



ELECTROTECHNICAL CORPORATION

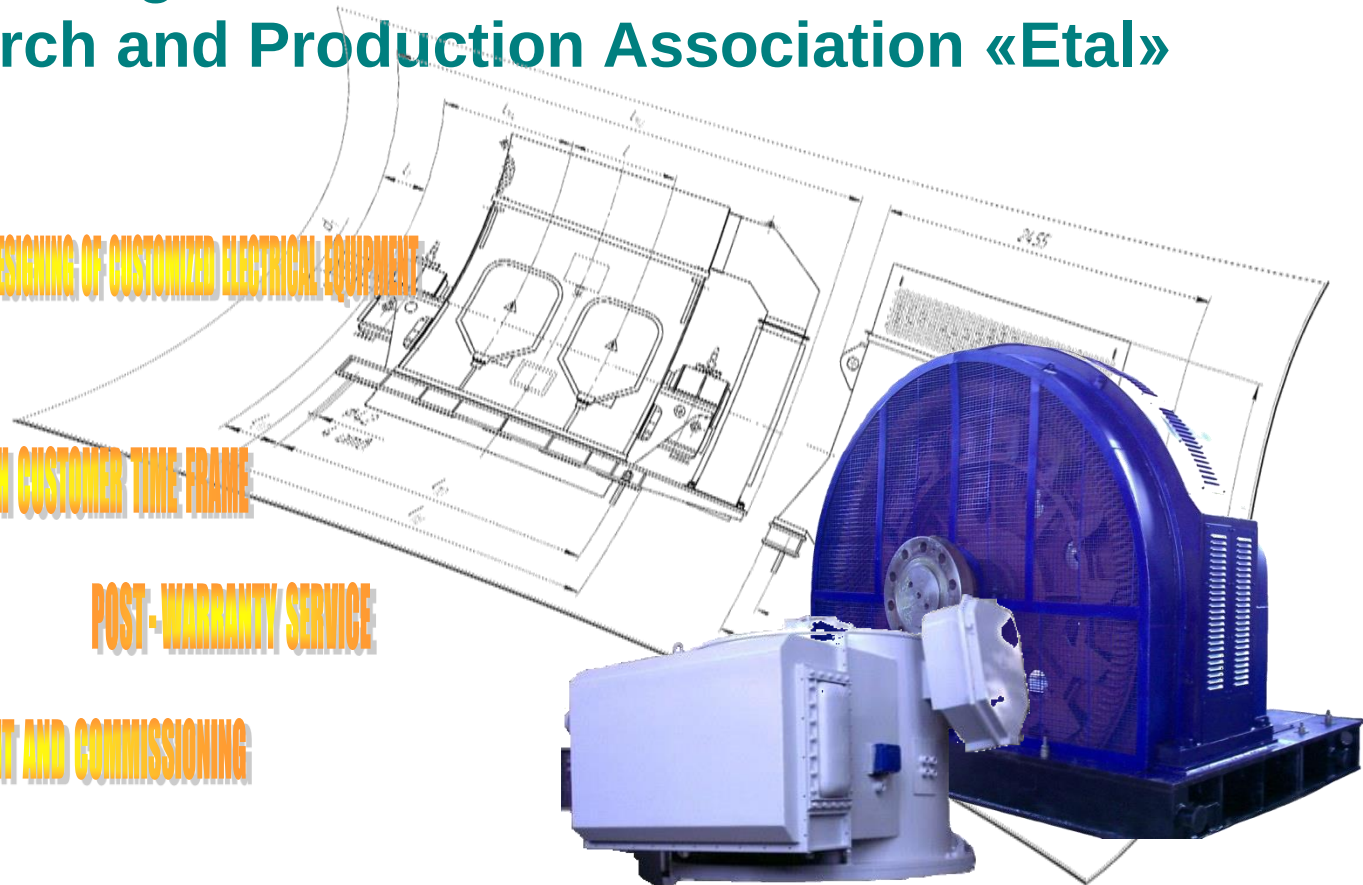
Limited Liability Company «Large Electric Machines Plant» Research and Production Association «Etal»

