nr.	PM2.1: PSC21.VHXXXGBHB PM2.2: PSC21.VBXXXGBHB
Kennzeichnung	s/n: 13202008 → PM2.1 (Prüfmuster 2.1) → H = ia Elektronik s/n: 14202003 → PM2.2 (Prüfmuster 2.2) → H1 = mb Elektronik

12.08.2019	Prüfprotokoll Projekt-Nr. „Prüfung nach ZG-ÜS“	VEGA
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Beschreibung Testobjekt 3

Testobjekt (DUT)	VEGAPULS C 23 mit 4...20mA/HART-Elektronik → Radarsensor zur kontinuierlichen Füllstandmessung von Flüssigkeiten
	
Baugruppe/-teil	---
Artikel-Nr.	PSC23.XXXXXFBHB
Kennzeichnung	s/n: 13202007 → PM3 (Prüfmuster 3)

Beschreibung Testobjekt 4

Testobjekt (DUT)	VEGAMET 842 4...20mA → Steuergerät im Feldgehäuse für einen kontinuierlich messenden analogen Füllstandsensor
	
Baugruppe/-teil	---
Artikel-Nr.	MET842.XXXSC
Kennzeichnung	s/n: 45204100 → PM4 (Prüfmuster 4)

Appendix 8 – Storage Tank Equipment Registration Forms



Department of Environmental Protection

2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DEP Form: 62-761.900(9)
Form Title: Storage Tank Equipment
Registration Form
Effective Date: July 2019
Incorporated in Rule 62-761.850, F.A.C.

Storage Tank System Equipment Registration Form

Fill out completely

General Information

Company Name: VEGA Americas, Inc. Contact Name: Greg Tischler
Company Address: 4170 Rosslyn Drive, Cincinnati, OH 45209 City, State: Cincinnati, OH Zip: 45209
E-mail: g.tischler@vega.com Contact Number: 513 272 7476

Product Name: VEGAPULS

Model Number(s): VEGAPULS 21, 31, C21, C22, and C23 Product Type: Liquid Level Gauges

Rule(s) citation that registration is being requested within Chapter 62-761 (UST), and/or 62-762 (AST),
62-762.501(2)(e), 62-762.502(2)(e), and 62-762.851(2), F.A.C. Also similar citations for USTs

F.A.C.: Write a brief description of equipment registration request including product limitations:

The request is sought by VEGA Americas, Inc. for five models for liquid level gauging in flammable liquids in stationary tanks. The VEGAPULS 21, 31, C21, C22, and C23 are intended for use with all petroleum products and their derivatives. This series of radar level sensors can be used with solvents, alcohols, ethanol and other chemical solutions including acids. They are not intended to be used with ammonia.

Information Checklist (Choose Yes, No, or N/A - Not Applicable):

	Yes	No	N/A
1. Third-party Certification by a Nationally Recognized Testing Laboratory? (Required)	☒	☐	☐
2. Documentation of third-party evaluation that the equipment meets DEP Rules?	☒	☐	☐
3. Documents included about the qualifications of the Nationally Recognized Testing Laboratory?	☒	☐	☐
4. Technical information and drawings included?	☒	☐	☐
5. Installation instructions included?	☒	☐	☐
6. Annual Operability Testing Requirements (Rules 62-761.500, 62-762.501, & 62-762.502 F.A.C.)?	☒	☐	☐
7. Integrity Testing Requirements (Rules 62-761.700, 62-762.701, & 62-762.702, F.A.C.)?	☐	☐	☒
8. Compatible with fuel blends containing >10% ethanol or >20% biodiesel?	☒	☐	☐
9. Has the product been approved or registered in other countries or states? (If so provide list)	☐	☒	☐
10. Any requirements for company-certified installers or trainers?	☐	☒	☐
11. Was this product(s) previously approved or registered by the Department? If yes, EQ- _____	☐	☒	☐
12. Any changes or modifications to the equipment since the last submittal to DEP?	☐	☒	☐

Document Information: Provide supporting documents indicated as "Yes" above including this form via email to Tanknotify@floridadep.gov, or documents can be sent to FDEP, Division of Waste Management, 2600 Blair Stone Road, MS 4560, Tallahassee, FL 32399.

Write a brief description of equipment installation and performance in the U.S.:

The models identified are designed to be installed in the field by experienced installers and contractors for field-erected and shop-fabricated aboveground storage tanks as well as underground storage tanks. The primary use will be for ASTs, but the systems can be used in USTs as well.

Equipment Registration Certification:

To the best of my knowledge and belief, all information submitted on this form is true, accurate and complete.

Marshall T. Mott-Smith, President, Mott-Smith Consulting Grp.
Printed Name and Title

Marshall T. Mott-Smith
Signature (right click to sign)

11/18/2020
Date

For Department Use Only:

Date Application Received: _____ Application complete: Yes: ☐ No: ☐

EQ- Date of complete or incomplete letter sent: _____ Date Equipment Requires Renewal:

Storage tank system equipment requires renewal every 5 years in accordance with subsection 62-761.850(2), F.A.C.