Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) # EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 03 ATEX 2089 X **Issue: 01**

(4) Product: Radar sensors VEGAPULS type series PS62(*).CX****P/F/K/L**** resp. PS66/68/SR68(*).CX****P/F**** resp. PS61/63(*).CX***P/F/K/L**** resp. PS65(*).CX***P/F****

(5) Manufacturer: VEGA Grieshaber KG.

(6) Address: Am Hohenstein 113, 77761 Schiltach, Germany.

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 18-27086.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012+A11:2013 EN 60079-11:2012 EN 60079-26:2015

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Ex 1 G, 1/2 G or 2 G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb

Konformitätsbewertungsstelle Sektor Explosionsschutz Braunschweig, September 24, 2018
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor

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(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 03 ATEX 2089 X, Issue: 01**

(15) Description of Product

The radar sensors VEGAPULS type series PS62(*).CX****P/F/K/L**** resp. PS66/68/SR68(*).CX****P/F**** resp. VEGAPULS PS61/63(*).CX***P/F/K/L**** resp. VEGAPULS PS65(*).CX***P/F****:
The radar sensors consists of an electronic housing with the corresponding analyzing electronic system with integrated Profibus PA-electronic assemblies resp. PS60PAC resp. PS60PAK resp. PS60PAS resp. with integrated Foundation Fieldbus-electronic assemblies resp. PS60FFC resp. PS60FFK resp. PS60FFS resp. PLICSZEKX.-01/-02, with a process connection element and an measuring sensor. They are used for level measurement in potentially explosive atmospheres requiring category-1, category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module "PLICSCOM" or PLICSCOM(*).*B/W/U* (TÜV 15 ATEX 161127 U) or VEGACONNECT or connected to the external display VEGADIS61/81 for parameterization or visualization.

Extract from the type key

VEGAPULS PS62/66/68/SR68(*).	C	*	*	*	*	*	*	*	*	*	*
	a	b	c	d	e	f	g	h	i	j	K

ab: Area of validity.

- **CX = ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.**
- CA = ATEX with additional overfill protection.
- CM = ATEX with ship approval.
- CI = IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.
- CK = ATEX II 1/2G, 2G Ex ia IIC T6...T1 Ga/Gb, Gb +
  ATEX II 1D 1/2D 2D Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66
  IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb +
  IECEx Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66

c: Version / Material.

de: Process connection / Material.

f: Seal / Process temperature

g: Electronics.

- P = Profibus PA.
- F = Foundation Fieldbus FF.
- K = Profibus PA with sensitiv electronic.
- L = Fieldbus FFwith sensitive electronic.

VEGAPULS PS62(*).CX**P/F/K/L****

VEGAPULS PS66/68/SR68(*).CX**P/F****

h: Enclosure / Protection.

i: Cable gland / Plug connection

j: Display / Adjustment module PLICSCOM.

k: Additional equipment.

The full type key can be found in the safety instructions.

VEGAPULS PS61/63/65(*). **C** * * * * * * * * *
a b c d e f g h i j

ab: area of validity.

CX = ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

CA = ATEX with additional overfill protection.

CM = ATEX with ship approval.

CI = IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

VEGAPULS PS63(*). **C** * * * * * * * * *
a b c d e f g h i j

CK = ATEX II 1/2G, 2G Ex ia IIC T6...T1 Ga/Gb, Gb +
ATEX II 1D 1/2D 2D Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66
IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb +
IECEx Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66

c: Version / process temperature / material.

de: Process connection / material.

f: Electronics.

P = Profibus PA / Profibus PA.

F = Foundation Fieldbus FF / Foundation Fieldbus FF.

K = Profibus PA with sensitiv electronic.

L = Foundation Fieldbus FF with sensitive electronic.

VEGAPULS PS61/63(*).CX*P/F/K/L****

VEGAPULS PS65(*).CX*P/F****

g: Enclosure / Protection.

h: Cable gland / Plug connection

i: Display / Adjustment module PLICSCOM.

j: Additional equipment.

The full type key can be found in the safety instructions.

Category 1-equipment

The radar sensors are installed in potentially explosive atmospheres requiring category 1-equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

Category-2 equipment

The radar sensors are installed in potentially explosive atmospheres requiring category 2 equipment..

