EURASIAN ECONOMIC UNION
CERTIFICATE OF CONFORMITY

№ ЕАЭС RU C-RU.МЮ62.B.00953/19
Series RU № 0182851

Product CERTIFICATION AUTHORITY PROMMASH TEST Limited Liability Company. Location: 34 Ochakovskoe shosse street, room VII, room 6, Moscow, 119530. Address of the place of economic activity: 11 Derbenevskaia naberezhnaia, room 60, Moscow, 115114, Russian Federation. Phone: +7 (495) 481-33-80, email address: info@prommashtest.ru. Registration certificate of accreditation No. POCC RU.0001.11МЮ62. Date of registration of the accreditation certificate: October 28, 2013

APPLICANT Glazovsky Zavod Metallist Joint-Stock Company
Main state registration number: 1021801092499.
Location: 10 Yukamenskaja Street, Glazov, Udmurt Republic, 427627, Russian Federation
Phone: 73414138200, email address: metallist@metallist-udm.ru

MANUFACTURER Glazovsky Zavod Metallist Joint-Stock Company
Location: 10 Yukamenskaja Street, Glazov, Udmurt Republic, 427627, Russian Federation

PRODUCTS Mine booster fans.
Explosion-proof marking according to Appendix (forms Nos. 0690921, 0690922, 0690923).
The equipment is produced according to the Technical Specifications TS 3146-077-02962743-2013 “Mine booster fans. Technical Specification” for working in explosion hazardous areas.
Serial production

COMBINED NOMENCLATURE CODE ЕАЭС 8414 59 200 0

CONFORMS to the REQUIREMENTS of the Customs Union Technical Regulations of the Customs Union TP CU 012/2011 “On safety of the equipment for working in explosion hazardous areas”

THE CERTIFICATE OF CONFORMITY WAS ISSUED ON THE FOLLOWING GROUNDS:
- Report on the results of state analysis findings of Glazovsky Zavod Metallist Joint-Stock Company of August 09, 2019;
- Test Protocol No. 629ILPMV (ИЛПМВ) of August 12, 2019 issued by PROMMASH TEST Testing Center Limited Liability Company, Registration Certificate of Accreditation No.RA.RU.21BC05
- Technical Specifications TS 3146-077-02962743-2013, operations manual, ignition risk assessment.

Certification scheme: 1c

ADDITIONAL INFORMATION
Service life -at least 4 years, storage conditions 3 according to GOST 15150-69, storage period-1 year in accordance with the manufacturer's operational documentation. Standards ensuring the compliance with the requirements of the the Customs Union Technical Regulations of the Customs Union TP CU 012/2011 “On safety of the equipment for working in explosion hazardous areas”: according to Appendix (forms Nos. 0690921, 0690922, 0690923).

VALIDITY TERMS SHALL COME INTO EFFECT FROM August 23, 2019 **TO** August 22, 2024
INCLUDING THAT DATE

Head (authorized person) of the certification authority	*Signature* (signature)	Affix seal here [Seal: Product Certification Authority PROMMASH TEST LLC POCC RU. 0001. 11МЮ62 EAS for CERTIFICATES]	Rodzivon Galina Aleksandrovna (full name)
Expert (auditor expert) (experts (auditor experts))	*Signature* (signature)		Liubovskii Iurii Stanislavovich (full name)

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EURASIAN ECONOMIC UNION
APPENDIX

TO THE CERTIFICATE OF CONFORMITY No. ЕАЭС RU C-RU.МЮ62.B.00953/19
Series RU No. 0690921

1. Name of the equipment and scope of application

The certificate of conformity is applicable to the axial mine booster fans, series-produced according to the Technical Specifications TS 3146-077-02962743-2013 “Axial mine booster fans. Technical Specifications”, (hereinafter refered to as the “VME fans”),

The fans are designed for ventilation of blind mine workings in coal and ore mines.

The scope of application - underground mine workings of mines and ore mines including gas- and (or) dust- hazardous ones.

