

Exploding silos

Staple support from IECEx

Aliyah Esmail

Wherever cereals are grown in large quantities it is common to see silos used to store grain. Not so common is the knowledge that in these silos, or with any of the food processing equipment likely to be found alongside them, the thin layer of dust resulting from the processing has the potential to make a farm go up in flames.

Farming supported by IECEx

Farming is one of the oldest industries and can be traced back to the Neolithic period. Cereal farmers growing wheat, millet or rye, as well as other grains, have seen many changes in the last few decades with advances in fertilizers and growing methodologies. IECEx, the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres, has a role to play in protecting grain farmers' equipment and livelihoods.

Silos are considered explosive areas

It might surprise the average home baker to know that if you throw a handful of flour into the air close to an open flame, a small explosion will take place. This example highlights the potential for explosion in silos and grain processing plants in which large quantities of grain and dust are found enclosed spaces.

Grain elevators can also present a risk of explosion. According to the United States Department of Labor's Occupational Safety and Health Administration, there have been more than 600 explosions in grain elevators over the last 40 years, killing over 250 people and injuring in excess of 1 000 others.

Equipment manufactured for Ex areas

The dust in areas like silos can prove hazardous if equipment such as electric



If the dust on a cereal farm ignites, livelihoods and lives can be lost



It surprises many that silos are considered to have explosive atmospheres

cables and motors, enclosures, isolators and vents, lamps and switches, control systems and a number of others does not have the relevant level of dust explosion protection. Likely ignition sources for dust include sparks from electrical or mechanical processes, arcs, open flames, ESD (electrostatic discharge) and electromagnetic waves.

Using devices that are certified for hazardous environments, taking safety

precautions during installation, use, maintenance and repair and carrying out regular inspections allows farms and grain mills to operate safely, so protecting the lives of workers and people in the surrounding area.

High standards

Given the hazards that dust poses it makes sense for there to be IEC International Standards such as IEC 60079, *Explosive atmospheres*,

CONFORMITY ASSESSMENT



IECEX provides a pathway for the testing and quality management of equipment for areas where there is a risk of fire and/or explosion

for Ex equipment and systems.

This covers the full range of areas from general requirements to protection levels for apparatus used by all sectors that operate in hazardous environments. They include food processing, sugar refineries, flour mills, grain silos and many others. Another relevant series is IEC 61241, International Standards that focus on electrical equipment in the presence of combustible dust.

Certify and test for safety

IECEX Certification to the IEC 60079 and IEC 61241 series of International Standards, in combination with national or regional regulations and legislation, will assist grain farmers and mills in the selection of appropriate equipment. IECEX provides a pathway for the testing and quality management of equipment manufacturing.

IECEX Certification shows that these International Standards are being met

by manufacturers, thereby providing clear proof of compliance, an important assurance for anyone responsible for the safety of those working in Ex areas.

About IECEX

IECEX provides certification for areas where there is a risk of fire and/or explosion due to flammable gases, liquids and dusts (Ex areas).

Ex areas are a part of almost every industry, from transport, food production and textiles to petroleum and mining. IECEX covers the broad spectrum of devices, systems, and any services used in explosive environments and verifies their conformance with International Standards. The System also includes the certification of organizations providing services for the inspection (location and other), installation, maintenance and repair of equipment and systems and for the assessment and certification of the competence of personnel working in this highly specialized area.

IECEX has been endorsed by the UN via the UNECE as THE certification system for the assessment of conformity in Ex areas, www.iecex.com