DEVELOPMENT AND DESIGNING OF CUSTOMIZED ELECTRICAL EQUIPMENT

PRODUCTION IN AGREED WITH CUSTOMER TIME FRAME

POST-WARRANTY SERVICE

INSTALLATION, ADJUSTMENT AND COMMISSIONING



Place of location



Main consumers



ISO Certificates

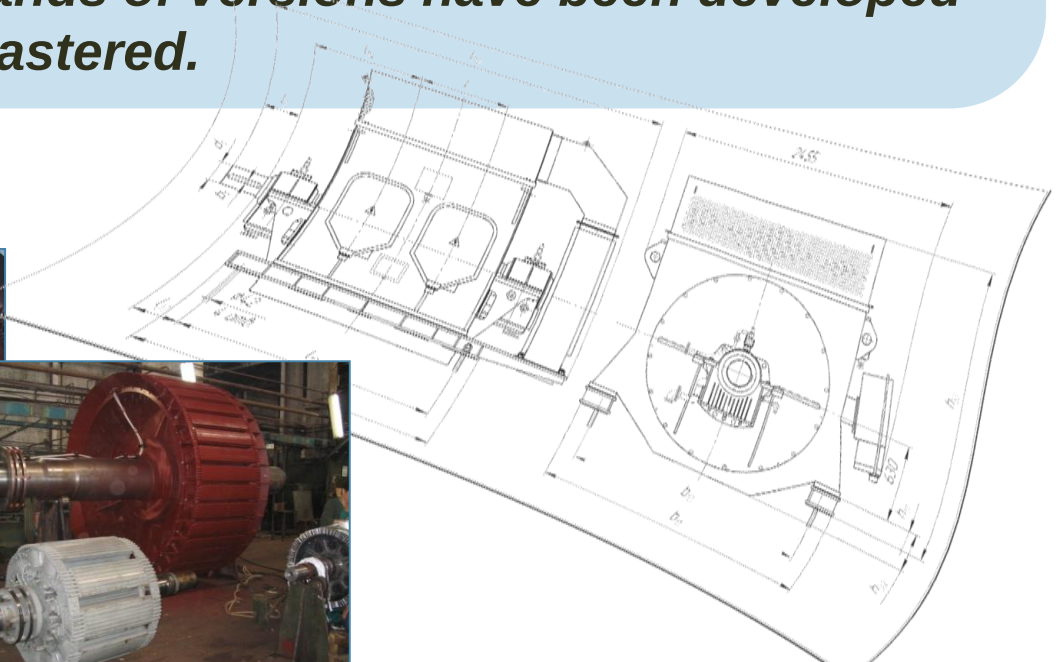
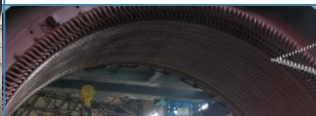


Engineering Centre



It is a large design subdivision which makes possible modernization of existing equipment, development of new equipment and its manufacturing application.

More than 200 production types and several thousands of versions have been developed and mastered.

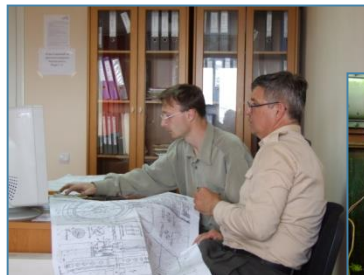


Historic reference

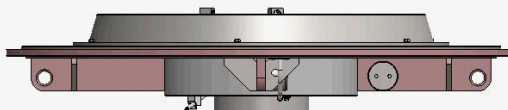
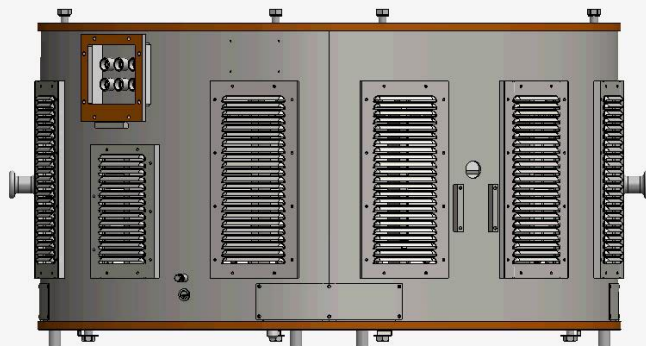
Engineering Centre

Specialists, working in Engineering Centre, have many years of experience in electrical machines development and preparation for production and also have many years of successful experience in organization and supervision of technical marketing works, cooperation with design institutes in organization of manufacturing application works.

