

## CERTIFICATE OF FIRE APPROVAL

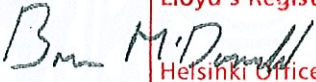
This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

<b>Manufacturer</b>	Halton Oy
<b>Address</b>	Pulttikatu 2 15700 Lahti Finland
<b>Type</b>	<b>FIRE DAMPER (STANDARD FIRE TEST)</b>
<b>Description</b>	Single/Multi Blade Fire Damper - Type: "FDB2-EL, FDB2-PNR, FDB2-PNL and FDB2-SP"
<b>Specified Standard</b>	IMO Res. MSC.61(67)-(FTP Code) Annex 1 Part 3 IMO MSC/Circ.1120

The attached Design Appraisal Document forms part of this certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue	4 May 2011	Expiry date	26 October 2015
Certificate No.	SAS F100359/M1	Signed	 Helsinki Office
Sheet No	1 of 3	Name	B. McDonald Surveyor to Lloyd's Register EMEA A Member of the Lloyd's Register Group

**Note:**

**This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.**

"Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract."

**DESIGN APPRAISAL DOCUMENT**

Date 4 May 2011	Quote this reference on all future communications LDSO/SFS/TA/BM
--------------------	---

**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F100359/M1**

This Design Appraisal Document forms part of the Certificate.

**APPROVAL DOCUMENTATION**

VTT Technical Research Centre of Finland, Espoo, Finland, Test Report Nos. RTE 762/04, RTE 679/04, and RTE1083/04 dated 17 May 2004 and RTE 1133/05, RTE 1134/05 dated 24 May 2005 and VTT-S-10161-07 dated 23 November 2007. VTT Statement No. VTT-S-3542-10 for joining single units in a multiple unit assembly.

**CONDITIONS OF CERTIFICATION**

- For use in A-0 divisions with fire damper insulated and 'A-15', 'A-30' and 'A-60' divisions with ducting and fire damper suitably insulated in accordance with Condition 4 below.
- Minimum and maximum size of damper: 100mm x 100mm up to 2000mm x 1900mm (mullion arrangement).
- The dampers are fitted with either:
  - (FDB2-EL) Schischek: 15F, ExMAX-15-SF, RedMAX-15-SF, ExMAX-5.10-SF
  - (FDB2-EL) Belimo: BLF 230, AF 24/230-2 HL, BF4-2 HL AF 24, SF24 ALON, SR 24/120/230
  - (FDB2-EL) Siemens: GGA 326.1 E & GGA 126 electric actuators
  - (FDB2-SP) Spring actuator (Terasjousi Oy)
  - (FDB2-PNR) Air Torque AT100 S10 B
  - (FDB2-PNR) E LO-Matic ES40
  - (FDB2-PNL) Roder 245N pneumatic actuators
- Table of Insulation Requirements for Decks and Bulkheads (insulated length may be interpolated from the results shown below using the cross-sectional area of fire damper). Insulation on duct to be the same fire rating as that used on the division, but insulation on fire damper in all cases to be A-60 Class. For single fire dampers joined together in a multiple unit assembly each fire damper to be insulated separately as shown in this table.

Cross-Sectional Area of Fire Damper (mm)	Total Insulated length (mm) including fire damper	Fire Damper Unit Type
100 x 100	900	Single
1600 x 1200	1400	Single
2000 x 1900	1900	Double with mullion

- Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.

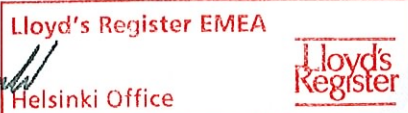
**DESIGN APPRAISAL DOCUMENT**

Date 4 May 2011	Quote this reference on all future communications LDSO/SFS/TA/BM
--------------------	---

**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F100359/M1**

**PLACE OF PRODUCTION**

Halton Ventilation Co. Ltd  
600 South Xin Yuan Road/Building 10  
Lingang New City  
Shanghai  
People's Republic of China



Bruce McDonald  
Statutory Fire & Safety Manager  
London Design Support Office  
Lloyd's Register EMEA

**Supplementary Type Approval Terms and Conditions**

*This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).*