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International valve actuator standards: a brief presentation

In today's processes, within the modern control system, DCSs, PLCs, SCADAs, field instruments, sensors and actuators must properly offer high degrees of performance, integration and modularity and guarantee efficiency, reliability and fast and easy interchangeability.

Thanks to the developments of electroinics and microprocessor technology - even on small-sized plants – there is an increased need to meet specifications and material requisitions based on system architectures based on distributed systems and sub-systems, with the necessary implementation of sensors and smart actuators, which must integrate with modern communication and ICT technologies.

The modern control networks, used also on un-manned plants, identify in the actuators essential components which must integrate and properly communicate with higher hierarchies and contribute to the safety of people, environment and capital investments.

To be able to offer valid products, manufacturers and users dedicated time and efforts to introduce in the industry proper performance and product standards.

This was also true, in the middle of 90's, also for valve actuators, which can be defined as «devices which transmit thrust and/or torque to the valve for a defined stravel or stroke».

They are basically classified as:

- Pneumatic actuators
- Hydraulic and gas-over oil actuators
- Electric actuators

The first activities in producing actuators' standards took place, starting from 1991, in Europe within CEN TC 69: Industrial Valves Technical Committee.

The set of actuatoirs' standards was split in 4 parts:

EN 15714-1

Industrial valve. Actuators – Part 1: Terminology and definitions

EN 15714-2

Industrial valve. Actuators – Part 2: Electric actuators. Basic requirements

EN 15714-3

Industrial valve. Actuators – Part 3: Pneumatic actuators. Basic requirements

EN 15714-4

Industrial valve. Actuators – Part 4: Hydraulic actuators. Basic requirements

All stakeholders, involved in industrial valves as:

- Final clients or «End users»
- Engineering companies and consultants (EPCs)
- On-off and control valve manufacturers (OEMs)
- Manufactures of actuators, gearboxes and installation bracket/mounting kits

felt the need to produce international standards with common base of know-how and with fixed and clear reference points, able to specify quality products with valid levels of performance: in other words to have easily comparable products with valid acceptable performances ands with high degrees of interchangeability, if and when necessary.

The industry felt the need, in other words, to change from «de facto»specifications to «de jure» internationaly accepted standards, also for valve actuators.

At CEN TC 69 level, these are the European standards that have produced and published and that a direct impact on valve actuators' specifications, sizing, selection, purchasing, installation operation and maintenance phases:

- EN 12570 (Industrial valves: Method fo sizing the operating element)
- ISO 5210 (Industrial valves – Multi-turn valve/actuator mechanical interfaces)
- ISO 5211 (Industrial valves – Part-turn valve/actuator mechanical interfaces)
- EN 15081 (Industrial valves – Mounting brackets for part-turn actuators)
- EN 15714-1 (Industrial valve. Actuators – Part 1: Terminology and definitions)
- EN 15714-2 (Industrial valve. Actuators – Part 2: Electric actuators. Basic requirements)
- EN 15714-3 (Industrial valve. Actuators – Part 3: Pneumatic actuators. Basic requirements)
- EN 15714-4 (Industrial valve. Actuators – Part 4: Hydraulic actuators. Basic requirements)

At global level, other standards followed.

Among these, also thanks to a mutual original liaison with CEN/TC69, I like to mention the standards which were developed and published in the US by the ISA SP 96 Committee:

- ANSI/ISA-96.02.01: Guidelines for the Specification of Electric Valve Actuators
- ANSI/ISA-96.03.01: Guidelines for the Specification of Heavy Duty Pneumatically Operated Quarter Turn Valve Actuators
- ANSI/ISA-96.03.03: Guidelines for the Specification of Pnaumatic Vane Type Valve Actuators
- ANSI/ISA-96.05.01: Partial Stroke Testing of Automated Block ValvesGuidelines for the Specification of Heavy Duty Pneumatically Operated Quarter Turn Valve Actuators
- ANSI/ISA-96.06.01: Guidelines for the Specification of Self Contained Electro-HydraulicValve Actuators

More detailed information will be given with the relevant manuscript which will be included in the IVS Conference Proceedings.

Thanks for your attention!

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