Detailed explanation of the identity code for VME fans:

VME X_1-x_2/X_3 U5 TU 3146-077-02962743-2013

VME	Explosion-proof booster fan
X_1	Symbol is not available - single-stage 2 - Two-stage
X_2	Diameter of an impeller in dm
X_3	The symbol is not available – with no a noise suppressor 1- equipped with a noise suppressor
U5	Climatic modification and placement category according to GOST 15150-69
TS 3146-077-02962743-2013	Technical Specification number

2. Description of the equipment and explosion protection facilities

The fan is horizontal-designed and consists of the following main components: housing, impeller, sliding blocks, inlet nozzle, outlet nozzle, collector, electrical motor and noise suppressor.

The flow part of the housing, inlet and outlet nozzles of the fan are made of St3ps-sv (Ст3пс-св) grade steel GOST 380 - 2005 with a thickness of at least 5 mm for single-stage fans.

The noise suppressor is made of St3ps-sv (Ст3пс-св) grade steel GOST 380-2005, and mineral wool is used as a noise-absorbing element.

The impeller mounted on the motor shaft consists of a hub made of aluminum alloy, as well as rotary blades made of thermoplastic plastic. The impeller is mounted on the output shaft of the electric motor.

Electric motors of VME fans are made in mine explosion-proof design and are intended for operation in accordance with the assigned marking of explosion protection and the scope of application of VME fans, as well as regulatory documents regulating the use of electrical equipment in explosion hazardous zones and the manufacturer's operating instructions.

The temperature of the inner and outer surfaces of the shells, depending on the requirements of the type of explosion protection used, does not exceed the temperature set for equipment of group 1-150 °C.

The principle of operation and description of the component equipment are given in the relevant operating documents.

Table 1-Main technical data of VME fans.

Indicator description	Version				
	One-stage				
	VME-4	VME-5	VME-6	VME-8	VME-12
Nominal diameter, mm	400	500	630	800	1200
Rated feed m^3 / s	1,8-2,0	3,30-3,65	4,5-7,0	6,3-10	12,0-34,0
Rated total pressure, PA	1300-1170	2000-1800	2500-2250	3150-2800	3000-1300
Fan overall efficiency	0.61	0.66	0.68	0.69	0.71
Electric drive power, kW	4.0	15.0	22,0...25,0	45,0... 50,0	110
Rotation frequency min’[1]	3000	3000	3000	3000	1500
Height, mm	650	730	975	1060	1717
Width, mm	550	605	745	990	1350
Set weight kg, no more	160.0	264.5	365.0	650.0	1860
Ambient temperature, °C	from minus 40 to plus 40				
Explosion-proof marking	Ex IMbc				

Table 2-List of components used in VME fans.

Equipment name, type (Version wherein this equipment is used)	Manufacturer, country of origin	Explosion-proof marking
Asynchronous explosion-proof electric motors (TS 27.11.21-001-19104618-2017 types AVRM 132, AVRM 160, AVRM 200, AVRM 225, AVRM 250, AVRM 280	Elektrodvigatel LLC, Saint Petersburg, Russia	Ex RV Ex d I Mb X
Asynchronous explosion-proof motors VRA132, VRA160. VRA180, VRA200, VRA225 (BYAIN .526126.022 TS(БЯИН.526126.022 ТУ))	PK VEMZ LLC, RUSSIAN FEDERATION	Ex RV Ex d I Mb
Asynchronous explosion-proof mine motors AIMURV 132,160, 180,200,225,280 TU 3341-010-79682497-2015	Jiangsu Dazbong Electric Motor Co, Ltd China	Ex PB Ex d I Mb

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Expert (auditor expert) (experts (auditor experts))	*Signature* (signature)		Liubovskii Iurii Stanislavovich (full name)

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Series RU No. 0690921

Note: In accordance with PROMMASH TEST Certification Authority, it is allowed to use explosion-proof devices of other manufacturers with similar explosion-proof markings and technical data and having valid certificates of compliance TR CU 012/2011.

Ensuring the explosion-proofness is carried out by performing VME fans in accordance with the requirements of GOST 31441.1 2011, as well as the requirements for the types of explosion protection "c" design safety" according to GOST 31441.5-2011.