Average age of employees – 45 years old.









Items under development are agreed with research institutes:
JSC «VNIIAEN» (Research and design Institute for Atomic and Power Pumpbuilding) Sumy,
JSC «Institute Hydroproject» Moscow,
OJSC «VNIIneftemash» MOSCOW,
UkrNIIVE (Ukrainian Scientific Research Project-Designing and Technological Institute of Explosion-proof and Mining Electrical Equipment with Experimental Production) Donetsk,
NIIHimmash Saint-Petersburg,
VNIImcompressormash Sumy
and machine-building enterprises, which use electric motors and generators for completing their products:
PJSC «Sumy Frunze NPO»
JSC «Nasosenergomash Sumy»
Concern «Ukrrosmetall» Sumy
«Pervomaiskdieselmash», ALC, Pervomaisk
PJSC «RUMO» Nizhny Novgorod
PJSC «Novokramatorsky Mashinostroitelny Zavod» Kramatorsk
NPO «Gidromash» (Scientific and Production Association of Hydraulic Machines). Moscow.



LARGE ELECTRIC MACHINES PLANT

Founded in: 1956

**Address: Novaya Kakhovka,
Kherson region, Ukraine**

Area: 5.1 ha

**In 2011 Kharkov electromechanical plant
SEM-EMZ (founded in 1915) was incorporated
into JSC «LEMP»**



RPA «ETAL»

Founded in: 1954

**Address: Alexandria,
Kirovograd region, Ukraine**

Area: 34 ha

СЕРТИФИКАТ 

СИСТЕМА СЕРТИФИКАЦИИ БЕЗОПАСНОСТИ, КАЧЕСТВА И ТЕХНОЛОГИИ ДЛЯ
ЭЛЕКТРИЧЕСКИХ УСТАНОВОК, РАДИОИОННЫХ ИСТОЧНИКОВ И ПУНКТОВ ХРАНЕНИЯ

№ Ф-НС 2193

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС RU.0001.01A300.00.10.2445

Срок действия с 05.06.2013 по 04.06.2016



Орган по сертификации: Вспомогательная экспертная организация "Центр по оценке соответствия и подтверждению качества оборудования, изделий и систем" (Орган по сертификации "Атест Тестовый")
Адрес: Республика Беларусь, 220125, г.Минск, Силиконовый пр., д. 18, стр. 2

РОСС RU.0001.01A300.00.10.2445

Удостоверяет, что описанным образом идентифицированные заявителем
изделия «Двигатели асинхронные мощностью от 1,5 до 315 кВт для АЗС»
по техническим условиям ЕИРН 520522.001 ТУ, серийный выпуск

31 2356
№ 42474 № 16052

ИЗГОТОВИТЕЛЬ (УПРАВЛЕНИЕ, ИСПОЛНИТЕЛЬ) Общества с ограниченной ответственностью
«Автоматизированные системы учета топлива» (ООО «АСУ») г. Минск, ул. Лесная, 10
Исполнительный директор: Леонов, Александр Владимирович

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ на Протокол 1

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ ОП.Протокол 2

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Условие действия сертификата: см. Протокол 2

УПолномоченный орган по сертификации

  Алекс. А.В.