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made as follows:

The radar sensors VEGAPULS type series PS62(*).CX**P/F/K/L**** resp. PS66/68/SR68(*).CX****P/F**** resp. PS61/63(*).CX***P/F/K/L**** resp. PS65(*).CX***P/F****:**

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the different type series VEGAPULS PS6*/SR68(*).CX** must be observed from the safety instruction document nos. 37991-DE, 37992-DE, 37993-DE, 37994-DE, 37995-DE and 39577-DE, clause 4.

Category 1-Equipment

For applications requiring category-1 equipment, the media process pressure has to be between 80 kPa and 110 kPa (0,8 bar and 1,1 bar).
For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer. For further information refer to the safety instruction document.

Category 1/2-equipment

The process pressure of the media for use with required category 1/2-equipment must be in the range of 80 kPa and 110 kPa (0,8 bar and 1,1 bar).
When the radar sensors are operated with higher temperatures than indicated in the safety instructions, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used.

For operating conditions without explosive mixtures, the manufacturer indications are applicable and must be considered. For further information refer to the safety instruction document.

Category 2-equipment

When the radar sensors are operated with higher temperatures than indicated in the safety instructions, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used.

For operating conditions without explosive mixtures the manufacturer indications are applicable and must be considered. For further information refer to the safety instruction document.

Electrical data:

	VEGAPULS PS66/68/SR68 (*).CX**P/F**** **VEGAPULS PS62(*).CX****P/F/K/L**** **VEGAPULS PS65(*).CX***P/F**** **VEGAPULS PS61/63(*).CX***P/F/K/L****
Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment or for the 2-chamber-enclosure version in the terminal compartment of the VEGAPULS)	In type of protection Intrinsic Safety Ex ia IIC For connection to a certified intrinsically safe circuit. Maximum values: U_i = 17.5 V I_i = 500 mA P_i = 5.5 W C_i negligibly smallle~~w~~. $L_i \leq 10$ µH. The instrument is suitable for connection to a Fieldbus system according to the FISCO model, e.g. Profibus PA, Foundation Fieldbus. or: Ui = 24 V Ii = 250 mA Pi = 1.2 W C_i negligibly small or in the version with fixed cable, $C_i = C_i'_{core/core}$ = 159 pF/m + $C_i'_{core/screen}$ = 270 pF/m $L_i \leq 10$ µH or in the version with fixed cable $L_i = L' (0{,}55$ µH/m) + 10 µH.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X, Issue: 01

Control and display circuit (terminals Nos. 5,6,7,8 in the electronic compartment or plug connector for the 2-chamber-enclosure version)	In type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61/81 (PTB 02 ATEX 2136 X). The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS type series PS6*/SR68(*).CX** and the external VEGADIS61/81 display unit are complied with if the total inductance and capacitance of the connecting line between the radar sensors VEGAPULS type series PS6*/SR68(*).CX*** and VEGADIS61/81 (L_{cable} = 310 µH and C_{cable} = 2 µF) is not exceeded. By using of the provided VEGA connecting cable between VEGAPULS PS6*/SR68(*).CX** and the external display unit VEGADIS61/81 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m: L_i' = 0.62 µH/m $C_i'_{core/core}$ = 132 pF/m $C_i'_{core/screen}$ = 208 pF/m $C_i'_{screen/screen}$ = 192 pF/m
Control and display module circuit (spring contacts in the electronic compartment, additionally for the 2-chamber-enclosure version in the terminal compartment)	In type of protection Intrinsic Safety Ex ia IIC For connection to the VEGA control and display module PLICSCOM or PLICSCOM*B/W/U (TÜV 15 ATEX 161127 U) or VEGACONNECT (PTB 07 ATEX 2013 X). With the 2-chamber-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.

The metal elements of the radar sensors type series VEGAPULS PS6*/SR6*** are electrically connected to the earth terminals..

In the versions of the radar sensors VEGAPULS type series PS6*/SR6*** the intrinsically safe circuit is electrically isolated from elements that may be earthed.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X, Issue: 01

Modifications to the EC-Type-Examination Certificate:

Update to newest standard versions of EN 60079-0, EN 60079-11 and EN 60079-26:2015.

