



New markets and applications anticipated for HVAC damper and valve actuators

Fig 1: Schischek valve actuators are used in the biogas production plant at Munich's Klärwerk Gut Grosslappen waste water treatment plant.

For over 30 years Schischek has been supplying electric explosionproof products for building services and HVAC applications in many industries, including onshore and offshore oil and gas, refineries, chemical plants, laboratories, pharmaceuticals, water treatment and ship building. The recent acquisition of the company by the Rotork group of flow control companies presents new opportunities for both organisations. Whilst the addition of the Schischek range enables Rotork to increase its activity in hazardous and non-hazardous area HVAC markets, Schischek actuators also fill a gap in Rotork's product range which is applicable to small valves and opens up new market areas, especially in the processing industries.

By Armin Nagel, Rotork Schischek

Heritage

The Schischek company ethos is not only about research and development, manufacturing and sales but also concerned with the security of the plant, equipment, machines, systems and, above all, people. A large product range for use in the explosion proof zones of the HVAC industry has been created, observing international norms and certifications.

Rotary and linear actuators for air dampers, fire dampers, air volume

control and valves have been developed for a wide range of on/off, three position and modulating duties and operating environments. The actuator products are complemented by a comprehensive range of monitoring and switching sensors for temperature, humidity, pressure and frost protection. The benefits of Schischek electrical solutions in hazardous environments, including reduced barrier costs, simplified connections, installation, maintenance and cost of ownership, are well established and appreciated.

When developing its products Schischek has always paid attention to the highest protection classes for the use of devices in environments encompassing all types of gases, mists, vapours and dust. Approvals have been obtained from respected certifying bodies such as PTB and the entire range can be used in ATEX zones 1, 2, 21 and 22. The scope of approvals is enlarged by international certificates, so that the current product range is not only certified to ATEX 94/9/EG but also IEC-Ex, ExGOST (Russia) and CSA/FM (Canada and USA).



Fig 2: Dampers for smoke and fire protection, as well as air control, are established applications for Schischek actuators.

Although designed primarily for explosionproof environments, the actuators incorporate features that are equally attractive for use in non-hazardous areas. These include a spring-return loss of power failsafe capability, selectable at speeds of 1, 3, 10 and 20 seconds for 90° operation, a self adaptive universal power supply with a range of 24 to 240V, ac or dc, standard environmental protection to IP66 and the availability of SIL2 safety integrity level for failsafe products. Robust stainless steel enclosures are available as an alternative to the standard aluminium in harsh and aggressive environments, whilst a three-coat offshore paint finish can also be applied.

A combination of designation and colour coding for Schischek products defines the appropriate hazardous or safe area of application to avoid any mistakes. For example, the Max range of quarter-turn actuators is available as the ExMax and painted yellow, indicating suitability for ATEX zones 1, 2, 21 and 22. The RedMax version, painted red, is suitable for ATEX zones 2 and 22; the InMax version, painted green, is only suitable for non-hazardous safe areas.

The same principle of designation and colour is universally applied to all Schischek products, including various OEM products developed for individual customised requirements.

Applications for the actuators are widespread, encompassing dust extraction systems, paint lines, disposal areas, waste water plants, container ships and tankers,

oil and gas platforms, compressor stations, pipelines and any industrial process using potentially explosive media as well as extraction plants in tunnel systems and air flow control units in laboratories.

Actuation products

Schischek manufactures electric actuators for quarter-turn and linear valve and damper operation, each available with a spring-return failsafe capability and with 'Ex' or 'Red' explosionproof or 'In' non-explosionproof enclosure specifications.



Fig 3: Schischek ExRun actuator for linear on/off, three-way or regulating valve control.

supply and choice of on/off, three-position or modulating control. For position signalling and feedback a 4-20mA or 0-10V supply can be utilised, whilst two end of travel auxiliary position switches are

optionally available. The ExMax and ExRun actuators have a T6/T5 Temperature and IIC Explosion Group classification enabling them to be used safely in ATEX rated Zones 1 and 21 in the presence of dangerous gases, mists and vapours. The T6/T5 temperature classification enables the actuator to operate at ambient temperatures up to 40°C/50°C and an integral heater automatically maintains reliable actuator operation at temperatures down to -40°C, facilitating the installation of standard products in extreme environments.

