

Project:

ifm flexpro gmbh
Film production in Wasserburg



in
building services automation
-> fire dampers <-

Fire dampers... via AS-i directly to the building services control system

So far the parallel wiring of fire dampers to the building services control system has been very complicated. Very long cables, broad cable carriers and big control cabinets have been necessary for this. The mounting costs have been an important item in the statement of costs in view of the long cable routes, high wiring efforts, and the possibility of incorrect wiring. The AS-interface field bus system enables a reduction in exactly these costs.

Controller

The controller concept is based on the AS-i field bus system. It is either an independent control system or serves as an interface to the higher-level system. The controller can also be connected to plc or GLT controllers via flexible interfaces (RS232 or RS485). Even Profibus, Interbus-S or Device-Net are no problem for this system.

All signals are transferred via the two-wire cable of the AS-i field bus system. The system processes the signals and ensures the voltage supply of all sensors at the same time.



In the control cabinet no more I/O modules are required. AS-i transfers data and ensures the voltage supply of all sensors in the field.

Connection to the fire damper



fire damper with AS-Interface

The two mechanical limit switches of the fire damper are replaced by one inductive dual proximity switch. The cylindrical damping puck enables the detection of the rotational movement of the flap by one dual sensor only. This sensor signals the end positions "open" and "closed" to the system. The controller is connected via a simple 2-wire cable.

An M12 connector enables the connection of the sensor to the AS-i flat cable.

Connection of the damper in the field



Ind. dual sensor IND T5 with corresponding puck. AS-i interface directly integrated in the sensor.

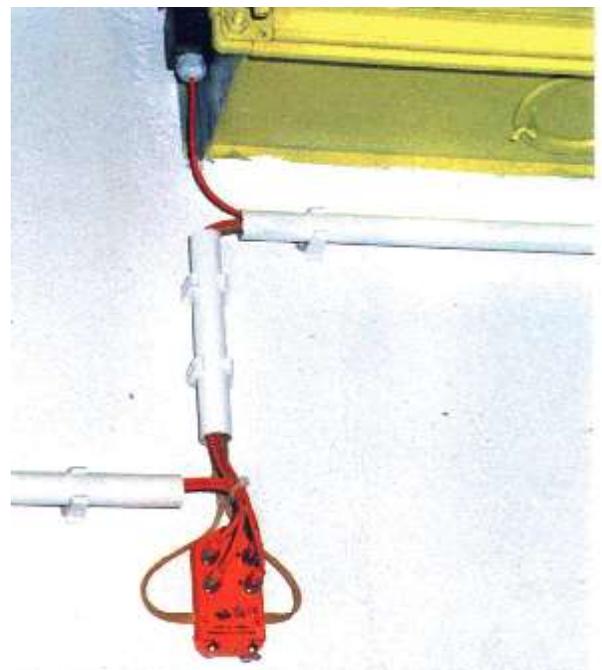
The connection between this sensor and the damper enables the system to monitor the dampers at any time. The sensor immediately signals a failure to the system. The fire damper can be ordered inclusive of mounting from the manufacturer of the dampers (e.g. company Gebrüder Trox GmbH, Neukirchen-Vluyn). On site the sensor only has to be addressed and the plug and socket connection be closed.

When the yellow flat cable is used, incorrect wiring is not possible because the cable has a special shape and can only be connected in one direction. Other failures are immediately detected and signalled when the controller is commissioned. Mechanically only three screws are necessary to mount the sensor and the puck and enable the connection of the damper to the bus system.

Intelligent sensors and switches

Even common sensors or switches can be connected to this system. Via special compact modules (IP67) with M12 connector normal standard sensors or simple switches can also be connected. It is also possible to use already existing cables e.g. 3x1.5mm² round cable as bus cable which are connected via modules with screw connection. They enable the use of special cables (fire-retardant, chemically resistant) as bus cable.

This system flexibility is guaranteed by AS-Interface being an open standard. It was not by chance but planned in advance that external components can be connected.



Considerably shorter cables

Each cable laid in the installation leads to subsequent costs. Cables have to be fixed, require cable links, have to be stripped off and isolated again and may be wired incorrectly. AS-i has a two-wire tree structure and can be branched at any position. This enables to reduce cable lengths considerably.

In this project approx. 1.5 km round cables would have been necessary for parallel wiring. With the use of AS-i only approx. 210 m of AS-i flat cables have been used.

It has not only been possible to use fewer cables but also to reduce the subsequent costs described above considerably.



Common parallel wiring to the control cabinet requires high mounting efforts. AS-i transfers data and ensures the voltage supply of the sensors via one two-wire cable.