Modification of model coding in the EU- Type Examination Certificate in protection type "Ex ia":
Radar sensors VEGAPULS type series PS62(*).CX****P/K/F/L**** resp.
VEGAPULS PS66/68/SR68(*).CX****P/F**** resp.
VEGAPULS PS61/63(*).CX***P/F/K/L**** resp. VEGAPULS PS65(*).CX***P/F****.

Change of the internal construction, based on the use of the alternative electronic module PLICSZEKX.-01/-02.(PTB 14 ATEX 2007X issue 01).

Consideration of the EC-Type Examination Certificate TÜV 15 ATEX 161127 U for the inclusion of display – and adjustment module PLICSCOM or PLICSCOM(*).*B/W/U* (TÜV 15 ATEX 161127 U) in the "Ex-i" electronic compartment, terminal compartment of the 2-chamber enclosure version with additional operating modes.

Additional marking for the operation as intrinsically safe field device acc. FISCO:
"FISCO Field Device"

(16) Test Report PTB Ex 18-27086

(17) Specific conditions of use

1) The radar sensors VEGAPULS type series PS61/62/63(*).CX(*)***P/F/K/L**** and VEGAPULS PS65/66/68/SR68(*).CX(*)***P/F**** which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2) The radar sensors with plastic enclosure, metal enclosure with display window, with enclosure parts made of plastic as well as sensors including surfaces that can become charged electrostatically (note warning label).
3) The radar sensors in the versions with standpipe or antenna extension shall be installed in such a way that contact between the antenna and the tank wall will be excluded with sufficient safety, considering the tank installations and the flow conditions inside the tank.
4) When used as category-1 or category-1/2 equipment, the level measuring instruments shall be connected to the equipotential bonding conductor (contact resistance ≤ 1MΩ) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
5) For applications where equipment of category- 1 or category- 1/2 is required, all parts of the radar sensors which are in contact with the medium must only be used in such media, against which the materials are sufficiently resistant.

6) For the radar sensors in the version with ball valve, it must be observed that the ball valve is closed before the flange connection is disconnected.

7) For the radar sensors in the version with flushing connection, it must be observed that the radar sensors, when operating as category -1/2 equipment, have protection class IP 67 at the connection to the non-return valve. After removing the check valve or the rinsing device on the non-return valve, the opening must be sealed with a suitable screw plug so that protection class IP 67 is maintained.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz Braunschweig, September 24, 2018
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

4. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

(Translation)

Equipment: Radar-sensors Type VEGAPULS PS6*.C(*)****K/L/P/F***

Marking: Ⓔx **II 1 G, 1/2G, 2 G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Deutschland

Description of supplements and modifications

The name of the radar-sensors type series VEGAPULS type series VEGAPULS PS6*.C(*)****K/L/P/F**** changes in radar sensors type series VEGAPULS PS6*(*).C(*)****K/L/P/F****. In future the radar sensors will be manufactured and operated in accordance with the test documents mentioned under section 3.

The marking is changed as follows: Ⓔx **II 1 G, 1/2G, 2 G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb**

Type list of the radar sensors:

VEGAPULS PS61(*).C****K/L/P/F****
VEGAPULS PS62(*).C*****K/L/P/F****
VEGAPULS PS63(*).C****K/L/P/F****
VEGAPULS PS65(*).C****P/F****
VEGAPULS PS66(*).C*****P/F****

Further modifications concern the marking, the internal and external construction, the electrical data and the temperature tables.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Radar-sensors type series VEGAPULS PS6*(*).C(*)**K/L/P/F****

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... + 42 °C	-20 ... +42 °C
T4, T3, T2, T1	-20 ... + 60 °C	-20 ... +60 °C

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4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

For applications requiring category-1 equipment, the pressure of the explosive atmosphere has to be between 0.8 bar and 1.1 bar. The permissible ambient temperature of the sensor and of the electronics specified are based on section 6.4.2 of EN 1127-1.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... + 60 °C	-40 ... +46 °C
T5	-20 ... + 60 °C	-40 ... +61 °C
T4, T3, T2, T1	-20 ... + 60 °C	-40 ... +82 °C

For applications requiring category-1 equipment, the pressure of the explosive atmosphere has to be between 0.8 bar and 1.1 bar. When the sensors of the VEGAPULS PS6*(*).*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +46 °C
T5	-60 ... +100 °C	-40 ... +61 °C
T4	-60 ... +135 °C	-40 ... +82 °C
T3	-60 ... +200 °C	-40 ... +82 °C
T2	-60 ... +300 °C	-40 ... +82 °C
T1	-60 ... +450 °C	-40 ... +82 °C

