



# SAMCON

Prozessleittechnik GmbH

## ATEX-component vs. ATEX-device certification

A brief guideline to determine if a certain camera module can be installed a flameproof ex.-enclosure to be used in the hazardous area and if the enclosure's certification is valid for the entire electrical device

Product:	T07 Enclosures Series and ExCam Series
Title:	ATEX-component vs. ATEX-device certification
Doc. - Id.	150729-TAU-SS-ATEX-component-vs.-ATEX-device-certification.docx
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Date:	July 29, 2015

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## Document Revisions

Rev.- Index	Date	Name	Comment
00	July 29, 2015	S. Seibert	Compilation of the document
01	Sep 03, 2015	H. Helland	Formal adjustments

## 1 The document's purpose

SAMCON are a manufacturer of camera systems for hazardous areas, not only offering a wide variety of explosion proof cameras but also supporting the customers with their project planning.

However, a significant number of our customers are experts in their field and already know which camera will meet their requirements best – sometimes already having special brands or technologies for their CCTV, security, or machine applications they would like to use in the hazardous area as well.

When getting touch with us, the main question is merely always the same:

**“What is the easiest way, to get “my” camera ATEX, IECEx, or EAC-Ex certified so that it can be used in the hazardous areas?”**

Considering the various options, many times the solution seems to be quite easy:

**“We buy a certified flameproof enclosure and just mount the camera we want to use into the housing.”**

After this approach has been considered, further questions arise:

**“Am I allowed to install my camera in a flame-proof ex.-enclosure and furthermore, am I then allowed to operate it in a hazardous area?”**

**“Is the enclosure's certification valid also for the entire electrical device?”**

**“May I have to modify the type plates?”**

**“Do I have to declare conformity with the European Standards (CE)?”**

**“Are the warnings displayed on the type plates still valid?”**

In order to answer all these questions which come about when deciding on using the camera in combination with the flame-proof ex.-enclosure, we have compiled this document which should serve as a guideline. So besides supporting our customers' engineering processes, it will also provide some background information helping you to select the most suitable option among the available alternatives.

Please note that even despite thorough research, errors can happen so the document neither claims completeness nor 100% accuracy.

## 2 ATEX Device vs. ATEX Component

“I did some researches on the web and found ATEX certified components as well as ATEX certified devices. What is the different?”

The most important fact first:

To install any electrical equipment in the field (hazardous area), it has to have a device certification! It is strictly forbidden to install equipment which only has a component certification.

If a device has either a component or a device certification, can be gathered from the “EC Type-Examination Certificate number” - ATEX component certifications always end with a “U”:

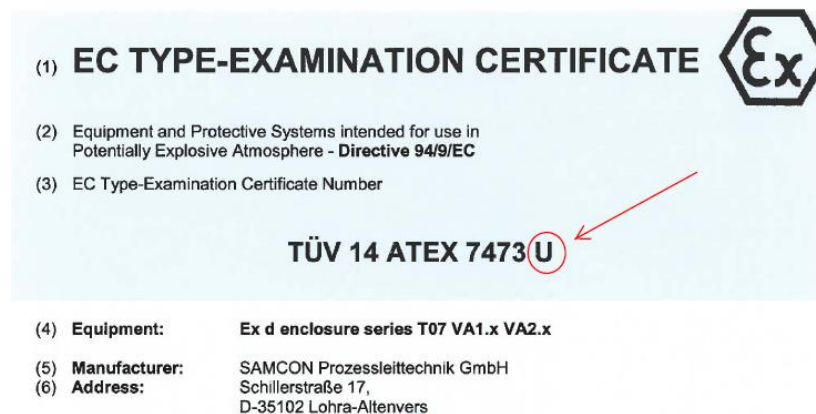


Fig. 2-1 Sample of an ATEX-component certification

On the other hand, ATEX device certifications always end with an “X” or a number:

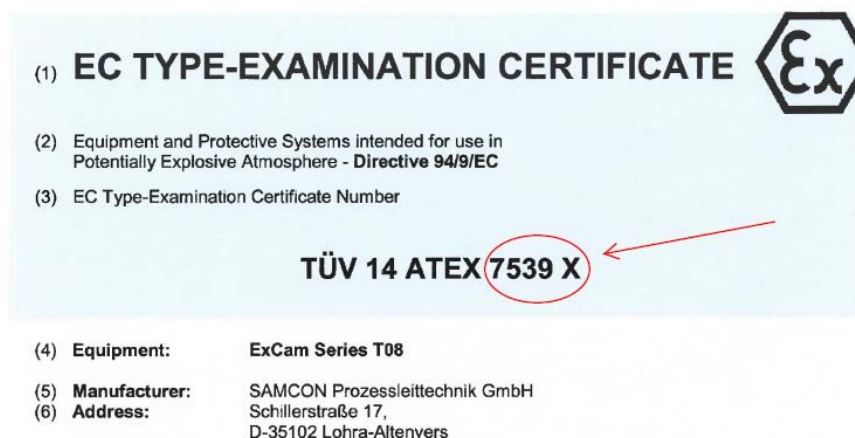


Fig. 2-2 Sample of an ATEX-device certification

To get a better understanding of the differences, though, let us take a closer look at the two different types of certification.

## 2.1 ATEX certified components

**“What does ATEX-component-certification state, and what are these components good for?”**

ATEX components are certain parts such as enclosures, barriers, or glands, etc. that are pre-certified by the individual manufacturer. These parts, including their component certification, allow a device manufacturer to use them as parts of their products and also to get the final ATEX-device certification for the produced goods.

For example, as a device-manufacturer, we buy component-certified barriers to use them with o in our products and to get the certification of the entire device. Nevertheless, we are not allowed to just assemble them: After the evaluation of all technical values and the execution of all necessary tests, a notified body still has to check the manufactured device to finally confirm the EC-Type Examination and to make sure that everything is within the standard.

So basically, ATEX certified components cannot just be used by end users or installation companies. The below picture illustrates this:

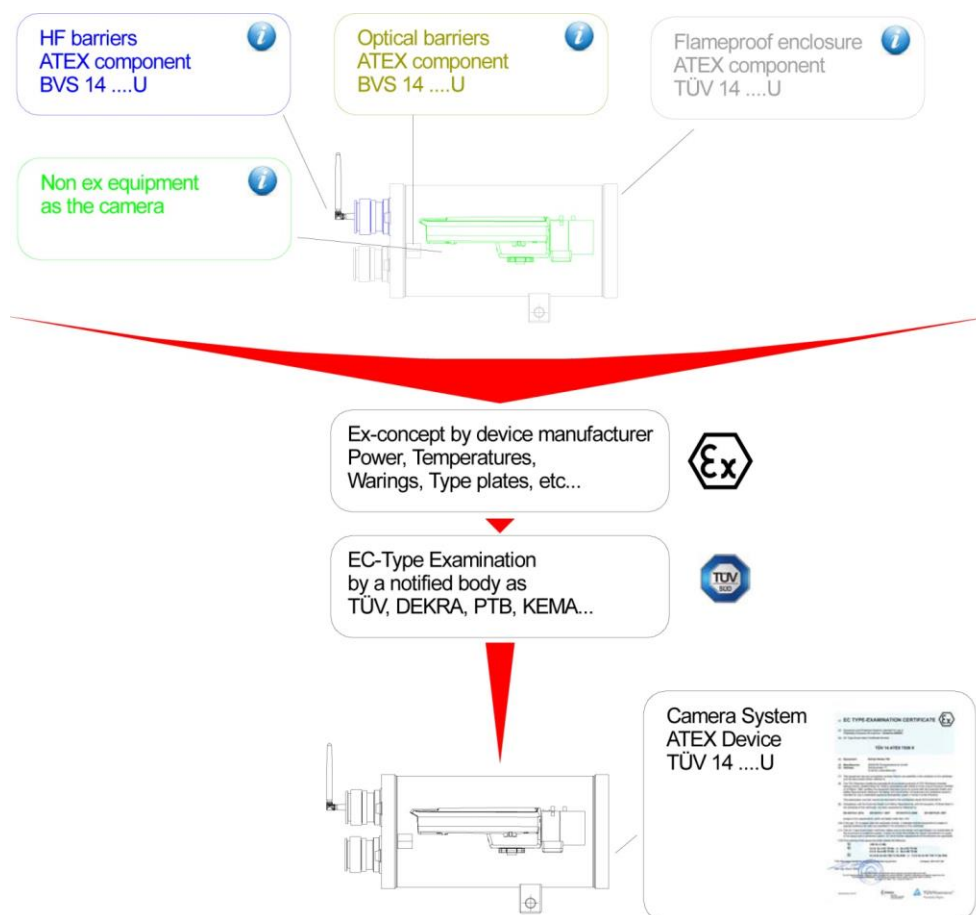


Fig. 2-3 The way from the component to the device certification

## 2.2 ATEX certified devices

**“This means that only ATEX certified devices can be installed in explosive and hazardous areas?”**

That is right. For installation companies or end customers/users, only ATEX certified devices are allowed to be used in the hazardous area, the so called field.

**“We are a big company and we would like to save costs. Our Idea is to assemble cameras by ourselves and get our own device certification. What do we need to do?”**

Besides being experienced and knowledgeable concerning equipment for the hazardous area, two prerequisites have to be met:

### 1. ATEX Quality System

A Quality System according to ATEX (94/9/EG) has either to be existent or has to be established. This also includes that the notified body periodically carries out audits.

### 2. EC-Type Examination

Secondly, you have to apply for your own EC-Type Examination. To do so, the following steps are necessary:

- Testing the equipment
- Executing e.g. temperature measurements
- Defining limits such as capacities, volumes, maximum power consumptions etc.
- Methods of proof to determine the safety of the device

All these documents have to be transmitted to a notified body which checks that everything is within the standards. If everything is correct and safe, the notified body will award the EC Type Examination.



## 2.3 Empty enclosures with ATEX device certification (the “Italian trick”)

“We found enclosures on the market which are sold with an ATEX device certification. The manufacturer says, that we can add our own camera ourselves without losing the device certification. How can a regular camera be installed in an ATEX certified housing?”



Fig. 2-4 Enclosures with ATEX device certification

This is a very smart trick:

To get the empty enclosure certified as an ATEX device, it needs an electrical power consumer included. To meet this requirement, a simple electrical heater is installed in the enclosure and the entire device is then evaluated and tested by the notified body. As a result, a device certification is issued and the available space within the enclosure can then be used to install, for example, a camera - isn't that smart?

“O.K. I understood the “trick” – but is this the right approach for me?”

Well, this is hard to say. Even for the manufacturer of the device certified enclosure it is getting more and more difficult to fulfil all regulations and to get approval from the notified body. Also, generally, a lot of responsibility is passed on and assigned to the assembler and it is very likely that a standard installation company is not able to fulfil all of the requests.

The below excerpt illustrates some of the things that have to be observed by the assembler:

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### Devices to install inside the housing

- Camera equipped with lens with max total power of 20W
- Power supply max 24Vac or 230Vac
- Useful volume for camera / lens: 2800cm<sup>3</sup>
- Minimum distance between the walls of the housing and the camera/lens: 12mm

Fig. 2-5 Excerpt of the data sheet of a flameproof enclosure with device certification

The following examples illustrate the difficulties and practice related problems that can arise when using this kind of an enclosure.

#### **Example 1: Batteries**

Within the ex-standard, batteries have to be evaluated. If an approved battery is used within the enclosure, the warning:

“Do not open while energized”

does not make sense as even if the power supply has been cut, the battery is still providing voltage. So if you want to install a high-end IP camera with an on board cell battery, certification is voided.

In case of an accident, the responsibility is with you.

#### **Example 2: Glands and Cables**

Within the ex-standard, cables have to fulfil some requirements and cable glands have to be selected in accordance with a certain schema.

The responsibility of selecting the correct cables and glands is transferred to the installing companies and if the made choices are wrong, it is the installation company's responsibility if something happens.

(Note: We once saw several 25 kg ex-d flameproof enclosures in the field furnished with plastic glands – voiding the entire protection system.)

#### **Conclusion:**

If you do not want to be responsible in case of accidents, this way might not your best choice.