Advantages of AS-i in this project



Requirements for this project were:

connection to a higher-level building services control system (DDC 3000 from Kieback & Peter). This connection is made in an interface PC via Profibus. Kieback & Peter are also working on a direct AS-interface which will then replace the current solution.

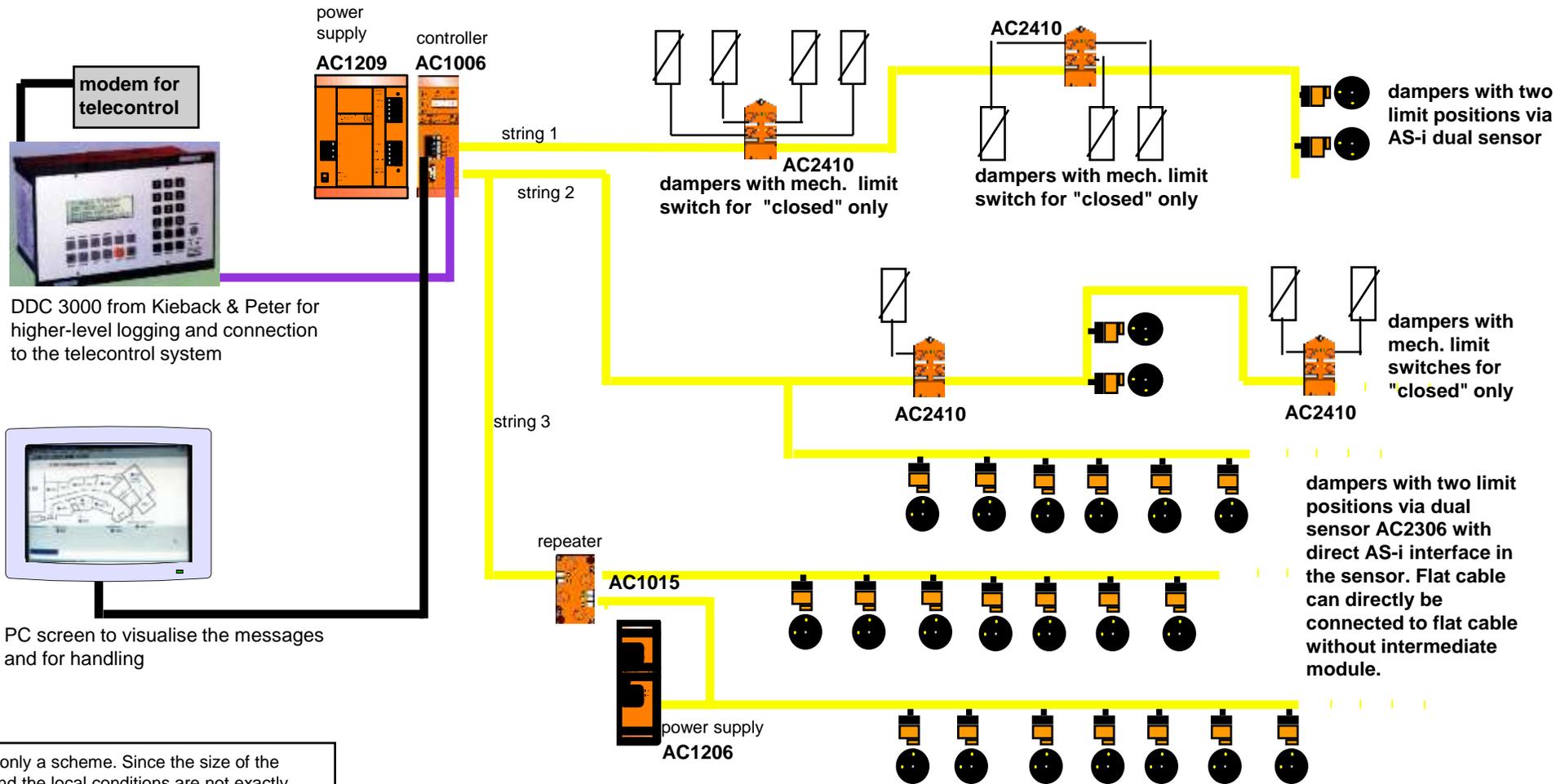
Simple mounting and savings compared to the common wiring system.

Simple visualisation without high costs (the visualisation software is included in the program package).

Diagnostic capability... the system enables early failure detection and signals its location independently.

Independent operation... the AS-i controller enables full functioning even when the connection to the higher-level system is disturbed or completely interrupted. This enables the commissioning of the installation before the higher-level system is installed.

Project scheme AS-i at fire dampers



This is only a scheme. Since the size of the plant and the local conditions are not exactly known the system must be set up according to the requirements on site.