



SAMCON

Prozessleittechnik GmbH

Cable Gland Selection for Ex-d Enclosures

Product:	ExCam & ExConnection Rail Series
Title:	Cable Gland Selection for Ex-d Enclosures
Doc.- Id.	150421-TAU-SS-Cable Gland selection for Ex-d enclosures.docx
Author:	Dipl.-Ing. Steffen Seibert
Date:	April 21, 2015

Table of Content

1	DIN EN 60079-14 (2014): What has changed?	3
2	What does the new selection schema say?	4
3	Selection criteria for cable glands in the hazardous area	5
4	What is the impact on the SAMCON product line?	6
4.1	The ExCam Series	6
4.2	The ExConnection Rail Series	7
5	Comments and Conclusion	8

List of Figures

Fig.3-1 – Cable selection schema	5
Fig.4-1 – Cable selection schema for ExCam devices	6
Fig.4-2 – Cable selection schema for ExConnection Rail devices.....	7

Document Revisions

Rev.- Index	Date	Name	Comment
00	Apr 21, 2015	S. Seibert	Compilation of document
01	Sep 03, 2015	H. Helland	Formal adjustments

1 DIN EN 60079-14 (2014): What has changed?

What has changed in relation to previous regulations concerning cable fittings?

- The new standard:
DIN EN 60079-14 (2014) „Projektierung, Auswahl und Errichtung elektrischer Anlagen“ was released
- The “old” selection schema for cable glands for Ex-d enclosures which depended on the **explosion group (IIB vs. IIC)** as well as on the gas volume (**less or more than 2 litres**), became obsolete
- A new selection schema for cable connectors for Ex-d enclosures was established

2 What does the new selection schema say?

This is the original release of the German standard:

DIN EN 60079-14 (2014)

Electrical installations design, selection and erection

“The schematic for the selection of the correct cable gland for flameproof enclosures has been dispensed with. The selection criteria have been changed as follows:

The cable gland system has to have one of the following designs:

- a) Cable glands sealed with a hardening casting compound (blocking cable gland) pursuant to IEC 60079-1 and certified as a device
- b) Cable glands that comply with the following requirements:
 - Cable glands pursuant to IEC 60079-1, certified as a device
 - Applied in combination with cables pursuant to 9.3.2(a)
 - With a minimum length of the connected cable of 3 m
- c) Indirect cable entry with a combination of a flameproof enclosure with a bushing and a connection terminal box in type of protection increased safety
- d) Mineral-insulated metal sheathed cables with or without outer plastic sheath, with suitable flameproof cable entry pursuant to IEC 60079-1
- e) Flameproof sealing (e.g. a sealing chamber), which is defined in the device documentation or complies with IEC 60079-1 and which is inserted with a cable entry that is suitable for the cables that are used. Sealing has to include a compound or other suitable sealants which make sealing of the individual conductors possible. Sealing has to be attached at the spot where cables are inserted into the device.”

“Das Kabel- und Leitungseinführungssystem muss einer der folgenden Ausführungen entsprechen: (Anmerkung: also ein logisches Oder)

- a) *Kabel und Leitungseinführungen abgedichtet mit einer aushärtenden Vergussmasse (absperrende Kabel- und Leitungseinführung) nach IEC 60079-1 und als Gerät zertifiziert*
- b) *Kabel- und Leitungseinführung die Folgendes erfüllen:*
 - *Kabel- und Leitungseinführungen nach IEC 60079-1, als ein Gerät zertifiziert*
 - *zusammen mit den Kabeln und Leitungen nach 9.3.2(a) verwendet*
 - *mit einer minimalen Länge des verbundenen Kabels/der verbundenen Leitung von 3 m*
- c) *indirekte Kabel- und Leitungseinführungen mit einer Kombination eines Gehäuses in druckfester Kapselung mit einer Durchführung und einem Anschlussklemmkasten in erhöhter Sicherheit*
- d) *mineralisierte Metallmantelkabel, mit oder ohne äußeren Kunststoffmantel, mit geeigneter druckfester Leitungseinführung nach IEC 60079-1*
- e) *druckfeste Abdichtungsvorrichtung (z. B. eine Abdichtkammer), die in der Gerätedokumentation festgelegt ist oder der IEC 60079-1 entspricht und mit einer für die verwendeten Kabeln und Leitungen geeigneten Kabeleinführung eingesetzt wird. Die Abdichtungsvorrichtungen müssen eine Vergussmasse oder andere geeignete Dichtungsmittel enthalten, die das Abdichten um die einzelnen Leiter ermöglichen. Abdichtungsvorrichtungen müssen am Ort der Einführung von Kabeln und Leitungen in das Gerät angebracht sein.“*