### 3 Decision Guideline

“Now I have learned about ATEX components and devices; however I still need to meet my project requirements. Can you give me some kind of a guideline which options I have and what is the best choice for my purposes?”

O.K. Let’s give it a try:

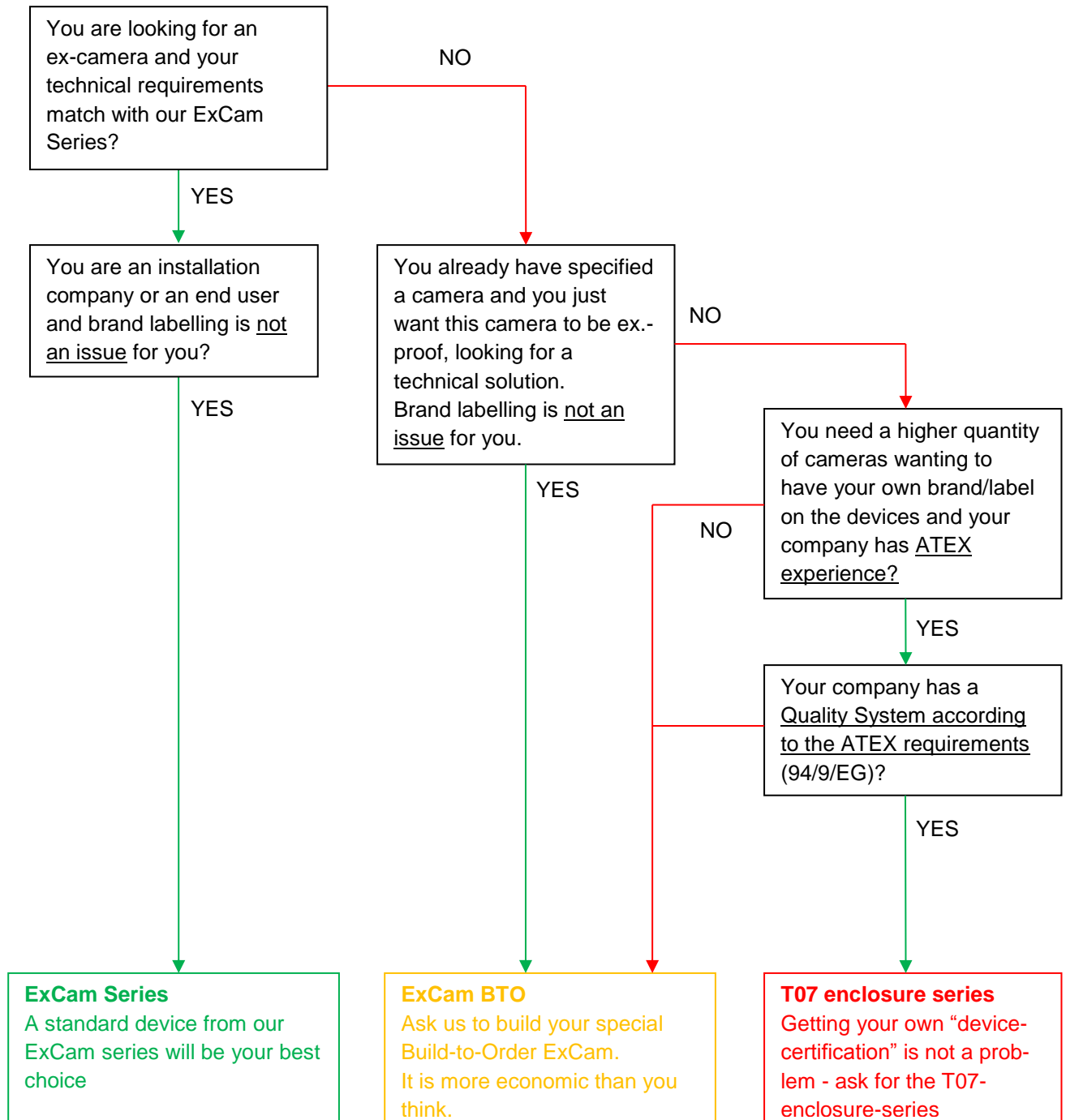


Fig. 3-1 Graphical decision guideline