СЕРТИФИКАТ имеет продолжение (или) на него накладываются ограничения, касающиеся


 ПАО «ЭНЕРГОАТОМ»
 КОМПАНИЯ
 ДОПОЛНИТЕЛЬНОГО
 ОБЩЕСТВЕННОГО
 ПОДРАЗДЕЛЕНИЯ

Печать: **ПРИКАЗ**
 № 100/П
 от 11.04.2014
 2014

РЕШЕНИЕ ОБ ОТВЕРЖЕНИИ ПОСТАВКИ И УСЛ. № 02.6858-14

На основании результатов оценки ОТГ «Финансовый центр, расположенный по адресу: 1900, Уроженная ст., 1. Панаев Евгений, д. Перемышляк, 25-а»

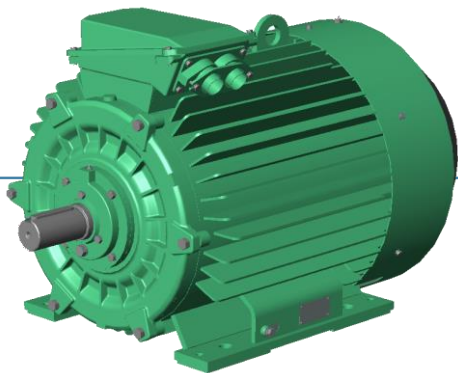
РЕШИЛИ:

1. Утвердить ООО «Национальный центр» в качестве поставщика ПП «А/Ж», «Энергоатом», при условии его работы в установленном порядке, предоставить ему право предоставления для ПП «А/Ж» «Энергоатом» и его обособленных подразделений электрической энергии, телемеханики, телеуправления в соответствии с А.4.4. Решение (на обороте листа).
2. Объявлять конкурс - без ограничений.
3. Срок действия решения: до 14.07.2014 г.
4. Предоставлять поставщикам, имеющим право поставлять по этому решению, возможность:

5. Осуществлять для принятия решения:
 - а) участие поставщика, зарегистрированного по ОГ Ю/АЭС по 26.27 мая 2014 г., в качестве потенциального поставщика;
 - б) отсыл по адресу 014123.000.006-14 уведомлений ОТГ Ю/АЭС 01.07.2014 г.
6. Дополнительно указать и ограничить:
 - а) поставщик должен предоставить информацию ОТГ «А/Ж» «Энергоатом» о возможности поставки, а также о наличии или отсутствии возможности поставки, а также о наличии или отсутствии возможности поставки, а также о наличии или отсутствии возможности поставки;
 - б) поставщик должен в течение 30 дней после получения отчета поставщика в ОТГ Ю/АЭС «А/Ж» «Энергоатом» предоставить информацию об отгрузке по телемеханике, телеуправлению и телемеханике, а также отгрузке по телемеханике, телеуправлению и телемеханике.

ГОЛОСОВАНО:

Подпись/подпись: директор
 «11» апреля 2014
 «11» апреля 2014

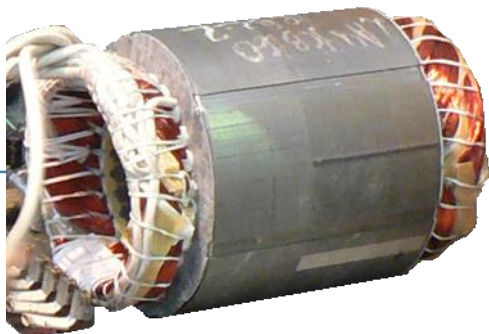


ASYNCHRONOUS ELECTRIC MOTORS OF AMPY, 4AMY 90 – 355 TYPES

Asynchronous three-phase motors with squirrel-cage rotor for nuclear power facilities.

Basic technical data

Power range	From 1,5 up to 315 kW
Rotation frequency	3000, 1500, 1000, 750 rpm
Ingress Protection Rating	IP 54, IP 55
Voltage	220 /380 or 380/660 V
Mounting version	IM 1081, IM 2081, IM 3081, IM1001
Insulation thermal class	F



ASYNCHRONOUS ELECTRIC MOTORS OF 4AMBY TYPE

Asynchronous embedded motors of **4AMBY90L2**, **4AMBY100L2** series are made as stator core with coils and aluminum cast rotor without shaft. Motors are designed to be embedded into immersed monoblock electric pump for NPP.

