How Korea handles Certification of Explosion Proof Products

South Korea, with its super high-speed internet and giant technology corporations is considered a world leader in many innovation-driven industries. The growth development of the South Korean market is impressive and unique.

As the eighth largest importer in the world, South Korea is a very attractive market for many international companies looking to sell technology and other sophisticated products. In 2021 the country announced investments totalling $432 billion USD in the semiconductor industry alone. This industry was in the news recently as it became major problem affecting manufacturing and international trade during the COVID-19 pandemic.

Suppliers from all over the world are faced with the challenge of obtaining the required approval for the Korean market to sell their parts and components. Depending on the product type there are many different types of approvals that may be needed.

Explosion protection products require a certification to be imported into Korea. Explosion protection certification procedures in Korea have been drastically consolidated over the past fifteen years and are now much better suited to international trade. The procedures are based on existing international standards or have been adapted to fit with them. With the approval for the Korean market building on the IECEx standards, companies can further expand their competitive advantages in the increasingly fast-moving international trade.

More than 730 types of products are now regulated under the umbrella of KC certification. Although these standards are generally comparable to IEC standards, KC certification must be obtained to ensure that the products meet local Korean standards before they can be imported or sold in the country. It was only in 2009 that all these certifications were consolidated and transferred to the KC certification system. Before the consolidation of the certification systems, South Korea had 13 different certification systems and 140 different certification marks. This multitude of different certification marks was in turn regulated by different governmental organisations, sometimes even with partial overlaps. The consolidation of explosion-proof certifications now makes the process more efficient.

It remains a challenge for companies to ensure that their products conform to all the current regulations and requirements and are correctly certified. This is especially important regarding the approval of electrical explosion-proof components based on an existing IECEx certification. As the Korean economy is advanced and mature, sudden regulatory changes are uncommon. Staying on top of new developments in the regulatory arena is key to successfully participate in the future growth and development of one of Asia’s most advanced and thriving economies.

The purpose of this article is to show how this development currently applies to the approval of explosion-protected products and how manufacturers can gain competitive advantages in the market by supplementing a KCs approval for South Korea with existing internationally recognised certificates. The lucky ones are those who know can successfully navigate the complex Korean rules needed to get certification.

KCs Ex for Electrical Components

The KCs mark was established to ensure the fundamental safety in the design and manufacturing of hazardous machinery and protective equipment used in hazardous work environments. The ultimate goal is to protect the health and safety of workers by preventing accidents.

By successfully completing the required certification and marking the product with the KCs mark, the manufacturer can ship to South Korea and the product is shown to meet all the regulations and assure safety. The KCs Certification is a special safety certification for machines and certain industrial equipment. This certification scheme is overseen by the Korea Occupational Safety and Health Agency (KOSHA) and requires certain potentially harmful machines or safety equipment to obtain the KCs Mark ("s" for safety).

Under the Occupational Health and Safety Act, KOSHA requires the KCs certification of explosion proof electrical components. Korea has had an approval system for explosion-proof components since 1992. KOSHA joined the IECEx scheme and became an internationally recognized IECEx certification body (ExCB) and IECEx testing laboratory (ExTL) in 2000.

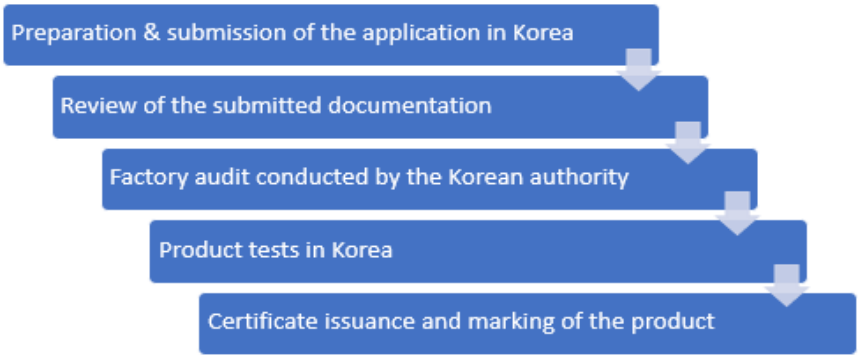
Apart from KOSHA, the KCs Ex certification can also be obtained through the Korea Gas Safety Corporation (KGS) and KTL, which are both accredited to issue KCs certificates as well.

In general, there are two certification types under KCs Ex. The manufacturer certification allows for continuous export of KCs certified Ex components, but the import certification is limited to a one-time import of a maximum quantity of 10 pieces per certified product.

Machines with explosion-proof capabilities that are used in hazardous zones can also fall under the KCs certification requirements. However, the KCs certification is only required in the context of electrical explosion protection. Non-electrical, mechanical explosion-proof equipment or machines are not relevant for a KCs certification. It is especially important to clarify the certification status of electrical ex-proof components when planning to build them into machines. In such cases, the timeline can increase substantially, because the certification of the components needs to be factored in as well. Manufacturers of affected machines should clarify certification requirements with their component suppliers in advance. This can help with avoiding unnecessary delays and discussions over the allocation of responsibilities at later stages.

