application
Compact pressurization unit iSWAY-FC® Adaptive type is a set of strictly defined components enclosed in one housing, intended to use in smoke and heat control systems as a pressure differential kit. Units of this type are used for overpressure protection of both vertical and horizontal escape routes in case of fire in different buildings e.g. office buildings, residential buildings, shopping malls as well as industrial buildings. iSWAY-FC® Adaptive units can be located inside and outside the building e.g. technical floors, roof level, ground level.


construction and assembly conditions
- iSWAY-FC® Adaptive type units are characterized with compact construction and small dimensions
- iSWAY-FC® Adaptive type units are manufactured in three housing sizes respectively 0, 1, 2 with dedicated axial flow fans with maximal capacity 50000 m³/h
- air supply fans are power supplied with the best available Danfoss frequency inverters with Fire Mode function, dedicated for application in smoke and heat control systems
- precise control and stable operation of the unit are guaranteed due to application of dedicated MAC-FC (Model Adaptive Control) controller built on signal processor-based with high computing power with floating-point 64-bit coprocessor, clock timing 456 MHz
- units were designed as a modular solution, with wide range of accessories which enables optimal configuration depending on local technical requirements
- application of self-supporting housing structure as well as vibration isolators enables unit’s operation at any position
- if necessary unit can be rotated about its axis which enables easy access to the inside on site
- application of properly integrated iSWAY-FC® Adaptive type units enables full functionality of the forced airflow active controlled SAFETY WAY® pressure differential system dedicated for high rise and super high-rise buildings

Anty Frost® system
In all iSWAY-FC® Adaptive type units dedicated for outside assembly on the roof or at the ground level near the building are equipped by default with Anty Frost® system preventing the shut-off dampers from freezing in the wintertime.

Freezing of important components of pressure differential kits may cause its proper operation. This problem regards both electronically controlled and mechanical pressure controllers e.g. barometric overpressure dampers.

Idea of Anty Frost® system is based on properly located and protected infrared heaters controlled with thermostat. In order to maximize infrared radiation absorption protected multiblade shut-off thermally insulated low temperature dampers are painted in black.
innovative adaptive control

In all iSWAY-FC® Adaptive type units innovative in fire protection industry control system were applied. Applied algorithm on which control is based is capable of constant learning with a use of neural network. Therefore MAC-FC controller makes an automatic adaptation to the dynamically changing conditions during evacuation basing on follow-up identification of control system e.g. staircase.

- precise control of overpressure value, that is guarantee of normative pressure gradient
- possibility of remote differential pressure sensors application, no limitation of pneumatic tubings length
- automatic adaptation to the changes of air leakage rate, e.g. broken window in the building facade
- confirmed adaptability in air leakage rate from 300 up to 36000 m³/h
- possibility of complex evacuation scenarios realization
- compensation of Airflow resistance generated by people during evacuation
- protection against negative stack effect and wind influence

fire BUS communication protocol

In buildings where it is necessary to apply more iSWAY-FC® Adaptive type units is necessary to provide appropriate system integration in order to control and on-line monitoring of the pressure differential system.

- single cable connecting all pressure differential system components
- safe control and monitoring signals transmission due to the loop architecture
- significant of wiring costs

unit’s operating conditions monitoring (MSPU)

In case of complex smoke and heat control systems, which require application of many units iSWAY company recommends central system monitoring. In such cases iSWAY company delivers MSPU device providing on-line monitoring of basic operating parameters of all important components. Advantage of such solution is simple construction basing on industrial PC and touch panel and intuitive operation.

- on-line monitoring of the overpressure value inside the protected spaces
- on-line monitoring of operating parameters of all important pressure differential system components
- evacuation door position monitoring
- visualization of pressure differential system architecture
- periodic 24-h tests with automatically printed report
- significantly shorter time required for acceptance and commissioning tests as well as periodic inspections
- increased safety level in case of fire due to immediate failure detection
- remote pressure differential system control and monitoring e.g. via Internet

quality and reliability

iSWAY-FC® Adaptive type units are first European complete pressure differential kits, which components fulfill all requirements in smoke and heat control systems applications.

- solution developed as a result of cooperation of iSWAY and PLUM companies together with Warsaw University of Technology scientists
- kits tested in Polish and German notified laboratories (aerodynamic and electrical tests) and real scale on site tests
- pressure differential kit as a building product certified in accordance with conformity assessment system 1
- additional tests of electronic components in full range of temperatures from -20 °C up to +55 °C
- technical approval ITB AT-15/F020/2012
- certificate of conformity ITB-2199-W
- manufacturer’s declaration of conformity NR 282/2013
- functionality and reliability as a guarantee of stable unit’s operation
- factory production control and individual tests of each manufactured unit on the test rig in iSWAY company
- full support at each stage of the project from system concept, through design, CFD simulations to on-site start-up and calibration

reference buildings

Due to application of innovative technical solution and high quality components dedicated for smoke and heat control systems application iSWAY-FC® Adaptive type units were applied in more than 60 different buildings.

- SKYTOWER high-rise buildings complex, Wroclaw
- CBVINCI office center, Kraków
- Municipal football stadium in, H. Reymana, Kraków
- Powerplant Konin
- Nova Park shopping mall, Grodzów Wielkopolski
- Saski Keparesidential buildings, Warszawa
- Regional hospital, Poznań
- Regional Hospital, Wroclaw
- Polish Financial Supervision Authority, Warszawa
- Customs Chamber, Katowice
- Tepfelow Business Park, Łódź
- Marine Hotel, Kolobrzeg
- University of Technology, Poznań
- BTO office center, Warszawa
- Silesian University of Technology, Gliwice
- Knights Academy, Legnica
- Globo Hotel, Gdańsk
- Reolita Hotel, Warszawa
- Pogor sports hall, Zabrze
Compact pressurization unit iSWAY-FC® Adaptive for smoke and heat control systems as a pressure differential kit.

What are the legal basis of holding the certificate?

- from the provisions of the Act of 16 Apr 2004 on Building Products
- from the provisions European Commission Mandate 109 Fire alarm/detection, fixed firefighting, fire and smoke control and explosion suppression products
- from the provisions of the Regulation of the Minister of Infrastructure dated 11 Aug 2004 on the manners of declaring conformity of building industry products and the manner of marking them with building industry brand B-mark