Basic technical data	
Power range	2,2 -4,0 kW
Rotation frequency	3000 rpm
Ingress Protection Rating	IP 00
Voltage	220/380; 380/660 V
Mounting version	IM 5010
Insulation thermal class	F

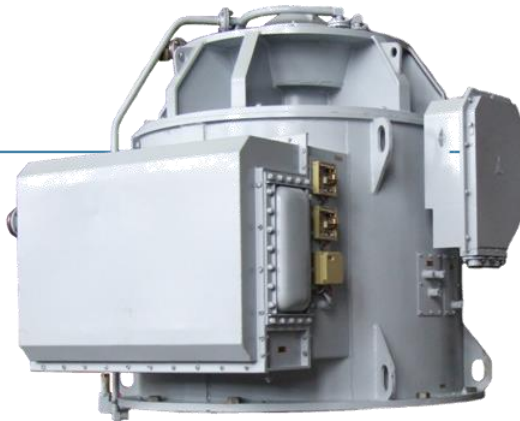


ASYNCHRONOUS ELECTRIC MOTORS OF 4AMY 112 – 355 TYPE

Asynchronous three-phase motors with squirrel-cage rotor for containment area of NPP.

Basic technical data

Power range	From 7,5 up to 160 kW
Rotation frequency	3000, 1500, 1000 rpm
Ingress Protection Rating	IP 55
Voltage	380 V
Mounting version	IM 1001
Insulation thermal class	H



VERTICAL ELECTRIC MOTORS OF **BAH3-5A TYPE**

Asynchronous vertical electric motors with squirrel-cage rotor of **BAH3-5A** type are intended for auxiliary pumps, utilized at NPP.

Basic technical data

Power	1000, 1250 kW
Rotation frequency	600 rpm
Ingress Protection Rating	IP 54, terminal box IP55
Voltage	6000 V
Mounting version	IM 8425 by GOST 2479
Insulation thermal class	“ F ” with thermal usage at a level of “B” class





VERTICAL ELECTRIC MOTORS OF BAH3-5A-1250-12Y3 TYPE

Asynchronous vertical electric motors with squirrel-cage rotor of **BAH3-5-5A-1250-12Y3** type are intended to drive vertical monoblock pumps of ОПБ 5-110 МБ type, operated at «Zaporizhzhya NPP».

Basic technical data

Power range	1250 kW
Rotation frequency	500 rpm
Ingress Protection Rating	IP 54, stator output device IP55
Voltage	6000 V
Mounting version	IM4011 by GOST 2479
Insulation thermal class	“F”

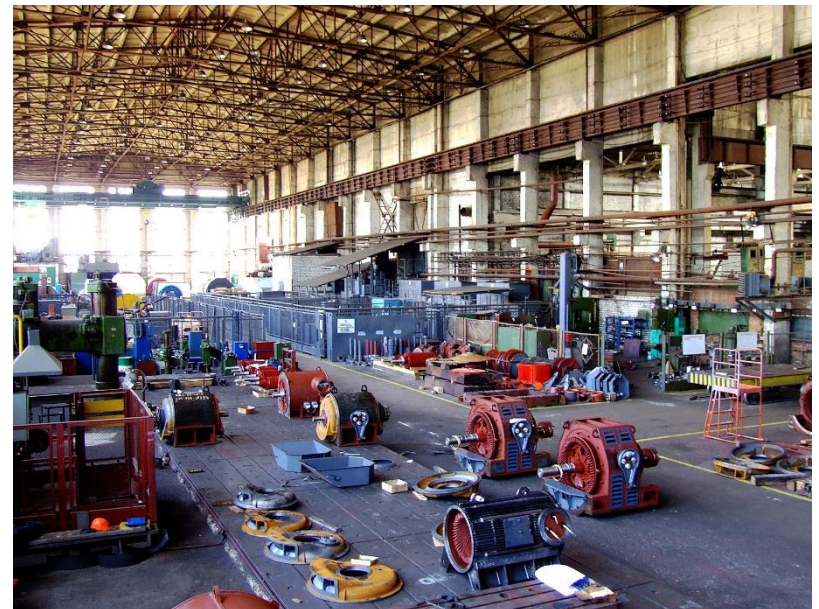


VERTICAL ELECTRIC MOTORS OF AB5A TYPE

Asynchronous electric motors with squirrel-cage rotor of **AB5A** type are intended to drive vertical hydraulic pumps, delivered to NPP.