When the sensors of the VEGAPULS PS6*(*).*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

Radar-sensors type series VEGAPULS PS63(*).C**K/L/P/F**** in the low temperature version down to -170°C**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +46 °C
T5	-170 ... +100 °C	-40 ... +61 °C
T4	-170 ... +135 °C	-40 ... +82 °C
T3, T2, T1	-170 ... +200 °C	-40 ... +82 °C

When the sensors of the VEGAPULS PS63(*).*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Radar-sensors type series VEGAPULS PS62(*).C***K/L/P/F**** in the low temperature version down to -170°C**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +46 °C
T5	-170 ... +100 °C	-40 ... +61 °C
T4	-170 ... +135 °C	-40 ... +82 °C
T3	-170 ... +200 °C	-40 ... +82 °C
T2	-170 ... +300 °C	-40 ... +82 °C
T1	-170 ... +450 °C	-40 ... +82 °C

When the sensors of the VEGAPULS PS62(*).*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment, for the 2-cell enclosure version in the terminal compartment)	**Category 1 or Category 1/2** in type of protection Intrinsic Safety Ex ia IIC/IIB **Category 2** in type of protection Intrinsic Safety Ex ia IIC/IIB or Ex ib IIC/IIB

	For connection to a certified intrinsically safe circuit. Maximum values: U_i = 17.5 V I_i = 500 mA P_i = 5.5 W C_i negligibly low $L_i \leq 5$ µH The equipment is suitable for the connection to a field bus system according to FISCO (IEC 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus. or U_i = 24 V I_i = 250 mA P_i = 1.2 W C_i negligibly low or in the version with permanent connected cable $C_i'_{core/core}$ = 58 pF/m, $C_i'_{core/screen}$ = 270 pF/m $L_i \leq 5$ µH, in the version with permanent connected cable L_i' = 55 µH/m
Control and display circuit (terminals Nos. 5,6,7,8 in the electronic compartment or plug connector for the 2-cell enclosure version)	Type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 (PTB 02 ATEX 2136X). The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS PS6*.*** and the external display unit VEGADIS61 are complied with if the total inductance and capacitance of the connecting line between the radar sensors type series VEGAPULS PS6*.*** and external display unit VEGADIS61 (L_{cable} = 310 µH and C_{cable} = 2.0 µF) is not exceeded. By using of the provided VEGA connecting cable between VEGAPULS PS6*. *** and the external display unit VEGADIS61 the following cable inductance and cable capacitance are to be taken into consideration from a length > 50 m: Li' = 0.62 µH/m $Ci'_{core/core}$ = 132 pF/m $Ci'_{core/screen}$ = 208 pF/m $Ci'_{screen/screen}$ = 192 pF/m

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4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

Control and display module circuit (spring contacts in the electronic compartment, additionally for the 2-cell-enclosure vesion in the terminal compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module PLICSCOM or CONNECT 4 (PTB 07 ATEX 2013 X).

The metal elements of the radar-sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

All other specifications remain without changes.

Applied standards

EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007

Assessment and test report: PTB Ex 10-29353

Zertifizierungssektor Explosionsschutz
By order:

Braunschweig, May 6, 2010

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

(Translation)

Equipment: Radar sensors type series VEGAPULS PS6*.CX/C_***K/L/P/F***

Marking:  **II 1 G or 1/2 G or II 2 G EEx ia IIC T6**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

Applied standards

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-26:2007**

The name of the radar sensors type series VEGAPULS PS6*.CX/C_***K/L/P/F*** is changed into radar sensors type series VEGAPULS PS6*.C(*)***K/L/P/F***. They are also made and operated according to the test documents listed under 3 of the test report.

Type list:
VEGAPULS PS61.C****K/L/P/F****
VEGAPULS PS62.C*****K/L/P/F****
VEGAPULS PS63.C****K/L/P/F****
VEGAPULS PS65.C****P/F****
VEGAPULS PS66.C*****P/F****

The changes concern the application of the above mentioned standards, the external construction (stainless steel forming housing and a second pressure compensation element), the internal construction, the electrical data and the marking.

