

## FIRE TEST OF BUILDING ELEMENTS

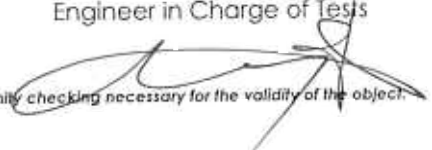
*According to the European standard NF EN 12101-3 : 2002-09  
and the French Decree dated of August 3<sup>rd</sup> ;1999*

### CERTIFICATE OF APPROVAL

<b>Subject</b>	Fire tests of a range of electrical motors Ref. M3BPW																		
<b>Tests n°</b>	: 04 - H - 081 : 04 - H - 086 : 04 - G - 082	<b>Carried out on</b>	: March 1 <sup>st</sup> , 2004 : March 2 <sup>nd</sup> , 2004 : March 3 <sup>rd</sup> , 2004																
<b>Report n°</b>	: 04 - G - 082																		
<b>Sponsor</b>	: ABB OY, ELECTRICAL MACHINES LV MOTORS Strömbergin Puistotie 5A FIN - 65101 VAASA																		
<b>Scope</b>	: A range of electrical motors of low-voltage, three-phase, asynchronous, closed cage electric motors with the following features : <ul style="list-style-type: none"> <li>• manufacturer : ABB OY, ELECTRICAL MACHINES LV MOTORS</li> <li>• reference : M3BPW</li> <li>• construction : TEFC</li> <li>• frame size : from 160 up to 400</li> <li>• electrical ratings up to 560 kW</li> <li>• nominal rated voltages supply between 190 V and 690 V</li> <li>• rotational speeds : from 4 up to 12 poles and multi speeds motors</li> <li>• insulation class/temperature rise class/specifications : H/F-B/EN 60034-1</li> <li>• frame and end covers material : cast iron</li> <li>• cooling fan material : aluminum (plastic fan allowed)</li> <li>• fan cover : steel</li> <li>• applications : DOL and VSD (maximal rotational speed 1800 rpm/min)</li> <li>• Maximal frequency equal to 60 Hz for both application</li> </ul>																		
	Bearings features for frame size motors from 160 mm up to 400 mm : <table border="0" style="margin-left: 20px;"> <tr> <td>Bearing type</td> <td>/arrangement</td> <td>/class of fit</td> <td>/lubricant DE :</td> </tr> <tr> <td>ball bearing regreasable</td> <td>/ locked bearing</td> <td>/C4</td> <td>/UNIREX N2 (ESSO)</td> </tr> <tr> <td>Bearing type</td> <td>/arrangement</td> <td>/class of fit</td> <td>/lubricant NDE :</td> </tr> <tr> <td>ball bearing regreasable</td> <td>/ free bearing</td> <td>/C4</td> <td>/ UNIREX N2 (ESSO)</td> </tr> </table>			Bearing type	/arrangement	/class of fit	/lubricant DE :	ball bearing regreasable	/ locked bearing	/C4	/UNIREX N2 (ESSO)	Bearing type	/arrangement	/class of fit	/lubricant NDE :	ball bearing regreasable	/ free bearing	/C4	/ UNIREX N2 (ESSO)
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<b>Test procedure</b>	These motors were tested according to the Annexe D, in association with a generator, with a dynamic load calculated according to ISO 281 and defined in the technical file of manufacturer. The dimensioning of the motors took into consideration axial and radial loads, the tests had been performed with a corresponding radial load.																		
<b>Conclusions</b>	OPERATING TEMPERATURE : <b>FOUR HUNDRED DEGREES CELSIUS (400° C)</b> OPERATING TIME : <b>ONE HUNDRED AND TWENTY MINUTES (120 min)</b> TEMPERATURE CLASS/TIME : <b>F 400 (120)</b> APPLICATION CLASS : <b>DUAL PURPOSE</b>																		

Maizières-lès-Metz, France, July 15<sup>th</sup>, 2004

**Kristelle BISCH**  
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*This certificate of test is for information only. Only a full copy of the test report, if any, will allow the conformity checking necessary for the validity of the object.*