Source: DIN EN 60079-14, Chapter 10.6.2

3 Selection criteria for cable glands in the hazardous area

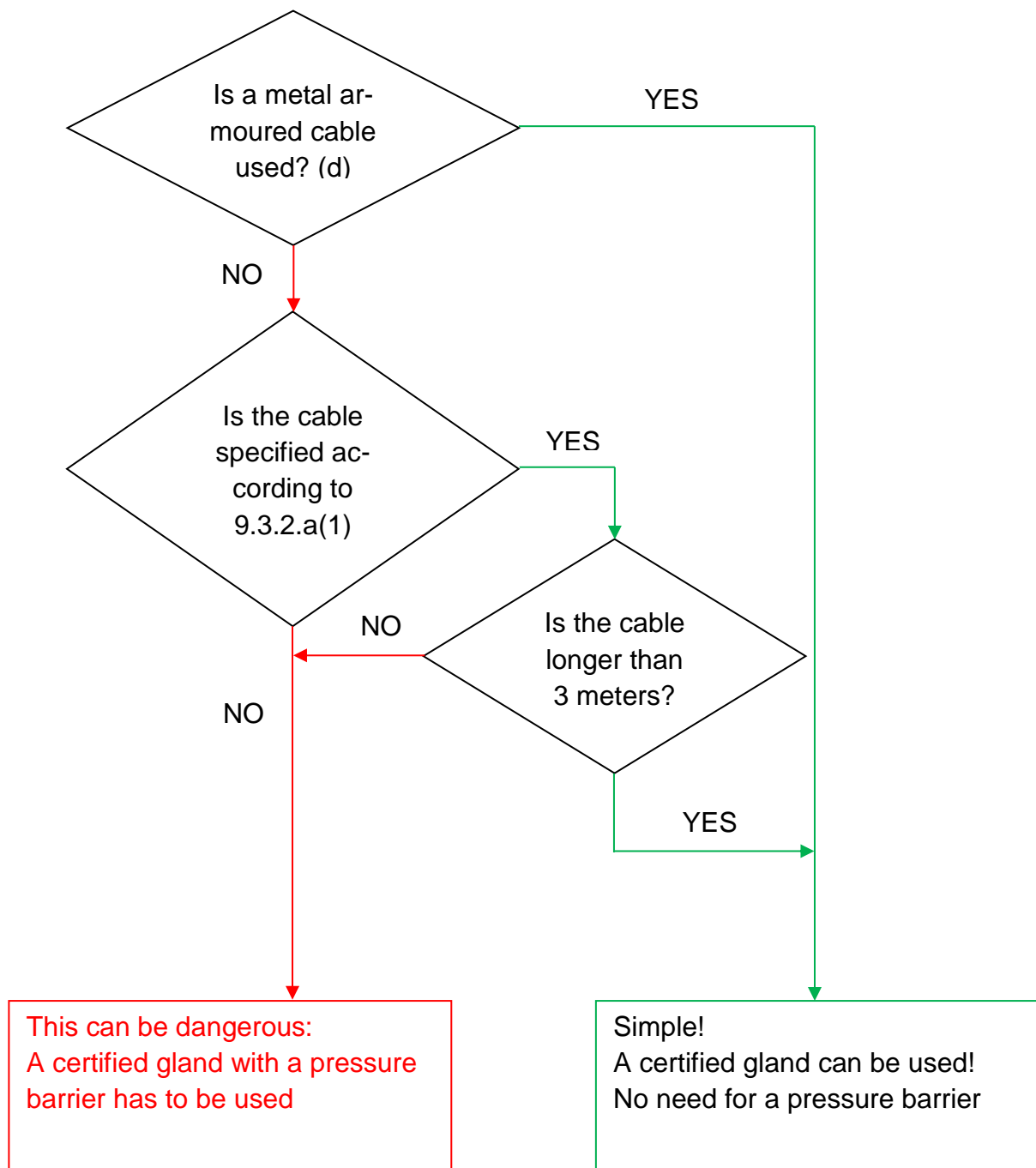


Fig.3-1 – Cable selection schema

„The cables have to be „...sheathed with a thermo-plastic, duro-plastic or elastomer material“. „They have to be circular and compact, and must have extruded embeddings. Filling material, if applicable must not be hygroscopic.“