The marking changes as follows:

 **II 1 G or 1/2 G or II 2 G Ex ia IIC T6**

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

Electrical data

Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment, for the 2-cell enclosure version in the terminal compartment)	**Category 1 or Category 1/2** in type of protection Intrinsic Safety Ex ia IIC/IIB **Category 2** in type of protection Intrinsic Safety Ex ia IIC/IIB or Ex ib IIC/IIB For connection to a certified intrinsically safe circuit. Maximum values: U_i = 17.5 V I_i = 500 mA P_i = 5.5 W C_i negligibly low $L_i \leq 5$ µH The equipment is suitable for the connection to a field bus system according to FISCO (IEC 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus. or U_i = 24 V I_i = 250 mA P_i = 1.2 W C_i negligibly low or in the version VEGAPULS PS6*.C(*)*****3/4/5/9*** $C_i'_{core/core}$ = 58 pF/m, $C_i'_{core/screen}$ = 270 pF/m $L_i \leq 5$ µH, in the version VEGAPULS PS6*.C(*)*****3/4/5/9***additional L_i' = 55 µH/m
Control and display circuit (terminals Nos. 5,6,7,8 in the electronic compartment or plug connector for the 2-cell enclosure version)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61. The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS PS6*.*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the radar sensors VEGAPULS PS6*.*** and VEGADIS61 (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. A control and display module installed in the VEGAPULS type series PS6*.*** and a connected VEGACONNECT have been considered.

	By using of the provided VEGA connecting cable between VEGAPULS PS6*. *** and the external display unit VEGADIS61 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m: Li' = 0,62 µH/m $Ci'_{core/core}$ = 132 pF/m $Ci'_{core/screen}$ = 208 pF/m $Ci'_{screen/screen}$ = 192 pF/m
Communication circuit (I^2C-bus socket in the electronics compartment additionally for the 2-cell-enclosure version in the terminal compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).
Control and display module circuit (spring contacts in the electronic compartment, additionally for the 2-cell-enclosure version in the terminal compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module (PLICSCOM). With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.

The metal elements of the radar sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

All other specifications remain valid without changes.

Test report: PTB Ex 08-28054

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, April 9, 2008

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

(Translation)

Equipment: Radar sensors type series VEGAPULS PS6*.CX/C_***K/L/P/F***

Marking: Ⓔx **II 1 G or 1/2 G or II 2G EEx ia IIC T6**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The radar sensors type series VEGAPULS PS63.CX/C_***K/L/P/F*** (Execution for operating at process temperatures to -170°C) may be operated as a category 2-equipment also according to the following tables:

Radar sensors type series VEGAPULS PS63.CX/C_***K/L/P/F*** (Execution for operating at process temperatures to -170°C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100°C	-40 ... +45°C
T4	-170 ... +135°C	-40 ... +80°C
T3, T2, T1	-170 ... +150°C	-40 ... +85°C

When the sensors of the VEGAPULS PS63.CX/C_***K/L/P/F*** (Execution for operating at process temperatures to -170°C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

All other specifications remain without changes.

Test report: PTB Ex 06-26254

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, November 06, 2006

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

(Translation)

Equipment: Microwave sensor, type series VEGAPULS PS6*.CX***P/F***
with integrated electronic assemblies PS60PA/FFC resp. PS60PA/FFK

Marking:  **II 1 G or 1/2 G or II 2G EEx ia IIC T6**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The name of the microwave sensors type series VEGAPULS PS6*.CX***P/F*** with integrated electronic assembly PS60PA/FFC or PS60PA/FFK is changed into radar sensors VEGAPULS PS6*.CX***P/F*** or PS6*.C_***P/F***. Furthermore the type series VEGAPULS are extended for the type series PS61/62/63. CX/C_***K*** and PS61/62/63. CX/C_***L***. In the radar sensors VEGAPULS type series PS61/62/63. CX/C_***K*** the electronic assembly PS60PAS and in the radar sensors VEGAPULS type series PS61/62/63. CX/C_***L*** the electronic assembly PS60FFS is used.

Other changes concern the internal and the external construction, the electrical data, a version of the type series VEGAPULS PS6*.CX/C_***K/L/P/F3/4/5*** with cable tail for the use with the Entity Concept as well as the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system and the "Special Conditions".

