

## Non-Metallic Enclosures Offer Clear Benefits in Agriculture

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*Electrical and electronic cable, connectors and related subsystems need rugged enclosures for the harsh agricultural environment, where non-metallic enclosures offer distinctive benefits compared to conventional units.*

It is well-known that many industrial installations and production facilities are often harsh settings, with oil, dirt, vibration, physical abuse and other numerous issues. In contrast, many people envision an agricultural setting as crops in the field, often with animals quietly grazing or resting in their barn. The image is all peaceful and benign (Figure 1).

Despite this image, the reality is quite different — and it is a harsh one.

A modern agricultural operation can be as bad as or even worse than an industrial environment. There are constant dirt, crop dust and discards, physical impact, extreme temperatures (both hot and cold), extreme weather (storms, flooding) and more. Further, unique to the farm environment is the presence of animal waste (primarily ammonia), which is corrosive to many materials.

Therefore, rugged enclosures are needed to enable effective and reliable modern farm work. These enclosures house and protect electrical lines, lighting controls, switchgear, safety and security wiring, even sophisticated electronics; they are also critical for user and livestock safety.

### **Enclosure Considerations Define Selection**



**Figure 2. Non-metallic polycarbonate enclosures, such as the dust- and moisture-proof TK and TG series from Altech Corp. offer many useful performance advantages and attributes in the farm/agriculture environment, as compared to metallic units. Source: Altech**



**Figure 1. A farm may seem a quiet and clean operation compared to an industrial facility, but it is actually more challenging in terms of dirt, dust, waste, impact and corrosive environment. Source: Altech**

The common solution is to select a suitable metallic enclosure, either steel or aluminum, to provide the needed ruggedness and protection. However, in the case of farms, a non-metallic polycarbonate enclosure (Figure 2) can be the better choice, as it resists moisture, corrosion, chemicals and even ammonia.

Polycarbonate enclosures offer other advantages in addition to basic ruggedness. Obviously, they are rust-proof and have no surface finish that can wear or chip, thus allowing rust to take hold. Further, these non-metallic units meet various relevant standards, among them:

- UL94 (Flammability of Plastic Materials);

- NEMA IP66/67 (particle and water ingress);
- VDE 0471 (fire hazard);
- IK07 (impact);
- Wide operating-temperature range of -35 degrees C to +80 degrees C.

A special feature of polycarbonate enclosures is that they can tolerate high concentrations of ammonia, meeting the stiff certification requirements of the German Agricultural Society (Deutsche Landwirtschafts-Gesellschaft, or DLG). They can withstand an ammonia concentration of 750 ppm (parts per million) at 70 degrees C and 70 percent humidity over 1,500 hours of continuous testing.

### **Customization Opportunities Make an Additional Difference**

While the physical sizes of polycarbonate enclosures are standardized, this is not a serious constraint, as they are available in a wide range of height, width and depth dimension combinations. Once a basic enclosure is chosen, many attributes and features can easily be customized. Vendors can do value-added work to reduce end-user effort even for moderate volumes, typically beginning at just 25 units (Figure 3). Among these are:

- Choice of hinge type (internal, external);
- Choice of mounting style and orientation;
- Panel cutouts for displays, indicators, keypads and other functions;
- Pre-packaged connectors and pushbuttons;
- Imprinting and labeling;
- Choice of transparent or opaque cover.

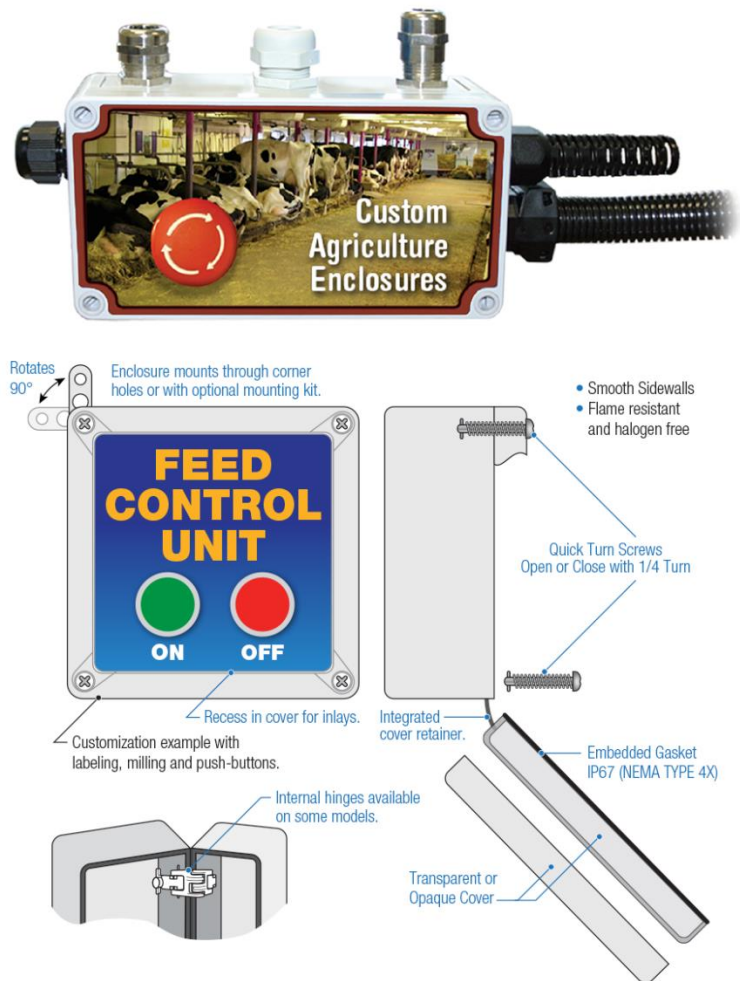


Figure 3. Non-metallic polycarbonate enclosures are offered with many standard options as well as customizable options. Source: Altech

### **Polycarbonate Enclosures: An Attractive Alternative**

Non-metallic polycarbonate enclosures can be a superior and flexible match for harsh applications such as agriculture, especially due to their corrosion and ammonia resistance. They meet and exceed all

relevant industry standards for corrosion, impact resistance, ingress protection, flammability and more. Further, the vendor can customize many aspects of these enclosures to meet specific user requirements and preferences.

For more information on choosing and using non-metallic polycarbonate enclosures, contact [Altech Corp.](#)