Basic technical data

Power range	800, 1000, 1250, 2000 kW
Rotation frequency	750, 1500 rpm
Ingress Protection Rating	IP 54, terminal box IP55
Voltage	6000, 10000 V
Mounting version	IM 4011 by GOST 2479
Insulation thermal class	“ F ” with thermal usage at a level of “B” class





VERTICAL ELECTRIC MOTORS OF AOB5A TYPE

Asynchronous electric motors with squirrel-cage rotor of **AOB5A** type are intended to drive pumps, delivered to NPP.

Basic technical data

Power range	400, 500, 630, 800 kW
Rotation frequency	1500 rpm
Ingress Protection Rating	IP 54, stator input device - IP55, outer fan – IP21
Voltage	6000, 10000 V
Mounting version	IM 4011 by GOST 2479
Insulation thermal class	“ F ” with thermal usage at a level of “B” class





ELECTRIC MOTORS OF АОДВА-355 TYPE

Asynchronous vertical three-phase electric motors with squirrel-cage rotor are intended to drive mechanisms, which do not require operation frequency adjustment.

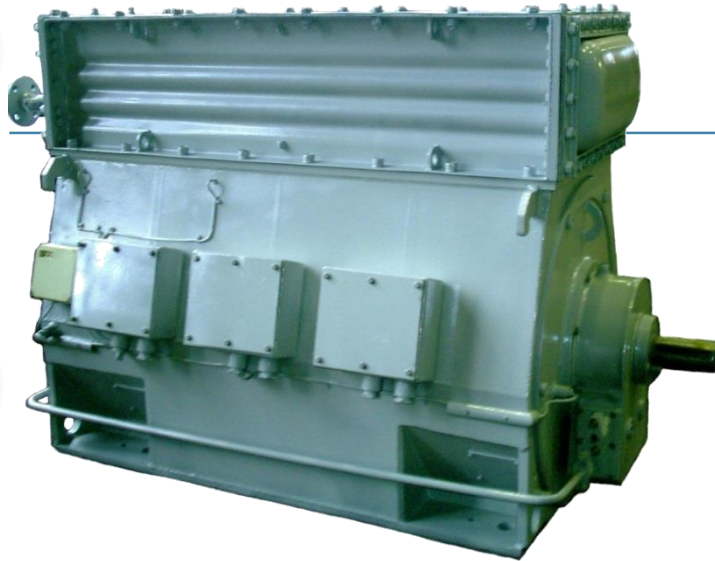
Basic technical data

Power range	200, 250, 315 kW
Rotation frequency	1000, 1500 rpm
Ingress Protection Rating	IP54 output device – IP55 outer fan — IP21
Voltage	3000, 6000, 6600 V
Mounting version	IM3011
Insulation thermal class	“F”