Explosion protection type "c" design safety" according to the requirements of GOST 31441.1-2011, GOST 31441.5-2011 and GOST 31439-2011 is provided by the use of structural measures to protect against possible ignition from heated surfaces of sparks and adiabatic compression produced by moving parts, namely:

- the equipment design eliminates sparking when metal fixed parts come into contact with rotating parts. The gaps between rotating and stationary parts do not change in the course of operation in a smaller way, the moving parts of the equipment are protected from external influences by a protective grid or safety fence. The selected materials exclude the possibility of spark producing from friction;
- by providing the size of the gaps between the rotating impeller and adjacent fixed elements (housing) excluding friction contact, the gaps between rotating and fixed parts do not change during operation in a smaller direction, the moving parts of the equipment are protected from external influences, the presence of a protective grid on the side of the air inlet, providing IP10. The selected materials (polyamide and steel) also eliminate the possibility of sparking from friction;
- by limitation of the heating temperature of the surface of the components and parts of the flow part of the fan (housing, impeller), the temperature is determined mainly by the temperature of the handled medium which can not exceed the self-ignition temperature;
- due to construction of single-stage fan housings made of steel with a thickness of at least 5 mm, the housings have a high degree of mechanical strength, are resistant to mechanical impacts of up to 20 J;
- By applying the bearing lubrication in electric motors in the amount sufficient for normal operation for the time specified in the operating documentation, used in electric motors, the bearings used in electric motors have at least 1.5-fold reserve, taking into account the maximum loads acting on the fan impeller, filling with grease in accordance with the requirements of the manufacturer's documentation;
- by absence of exterior parts made from materials containing aluminium and its alloys according to GOST 31441.1-2011; by absence of external details made of metal material area of 100 cm^2, with a surface resistance of more than 10^9 ohms, the fan blades are made of polyamide with the use of the materials and paintwork with a thickness not exceeding 2 mm with a resistivity of no more than 10^9 Ohm excluding the possibility of accumulation and discharge of static electricity, and by connecting fans VME to circuit ground, the transition resistance of the ground between the various metal parts of the enclosure does not exceed 100 Ohms. The grounding clips are provided on the fan housing, motor and terminal box;
- manufacturing of a VME fan from materials that are non-flammable and flame-resisting according to GOST 31439-2011;
- the threaded connections of moving assembly units of the working elements of fans are equipped with devices to prevent arbitrary unscrewing;
- the certified explosion-proof electric motors of group I, with an explosion protection level not lower than RV (Mb) are applied to the VME fan. The above components are selected based on the ambient temperature range and other operating conditions. The temperature of the external surface of VME fans in normal operation, taking into account the maximum temperature during operation, does not exceed 150 °C;
- by instruction given in the operation manuals to immediately turn off the power supply of the VME fan in the event of extraneous sound and potentially possible bearing failures which eliminates a dangerous increase in temperature, taking into account the time allowance;
- installation, operation, repair and maintenance of the VME fan shall be carried out in strict accordance with the requirements of the operating instructions. The service personnel shall strictly observe the requirements for the parameters of the environment and operating environment set out in the operating instructions.

This certificate of conformity confirms compliance with the explosion safety requirements of TR CU 012/2011 and does not consider any other types of safety in the operation of equipment.

3. The mine booster fans meet the following requirements:

TR CU 012/2011	Customs Union Technical Regulations of the Customs Union TP CU 012/2011 "On safety of equipment for working in explosion hazardous areas"
GOST 31441.1-2011	Non-electrical equipment designed to use in potentially explosion hazardous areas. Part 1. General requirements.
GOST 31441.5-2011	Non-electrical equipment designed to use in potentially explosion hazardous areas. Part 5. Protection by "c" design safety.

4. Marking

The nameplates attached to VME fans are marked with the following information:

- manufacture mark;
- product identity code
- explosion-proof marking and image of a special explosion safety sign ЫІ Mb c;
- operating temperature range from minus 40 °C to +40°C;
- serial number;
- number of a certificate of compliance;

and other data required by regulatory and technical documentation which the manufacturer shall specify in the marking.

Marking with a special explosion-proof sign Ex is compliant with TR CU 012/2011.

5. Special application conditions

N/A.

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