ATEX Basics and Expectations Toward Vendors

GRUNDFOS

Possibility in every drop

Introduction to ATEX (ATmosphère EXplosibles)

- The main goal is explosion-proof production to ensure safe operation in explosive atmospheres by preventing sparks, or heat from igniting flammable gases, vapors, dust, or fibers.

- Acceptable protection techniques designed to avoid potential disaster:
  - flame proofness
  - dust tightness
  - hermetical sealing
  - purging/pressurization
  - intrinsic safety

- Grundfos explosion-proof pumps are primarily for wastewater applications

How do we know/ensure that our products are safe

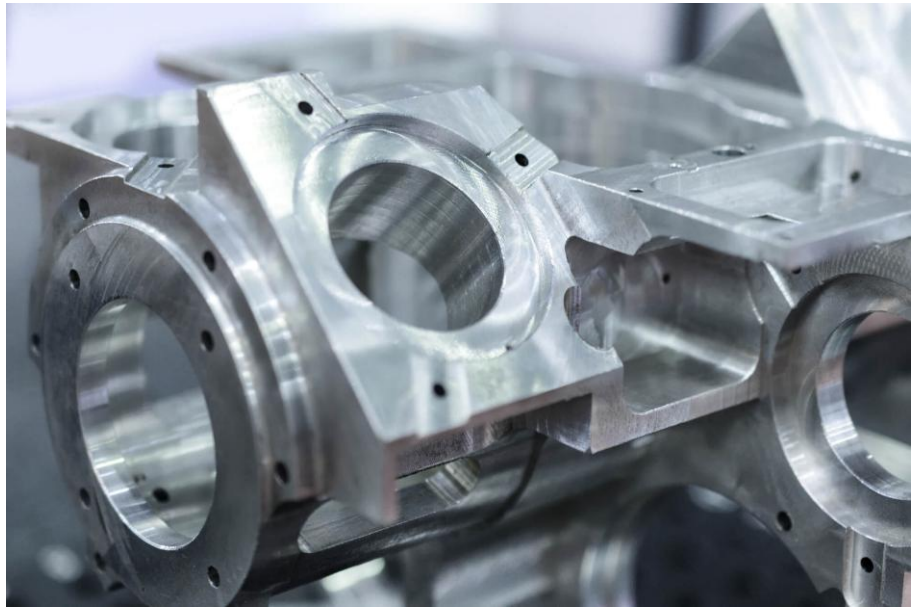
The product...
- fits to general safety requirements (Safety Risk Assessment)
- complies to directives and standards
- passes on tests (at approval institutes or own lab)
- receives certificate

Explosion Proofness Test

Verification of flameproof enclosures (IEC 60079-1)

Castings

- 100% visual inspection of each part
- Wall thickness verification
- Check for flaws, inclusions, blow holes, and porosity
- Welded castings: subject to pressure testing



Machining

- 100% (CMM) inspection (or statistical techniques if approved by Grundfos)
- Verify flatness of flanged flamepaths
- Surface roughness of non-threaded flamepaths
- Fit of all threaded flamepaths
- Depth of drilling holes
- Dimensional requirements of all flamepaths

Ex description according to GS318A0001

Symbol	Class	Definition
Ex [D](Thermal/fire)	0	Class 0 symbol Ex with [D] and (hazard) identification shall be used for **safety critical requirements** on Ex products. These requirements are typically derived from regulatory requirements. Hazard on Ex is by default "Thermal/fire" acc. to Section 5.4. Mandatory documentation acc. to section 4.1.54.1.4. No changes are allowed on ratings/designation/composition/geometry/tolerances/ supplier of the part without prior acceptance from Grundfos Product Compliance. *Example: Flame gap*
Ex (Thermal/fire)	0	Same as above just without "mandatory documentation", see section 4.1.54.1.4 No changes are allowed on ratings/designation/composition/geometry/tolerances/ supplier of the part without prior acceptance from Grundfos Product Compliance. *Example: dimension with large margin to the safety critical requirement (see Figure 13)*
Ex	0	Class 0 symbol Ex without [D] and hazard identification shall be used for **regulatory but not safety critical** requirements on Ex products: • Regulatory requirements with 3rd part approval or self-declaration • Characteristics which are copied into 3rd part approval files used to document what is tested and approved. (Because a change shall also be reflected in the 3rd part approval file) *Example: Overall dimension of the Ex-part*

- Significant Parts: Key components of protection types. (Ex marking on the drawing)
- Ex Authorized Person: Determines the importance of parts based on their role in protection.

Main requirements for Vendors delivering Ex parts

- **Quality documents and records archive**
  For the Ex classified characteristics the minimum filing period of collected and measured data after manufacturing date is 10 years.
  Note: In case supplier change, GF purchasing shall ensure the handling of the access of these documents.

- **Traceability**
  Each part must be properly marked with at least a batch code, and inspection records must be linked to these codes.

- **Competences**
  All person having impact on compliance of Ex products must be trained and competent. The training shall be registered.

- **Exemptions**
  Follow technical documentation for Ex critical characteristics. No exemptions allowed.

- **Measuring Equipment**
  Calibrate all measuring equipment against accredited standards.

- **Quality records**
  Maintain adequate records to demonstrate product conformity.

- **Compliance verification**
  If Grundfos buys parts for Ex certified products, they must evaluate suppliers to ensure they meet requirements.
  This can be done through audits, quality management certificates, or incoming inspections.
  Suppliers fully capable of producing and verifying the product need no further check by Grundfos if they provide a Declaration of Conformity for each batch. -> DoC is the most preferred method

DoC, Declaration of Conformity from supplier

The declaration shall minimum contain the following:

- Unique identification of DoC
- Name and address of the supplier who is issuing the Declaration of Conformity.
- Identification of parts, processes, or services (i.e. name, type, and model number, and/or other relevant supporting information).
- The batch code or serial number of the supplied parts.
- A list of the documents which specify how the production parts are manufactured and controlled.
- Purchase order number.
- Batch size.
- The statement of conformity with critical parameters in the following format: We (issuer name) to declare that the information provided in this “External providers declaration of conformity” is accurate and confirm that the processes/products and services supplied by (issuer name) comply in all respects with the Purchase order requirements.
- Statement about production/service was not subcontracted to External provider without agreement with Grundfos.
- Date and place of issue of the declaration.
- The signature, name and function of the authorized person(s) acting on behalf of the supplier.

Supplier Evaluation (audit) for Ex Marked Parts

- Before the beginning of the production Supplier Quality must evaluate suppliers from Ex perspective, considering the criticality of parts and processes.

- After first approval of the supplier further evaluation options:

  - Quality Management Certificate:
  Obtain an Ex quality management certificate issued by an accredited body
  (preferably EN ISO 80079-34 2018 Global Ex Standard)

  OR

  - Supplier Audit:
  Grundfos SQD conducts an annual (on site / remote) audit to verify and document
  that the necessary procedures are in place and working efficiently.

Relevant documents

- Standards to be shared with vendors:

GS402A0051 - Requirements for Ex Quality Management
GS318A0001 - Technical documents/drawing -Classification of requirements
GF402A0051-01 - Supplier Declaration of Conformity

- Standards recommended to be aware:

ATEX directive (2014/34/EU) - Equipment and protective systems intended for use in potentially Explosive atmospheres.
ISO 80079-34 - Explosive atmospheres – Part 34: Application of quality management systems for Ex Product manufacture

Thank you!

Q&A

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