The certification cannot be carried out by the manufacturer or assembler of a complete machine or facility but must be applied for by the producer of the electrical Ex components. In the context of an import certification, active participation of the manufacturer together with the importer is required.

For a KCs manufacturer certification, the standard certification process under the KOSHA regulations is as follows:



Regular follow-up inspections are normally conducted by the Korean authority every two years after obtaining the KCs certification to ensure that the product is being produced under the same standards that were confirmed during the initial certification process. The import certification in contrast does not require a factory audit.

For manufacturers who want to export to Korea, the standard certification process is usually not the most practical and efficient solution. It can be much easier to obtain KCs certification if there is an existing IECEx certification for in Korea.

IECEx And Sometimes ATEX Can Simplify The Procedure

In case the manufacturer already has an IECEx certification for their product, there is a simplified certification process to obtain a Korean explosion-proof certificate. For this process the entire IECEx documentation will be thoroughly examined so that the ExTRs can replace the product tests and the IECEx QAR can substitute the initial factory inspection.

Even though IECEx can simplify the process, especially with regards to skipping product testing in Korea, it is not a simple 1:1 transfer of IECEx to KCs. For the application process it is not sufficient to only provide ExTRs. The authority will examine the entire IECEx documentation that is referenced in the existing test reports and will compare this to the Korean regulations. Even though these are mainly based on IECEx, any differences will be brought up and evaluated during the approval process.

Another important difference with IECEx are the unit classification criteria, which are much more restrictive in Korea and can significantly complicate the process and increase approval costs. Manufacturers should not start the process with the assumption that the same product scope on their IECEx certificate can just be carried over to a KCs certificate. In certain product categories, even differences that do not necessarily influence the explosion protection properties, like product dimensions, can result in a request to apply for separate certificates. It is highly recommended that these differences are evaluated individually in advance to avoid delays and unexpected cost increases.

Another difference to IECEx is the requirement to apply for gas and dust separately. After approval, the authority will issue two certificates, whereas under IECEx everything can be put together on one certificate. For the application it is also required to submit a Korean manual and a drawing of the marking proposal according to Korean requirements. For products that already have different international approvals and limited space on the nameplate, adding the required marking information for the KCs certification can be an additional challenge.

Applying for a KCs manufacturer certification with an existing IECEx certification can still shorten lead times as product testing in Korea can be bypassed and skipping the initial factory audit avoids delays with regards to audit planning and international travel. This is an important advantage that enables certification, especially in challenging times like the COVID-19 pandemic. After skipping the initial audit, it is still necessary to pass regular follow-up inspections by the Korean authority to maintain the validity of the certificates.

Even for one-time deliveries of electrical ex-proof components a KCs certification is still required, but it is possible to apply for an import certification. An import certificate can cover a maximum of 10 identical Ex components, for which each specific serial number will be documented on the certificate. A factory audit is not necessary for an import certification, but the detailed examination of the IECEx documentation and ExTRs is still required to avoid product testing in Korea as the alternative.

The overall lead time and sequence of events for obtaining an import certification is different compared to the manufacturer certification. A crucial document in the application process for the import certification is the import declaration that contains the serial numbers of the imported products. Since this document will only be available after import, the application can only be submitted afterwards. That means the components can be exported, but before they can be put into operation there is a time delay to obtain the KCs import certification. When planning to apply for an import certification it is recommended to start with the preparation of the application well in advance before import, so that the application can be submitted as soon as the import declaration is available. With proper planning and execution delay is minimized.

In contrast to the universal recognition of IECEx to simplify the application process, the utility of an existing ATEX certification is much narrower. For obtaining a KCs manufacturer certification, ATEX is not accepted to simplify the application process.

ATEX can be used under certain circumstances only in the context of an import certification. Here it is mainly dependent on which European institution issued the ATEX certificate and if they have a memorandum of understanding (MOU) with the respective Korean authority for recognition of their ATEX certificates. It should always be checked in advance whether this critical condition can be fulfilled. If so, then the product testing can be substituted by submitting the ATEX documentation in English and the process is comparable to using an existing IECEx certification. It should also be noted that an import certification must have the importer as the applicant, so both the manufacturer and the importer must be involved in the process.

The Korean regulations provide viable avenues to certification for all companies that can provide an existing IECEx certification or in certain instances also ATEX. It is just a question of proper planning and lead time to prepare for the Korean market.

MPR International GmbH Can Assists You For KCs Ex And More

We can assist with the certification of your explosion proof products in Korea.

Feel free to contact us any time!

MPR International GmbH
Kaiserstr. 65, D-60329 Frankfurt, Germany
Tel.: +49-69-2713769259
E-Mail: info@korea-certification.com
Web: www.korea-certification.com/en

The author: Julian Busch, Managing Director of MPR International GmbH