For failsafe operation in either direction an integral spring-return version is available for output torques up to 60Nm, which can be programmed to operate with a 1, 3, 10 or 20 second stroke time. In its failsafe version the actuator is available with SIL2 safety integrity level approval.

Max actuator duties in explosionproof environments include dampers for smoke, temperature or fire protection and the operation of ball and butterfly valves, typically in sizes up to 50mm (2 inches).

For linear on/off, three-way or regulating control, Run actuators offer an output torque range of 500 to 10,000N and stroke lengths between 5 and 60mm. Up to five running times between 2 and 15 seconds per millimetre are selectable on-site, together with the self-adaptable power supply and choice of position signal and feedback supply. The Run actuator is not available in a linear failsafe configuration, but this function is achieved by the combination of a Max actuator and Lin gearbox. The Lin converts the actuator's quarter-turn output into a linear stroke, selectable at lengths between 10 and 42mm.

Customers supply Schischek actuators to end-users as a packaged valve or damper, including all necessary adaptation parts and accessories. In many cases valvemakers free-issue products to Schischek workshops at subsidiaries or agents, where actuation and factory testing can take place locally, prior to shipment to site.

The selectable stroke time is one of a number of options that are built into the standard product, including the adaptable power supply and choice of on/off, three-position or modulating control. For position signalling and feedback a 4-20mA or 0-10V supply can be utilised, whilst two end of travel auxiliary position switches are

The Rotork connection

Both Schischek and Rotork are known for manufacturing products of the highest quality and reliability. These products complement each other and will enable Schischek to significantly extend its offering in the HVAC market, supported by Rotork's worldwide presence in almost 100 countries.

Rotork's rack and pinion pneumatic actuators are one example of a product that gives Schischek the ability to increase its offering to encompass electrical sensors and monitoring equipment with electric and pneumatic actuation. In another scenario, Rotork's range of larger explosionproof electric actuators can be used with Schischek actuators to increase versatility and scope of supply. Motorway tunnels in Melbourne, Heathrow Airport's T5 terminal and the London Olympic Village are just three of many locations where Rotork IQ intelligent electric actuators are used for fire control and HVAC applications. Power stations are another area of activity, where large linear and rotary Rotork electric and pneumatic actuators are used for applications including the modulating control of inlet and draft dampers for boiler combustion control. At the other end of the size range, Rotork's abilities in the process industries will benefit from the option of using Schischek electric actuators to control small linear valves requiring up to 10kN operating force and quarter-turn valves with torque requirements up to 150Nm. By providing isolating and modulating control with a failsafe function, these products sit neatly below Rotork's ranges of control valve actuation products, including CVA and CMA electric actuators, broadening the scope of supply in plants containing large and small bore pipework and introducing the option of an all-electric solution in every area of the process.

Application: Schischek boosts biogas production at Munich waste water plant

Schischek ExMax explosionproof actuators have been selected to assist the production of biogas for district heating systems in the German city of Munich. Biogas is produced during the effluent treatment process at the city's largest waste water plant Klaerwerk Gut Grosslappen, situated close to the world famous Munich Allianz Arena, home to Bayern Munich football club. The Schischek actuators have been installed in the digester and fermentation tanks, where all electrical equipment must be approved for use in hazardous areas. Built inside four large towers, the fermentation tanks mix the waste at a defined temperature to produce the biogas. For optimum performance the inner tank temperature must be maintained at 38°C. Six Schischek actuators are installed in an area known as the lamp at the top of each tower

for the operation of air dampers to balance the inside temperature with fluctuating ambient temperatures on the outside. Factors which have assisted the selection of Schischek products for this application include their compact size, ease of

installation, standardised connections and Zone I hazardous area explosionproof certification. In addition Schischek has developed established relationships with the damper OEM, local engineering companies and the end user.



Fig 4: One of the four fermentation tank towers at the Munich waste water treatment works. The Schischek actuators are installed in the lamp at the top of each tower.

About the Author

Mr. Armin Nagel is International Sales Director for Rotork Schischek, with responsibility for worldwide sales and marketing activity. An experienced specialist in sales and business development, his technical experience includes electrical drives, automation and control engineering. Armin's main focus in leading the sales organisation at Rotork Schischek is the continuing development of the company's global structures and strategies.