Motor version for NPP



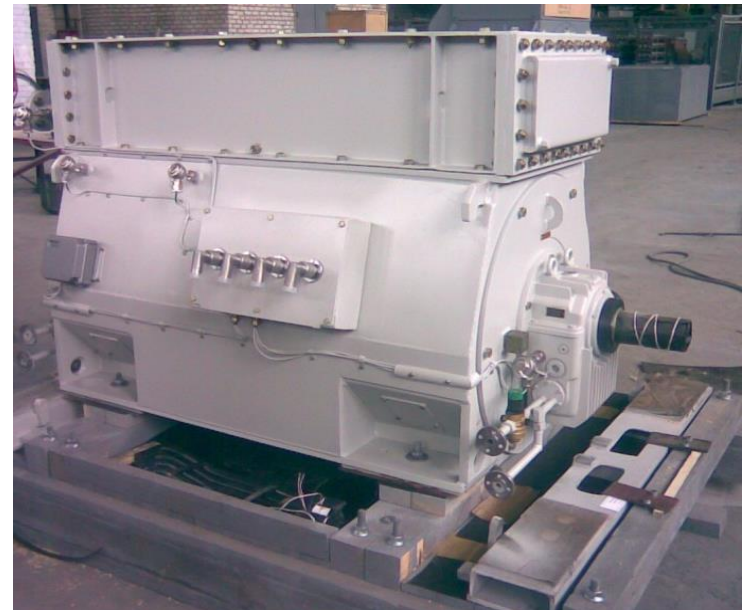
ELECTRIC MOTORS OF АОДА5 TYPE



Motor are intended for work as a part of pump units, operated at NPPs of Ukraine, Russia and at NPPs that are being built by Russia abroad. Motors are produced with frictionless or friction bearings.

Basic technical data

Power	500, 630, 800 kW
Rotation frequency	3000 rpm
Ingress Protection Rating	IP54, terminal box IP55
Voltage	6000, 10000 V
Mounting version	IM1001
Insulation thermal class	"F"





VERTICAL ELECTRIC MOTOR OF 4AOB-400Y-4Y3 TYPE

Electric motors are intended to drive mechanisms with light starting duty such as pumps or other mechanisms with similar characteristics.

Basic technical data

Power range	500 kW
Rotation frequency	1500 rpm
Ingress Protection Rating	IP44, output device – IP55, outer fan shell – IP21
Voltage	6000 V
Mounting version	IM3011
Insulation thermal class	“F”

ELECTRIC MOTORS OF ДА30А and АОДА TYPES

Motors are made as special design of general purpose motors of ДАЗО and АОД series to be utilized at NPP outside containment area.

Basic technical data	
Power range	200- 2000 kW
Rotation frequency	500,600, 750, 1000, 1500 rpm
Height of axis of rotation	400, 450, 560 mm
Ingress Protection Rating	IP54, output device - IP55 outer fan - IP51
Voltage	380, 660, 690, 3000, 6000, 10000 V
Insulation thermal class	«F»
Weight	From 2 000 to 7 000 kg





JSC «LEMP» has developed and mastered production of large electric motors to drive pump units of NPP with VVER-1000 reactor

Pos. No	Pump application	Installed motor	Q-ty, pcs.	Offered by JSC «LEMP»	Motor parameters	
					Power, kW	Rotation frequency, rpm
1	Main circulation pump	BA3-215/109-6OM	4	AB5A-8000-6 O5	8000	1000
2	Circulation pump	ДВДА2-235/104-20-24	3	BAHД5-4000/2500-20-24	4000/2500	300/250
3	Condensate pump of first stage	AB-15-36-8AM	3	AB5A-1000-8	1000	750
4	Non-essential pump	BAH 143/41-10	2	BAH5A-1000-10УХЛ4	1000	600
5	Sprinkler modules	ABCM-16-73-12У3	7	BAH3-5A-1250-12	1250	500
6	Feed pump	4A3M 800/6000	3	АОДА5-800-6-2УХЛ4	800	3000
7	Emergency boron injection	2A3M 800/6000	3	АОДА5-800-6-2УХЛ4	800	3000
8	Emergency cooling pump	2A3M 800/6000	3	АОДА5-800-6-2УХЛ4	800	3000
9	Emergency feed pump	2A3M 800/6000	3	АОДА5-800-6-2УХЛ4	800	3000
10	Auxiliary feedwater pump	2A3M 800/6000	2	АОДА5-800-6-2УХЛ4	800	3000
11	Sprinkler pump	2A3M 500/6000	3	АОДА5-500-6-2УХЛ4	500	3000
12	Line pump	A4-400Y -4Y3	2	A4-400Y -4Y3	630	1500
13	Drain pump of ПНД-3 type	AOB2-14-41-4Y3	3	4AOB-400Y-4Y3	500	1500
14	Drain pump	AOB2-14-41-4Y3	2	4AOB-400Y-4Y3	500	1500
15	Drain pump of ПНД-1 type	AB-114-4M	3	АОДВ-355Y-4Y2	320	1500
16	Condensate pump of ПСВ type	AB-113-4M	2	АОДВ-355X-4Y2	250	1500
17	Service water pump	AB-113-4M	2	АОДВ-355X-4Y2	250	1500
18	Fire-protection pump	AB-113-4M	2	АОДВ-355X-4Y2	250	1500
19	Closed loop pump of ОГЦ type	A13-46-6 УХЛ4	2	A4-450X-6Y3	630	1000
20	Service water pump	A4-450Y -8Y3	6	A4-450Y -8Y3	630	750
21	Lift oil pump	A4-400XK-6Y3	2	A4-400XK-6Y3	315	1000
22	First stage lift pump	A4-450X-8Y3	2	A4-450X-8Y3	400	750