4 What is the impact on the SAMCON product line?
4.1 The ExCam Series

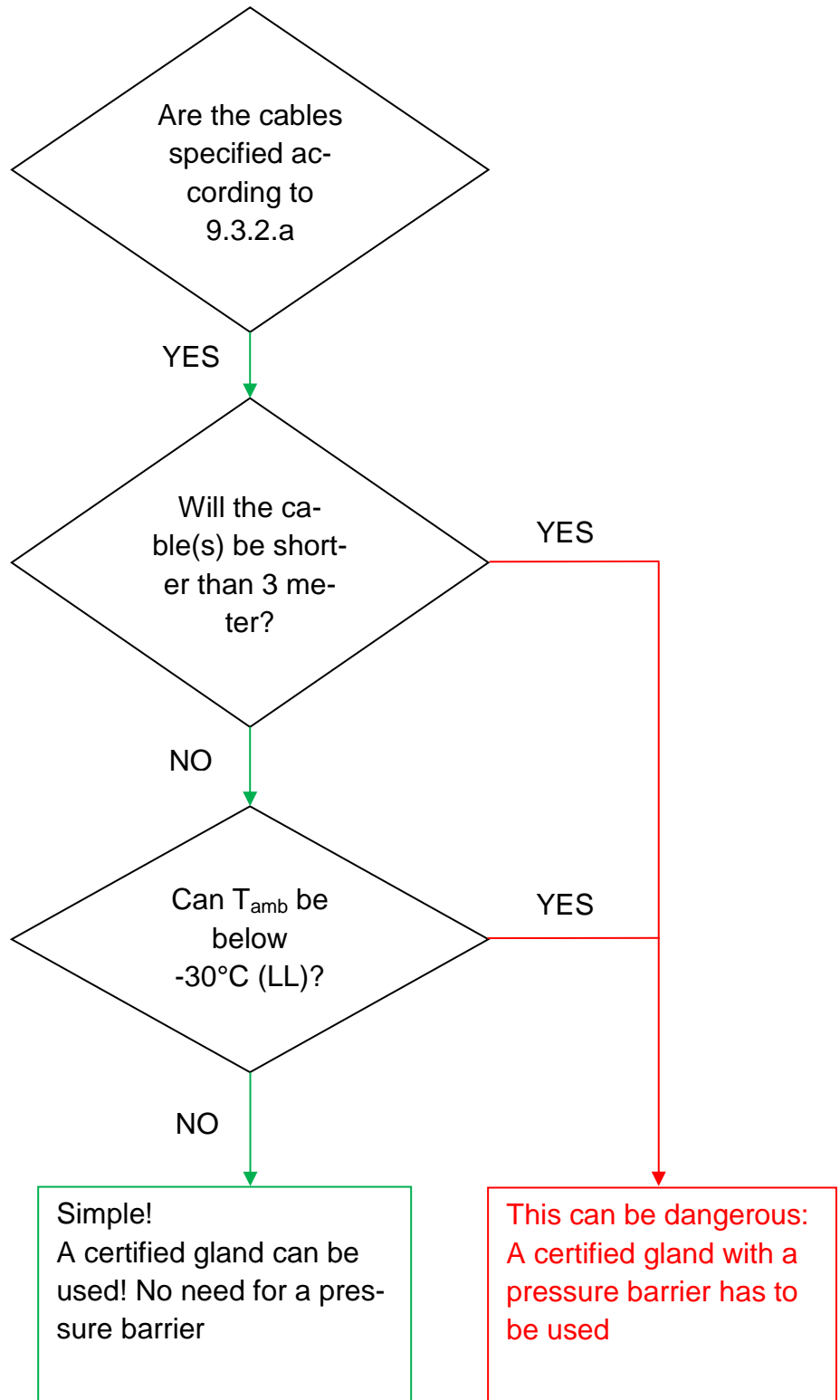


Fig.4-1 – Cable selection schema for ExCam devices

4.2 The ExConnection Rail Series

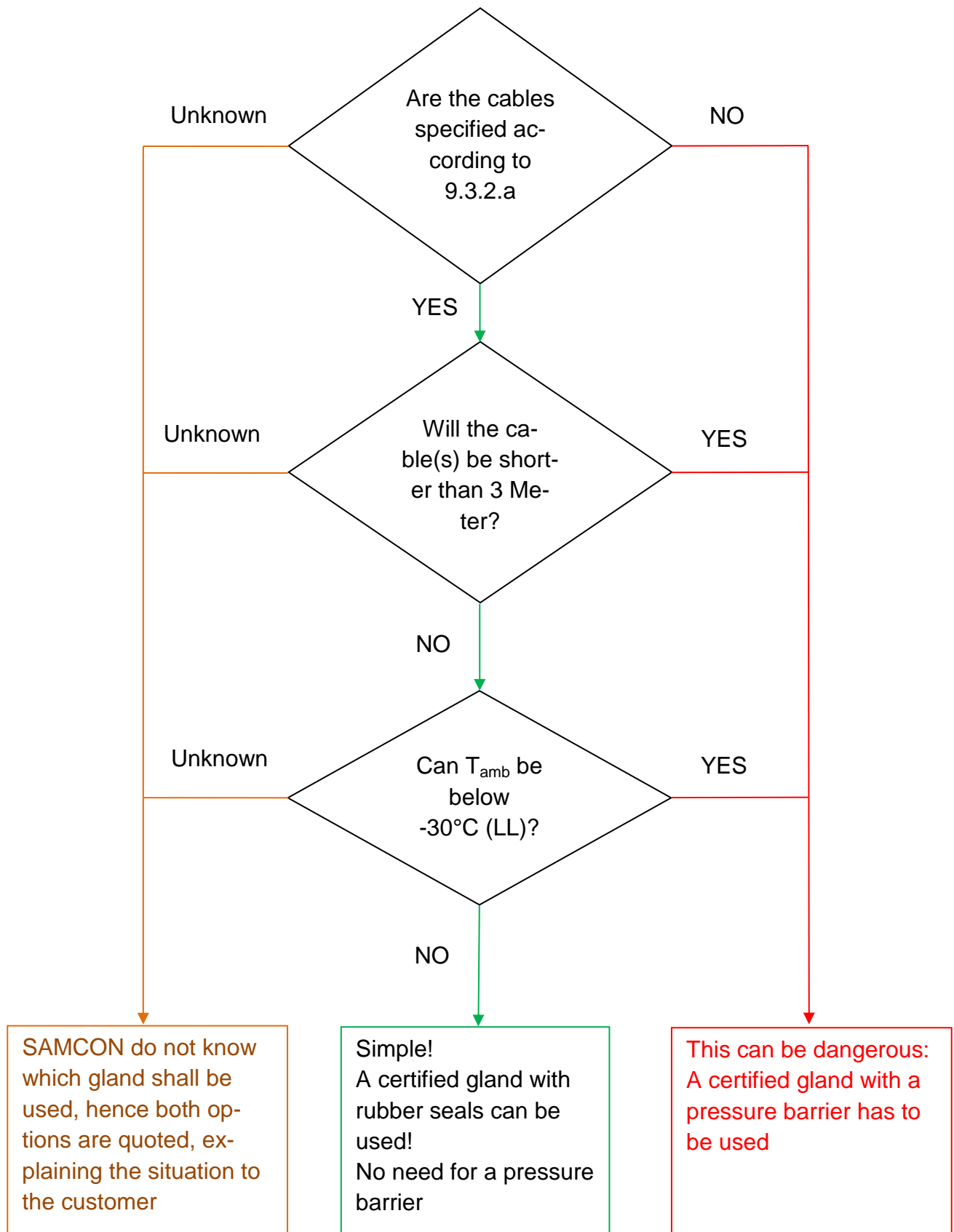


Fig.4-2 – Cable selection schema for ExConnection Rail devices

5 Comments and Conclusion

The new standard is adding the cable quality, its length, and condition into the device safety evaluation. This can be dangerous, when:

- The cable is partly damaged
- In bad condition
- Not well mounted
- Not well protected
- Etc.

A cable gland or fitting “certified as device” means “not certified as component” (U).

The installer and the site-owner need to take closer looks on cables and their conditions.

If in doubt, the barrier glands are the safer solutions.

As SAMCON want to be on the safe side, we added, by choice, the ambient temperature as an additional evaluation criterion since lower temperatures increase the explosion pressure.

For any further information or questions, please feel free to contact us at any time.

www.samcon.eu