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Radar-sensors type series VEGAPULS PS6*.CX*P/F*** or PS6*.C_***P/F***

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... + 43 °C	-20 ... +43 °C
T4, T3, T2, T1	-20 ... + 60 °C	-20 ... +60 °C

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1.
For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... + 60 °C	-40 ... +47 °C
T5	-20 ... + 60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... + 60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

When the sensors of the VEGAPULS PS6*.*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4*	-60 ... +135 °C	-40 ... +85 °C
T3*	-60 ... +200 °C	-40 ... +85 °C
T2*	-60 ... +300 °C	-40 ... +85 °C
T1*	-60 ... +400 °C	-40 ... +85 °C

*from 130 °C with temperature distance piece

When the sensors of the VEGAPULS PS6*.*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

Radar-sensors type series VEGAPULS PS61/62/63.CX*K/L*** or PS61/62/63.C_***K/L*****

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T4	-20 ... + 54 °C	-20 ... +54 °C
T3, T2, T1	-20 ... + 60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... + 60 °C	-40 ... +45 °C
T4	-20 ... + 60 °C	-40 ... +80 °C
T3, T2, T1	-20 ... + 60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

When the sensors of the VEGAPULS PS6*.*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +80 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +85 °C

*from 130 °C with temperature distance piece

When the sensors of the VEGAPULS PS6*.*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit (terminals 1 [+], 2 [-] in the compartment, for the 2-cell enclosure version in the terminal compartment)	**Category 1 or Category 1/2** in type of protection Intrinsic Safety EEx ia IIC/IIB **Category 2** in type of protection Intrinsic Safety EEx ia IIC/IIB or EEx ib IIC/IIB For connection to a certified intrinsically safe circuit. Maximum values: U_i = 17.5 V I_i = 500 mA P_i = 5.5 W C_i negligibly low $L_i \leq 5$ µH The equipment is suitable for the connection to a field bus system according to FISCO (IEC 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus. or U_i = 24 V I_i = 250 mA P_i = 1.2 W C_i negligibly low or in the version VEGAPULS PS6*.CX/C_***K/L/P/F3/4/5*** $C_{i\ core/core}$ = 58 pF/m, $C_i'_{\ core/screen}$ = 270 pF/m $L_i \leq 5$ µH, in the version VEGAPULS PS6*.CX/C_***K/L/P/F3/4/5*** additional L_i' = 55 µH/m
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell enclosure version)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe supply and signal circuit of the corresponding external VEGA display unit VEGADIS61 (PTB 02 ATEX 2136 X).

	The rules for interconnection of intrinsically safe circuits between the radar sensors sensors, type series VEGAPULS and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between radar sensors, type series VEGAPULS and the external VEGADIS61 display unit (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. A control and display module (A/B module or PLICSCOM) installed in the radar sensors, type series VEGAPULS and a connected VEGACONNECT3 have been considered.
Communication circuit (I^2C-bus socket in the electronics compartment, additionally for the 2-cell-enclosure version in the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT3 (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment, additionally for the 2-cell-enclosure version in the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM) With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.

The metal elements of the radar sensors are electrically connected to the earth terminals.
The intrinsically safe circuits are safely electrically isolated from elements that may be earthed.

All other specifications remain without changes.

Special conditions for safe use

1. The radar sensors type series VEGAPULS PS6*.*** which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2. The radar sensors with plastic enclosure, with metal enclosure with display window, with parts of enclosures out of plastic as well as sensors include surfaces that can become charged electrostatically (note warning label).

3. The radar sensors in the versions with standpipe or antenna extension shall be installed in such a way that contact between the antenna and the tank wall will be excluded with sufficient safety, considering the tank installations and the flow conditions inside the tank.
4. When used as category-1 or category-1/2 equipment, the radar sensors shall be connected to the equipotential bonding conductor (contact resistance ≤ 1MΩ) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
5. For applications where equipment of category 1 or category 1/2 is required, all parts of the radar sensors which are in contact with the medium must only be used in such media, against which they are sufficiently resistant.
6. With the radar sensors in the execution with ball valve it is to be made certain that before the separation of the flange connection the ball valve is locked.
7. With the radar sensors in the execution with flushing connector it is to be made certain that using the radar sensors as an apparatus of category 1/2 the degree of protection IP 67 at the connection to the check valve is guaranteed. After removing the check valve or the flushing system at the check valve, the opening with a suitable plug is to be locked in such a way, that the degree of protection IP 67 is kept.

