



Marine & Offshore
Division

Certificate number: 22541/B0 BV

File number: ACE 4/859/1

Product code: 2584H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

FABRYKA SILNIKOW ELEKTRYCZNYCH BESEL S.A.
BRZEG - POLAND

for the type of product

ASYNCHRONOUS MACHINES (Power below 100kW)

Three phase induction motors Type mSh

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

IEC 60034 series (2008), IEC 60092-301 (1995)

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 16 Apr 2020

For BUREAU VERITAS,

At BV KATOWICE, on 16 Apr 2015,

Wojciech Lubojanski



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Three phase Cage Induction Marine Motors - Type mS*h

* : Mounting form on lugs, on flange(K) ; on lugs with flange (L)

| Frame material | Cast aluminium |
|-----------------------|------------------------------|
| Number of poles | : 2 to 8 |
| Height of frame | : 56, 63, 71, 80 |
| Power supply | : Up to 690 V 50 Hz or 60 Hz |
| Enclosure en cooling | : IP 55 - IC411 |
| Ambient temperature | : Up to 50°C |
| Duty type: | : S1 |
| Insulation class | : F |
| Temperature rise | : B or F |

Rated power at S1

| Motor type | kW 2 poles 50 Hz | kW 2 poles 60 Hz | kW 4 poles 50 Hz | kW 4 poles 60 Hz | kW 6 poles 50 Hz | kW 6 poles 60 Hz | kW 8 poles 50 Hz | kW 8 poles 60 Hz |
|-------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| mSh 56-.A | 0,09 | 0,11 | 0,06 | 0,07 | / | / | / | / |
| mSh 56-.B | 0,12 | 0,14 | 0,09 | 0,11 | / | / | / | / |
| mSh 63-.A | 0,18 | 0,21 | 0,12 | 0,14 | 0,09 | 0,11 | / | / |
| mSh 63-.B | 0,25 | 0,29 | 0,18 | 0,21 | 0,12 | 0,14 | / | / |
| mSh 71-.A | 0,37 | 0,43 | 0,25 | 0,29 | 0,18 | 0,21 | 0,09 | 0,11 |
| mSh 71-.B | 0,55 | 0,64 | 0,37 | 0,43 | 0,25 | 0,29 | 0,12 | 0,14 |
| mSh 80-.A | 0,75 | 0,87 | 0,55 | 0,64 | 0,37 | 0,43 | 0,18 | 0,21 |
| mSh 80-.B | 1,10 | 1,30 | 0,75 | 0,87 | 0,55 | 0,64 | 0,25 | 0,29 |

2. DOCUMENTS AND DRAWINGS :

2.1 - Drawings

K2-2195 02/10/2009 : General arrangement

K3-9310 02/10/2009 : Terminal box

K3-10795 03/11/2009 : Materials

K3-9377 02/10/2009 : Wound stator breakdown

K3-9376 02/10/2009 : Rotor breakdown

2.2 - Electrical data sheet

As per BESEL S.A F.S.E N° K.K. 45/07

For modification B0 version:

Drawing K2-2195 3-phase motors, dated 09.03.2015

Drawing K3-9310 Terminal box, dated 09.03.2015

Drawing K3-9376 Rotor, dated 09.03.2015

Drawing K3-9377 Stator, dated 12.06.2013

Drawing K3-10795 Materials, dated 09.03.2015

Datasheet KK mSh_2015 Ref. K.K. 45/15

3. TEST REPORTS :

Type test reports dated October 2009 on frames mSh 71 .., mSh 80 ..

For modification B0 version:

Test certificate mSh56-2A, dated Jan 2015
Test certificate mSh56-2B, dated Jan 2015
Test certificate mSh56-4A, dated Jan 2015
Test certificate mSh56-4B, dated Jan 2015
Test certificate mSh63-2A, dated Jan 2015
Test certificate mSh63-2B, dated Jan 2015
Test certificate mSh63-4A, dated Jan 2015
Test certificate mSh63-4B, dated Jan 2015

4. APPLICATION / LIMITATION:

4.1 - Application / Limitation of use

According to BV Rules for the Classification of Steel Ships and IEC 60092 series.

4.2 - On board installation & Maintenance requirements

According to BV Rules for the Classification of Steel Ships and IEC 60092 series.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **Fabryka Silnikow Elektrycznych BESEL S.A** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320.

5.3 - **Fabryka Silnikow Elektrycznych BESEL S.A** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products :

Fabryka Silnikow Elektrycznych BESEL S.A POLAND
ul. Elektryczna 8
49-300 BRZEG
Poland

6. MARKING OF PRODUCT:

- Name plate according to IEC 60034-1

7. OTHERS:

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that the **Fabryka Silnikow Elektrycznych BESEL S.A POLAND** will accept full responsibility for informing shipbuilders, ship-owners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate No. 22541/A0 issued on 12 Feb 2010 by the Society.

*** END OF CERTIFICATE ***