Test report: PTB Ex 05-25326

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, December 19, 2005

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) # EC-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 03 ATEX 2089 X

(4)	Equipment:	Microwave sensor, type series VEGAPULS PS6*.CX***P/F*** with integrated electronic assemblies PS60PA/FFC resp. PS60PA/FFK
(5)	Manufacturer:	VEGA Grieshaber KG
(6)	Address:	Am Hohenstein 113, 77761 Schiltach, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 03-23209.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997+A1+A2 **EN 50020:2002** **EN 50284:1999**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

Ex II 1 G or II 1/2 G or II 2G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, July 7, 2003

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2089 X

(15) Description of equipment

The microwave sensor, type series VEGAPULS PS6*.CX***P/F*** with integrated electronic assemblies PS60PA/FFC resp.PS60PA/FFK, are used for level measurement in potentially explosive atmospheres requiring category-1 or category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module "A/B module" or "PLICSCOM" for either parameterization or visualization.

The pressure transducers consist of an electronics housing with the corresponding analyzing electronic system, the process connectors and the sensor.

Category-1 equipment

The microwave sensors are installed in potentially explosive atmospheres requiring category-1 equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

Category-2 equipment

The microwave sensors are installed in potentially explosive atmospheres requiring category-2 equipment.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... + 43 °C	-20 ... +43 °C
T4, T3, T2, T1	-20 ... + 60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... + 60 °C	-40 ... +47 °C
T5	-20 ... + 60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... + 60 °C	-40 ... +85 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... + 85 °C	-40 ... +47 °C
T5	-50 ... + 100 °C	-40 ... +62 °C
T4	-50 ... +135 °C	-40 ... +85 °C
T3	-50 ... +200 °C	-40 ... +85 °C
T2	-50 ... +300 °C	-40 ... +85 °C
T1	-50 ... +400 °C	-40 ... +85 °C

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit (terminals 1 [+], 2 [-] in the compartment, for the 2-cell enclosure version in the terminal compartment)

category 1 respectively category 1/2
Type of protection Intrinsic Safety EEx ia IIC/IIB
category 2
Type of protection Intrinsic Safety EEx ia IIC/IIB resp. EEx ib IIC/IIB

For connection to a certified intrinsically safe circuit.
Maximum values:
U_i = 17.5 V
I_i = 500 mA
P_i = 5.5 W

The equipment is suitable for the connection to a field bus system according to the FISCO model, e.g. PROFIBUS-PA or Foundation Fieldbus.

or

	U_i = 24 V I_i = 250 mA P_i = 1.2 W C_i negligibly low $L_i \leq 5$ µH
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell enclosure version)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe supply and signal circuit of the corresponding external VEGA display unit VEGADIS61 (PTB 02 ATEX 2136 X) The rules for interconnection of intrinsically safe circuits between the microwave sensors, type series VEGAPULS and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between microwave sensors, type series VEGAPULS and the external VEGADIS61 display unit (L_{Kabel} = 96 µH and C_{Kabel} = 2.8 µF) is not exceeded. A control and display module (A/B module or PLICSCOM) installed in the microwave sensors, type series VEGAPULS and a connected VEGACONNECT3 have been considered.
Communication circuit (I^2C-bus socket in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA VEGACONNECT3 interface converter (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM) With the 2-cell-enclosure version the operating and display module may either be fittted in the electronics compartment or in the terminal compartment.

The metal elements of the microwave sensors are electrically connected to the earth terminals.

The intrinsically safe circuits are safely electrically isolated from elements that may be earthed.

(16) Test report PTB Ex 03-23209

(17) Special conditions for safe use

1. The microwave sensor, type series VEGAPULS PS6*.CX***P/F*** with integrated electronic assemblies PS60PA/FFC resp. PS60PA/FFK, which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2. The microwave sensors with plastic enclosure, parts of enclosures out of plastic and also the sensors include surfaces that can become charged electrostatically (note warning label).
3. The microwave sensors shall be installed in such a way that impact of the sensor to the tank wall can be excluded with sufficient safety considering the tank installations and the flow conditions inside the tank. This applies, in particular, to sensors which are more than 3 m long.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, July 7, 2003