REFERENCE No 1

Asynchronous electric motors to drive pumps, delivered to NPP.

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
АОДБА-355Х-4УХЛЗ 250 kW, 6 kV, 1500 rpm	3О	3	Leningrad NPP, Russian Federation, 2003.
ДАЗО4-400Хк-4ТВ3 250 kW, 6000 V, 1500 rpm	4Н	6	Kudankulam NPP, India, 2004.
АОДЛ-800-10-6ТВ4 800 kW, 10000 V, 1000 rpm	4Н	1	Bushehr NPP, Iran, 2004.
АОДБА-355Х-4УХЛЗ 250 kW, 6000 V, 1500 rpm	3О	3	Leningrad NPP, Russian Federation, 2004.
АОДЛ-800-6-2ТВ3 800 kW, 6000 V, 3000 rpm	3Н	6	Kudankulam NPP, India, 2005.
4АОВ-400У-4У3 500 kW, 6000 V, 1500 rpm	4Н	1	Zaporizhzhya NPP, Ukraine, 2005.
АОДБ-355У-4У2 315 kW, 6000 V, 1500 rpm	4Н	1	Zaporizhzhya NPP, Ukraine, 2005.
ВАНЗ-5А-800-8ТВ3 800 kW, 6000 V, 750 rpm	3Н	6	АЭС «Куданкулум», Индия, 2005.
А-400У-4У3 630 kW, 6000 V, 1500 rpm	4Н	2	Zaporizhzhya NPP, Ukraine, 2005.
А-450Х-6У3 630 kW, 6000 V, 1000 rpm	4Н	2	Zaporizhzhya NPP, Ukraine, 2005.
А-450Х-8У3 400 kW, 6000 V, 750 rpm	4Н	2	Zaporizhzhya NPP, Ukraine, 2005
А-450У-8У3 630 kW, 6000 V, 750 rpm	4Н	1	Zaporizhzhya NPP, Ukraine, 2005
А-450Х-8У3 400 kW, 6000 V, 750 rpm	4Н	1	Khmelnitska NPP, Ukraine, 2005
ВАНЗ-5А-1000-10ТМ3 1000 kW, 6000 V, 600 rpm	4Н	6	Kudankulam NPP, India, 2006
ДАЗО4-400Хк-4ТВ3 315 kW, 6000 V, 1500 rpm	4Н	8	Leningrad NPP, Russian Federation, 2006
ДАЗО4-400Хк-4АУ1 250 kW, 6000 V, 1500 rpm	4Н	8	Leningrad NPP, Russian Federation, 2006
ВАНЗ-5А-1250-10ТМ3 1250 kW, 6000 V, 600 rpm	2НО	8	Kudankulam NPP, India, 2007
ВАНЗ-5А-2000-4ТВ3 2000 kW, 6000 V, 1500 rpm	3Н	6	Kudankulam NPP, India, 2007
ДАЗО4-400Хк-4АУ1 250 kW, 6000 V, 1500 rpm	4Н	4	Leningrad NPP, Russian Federation, 2007
ДАЗО4-400Хк-4ТВ3 250 kW, 6000 V, 1500 rpm	4Н	4	Kursk NPP, Russian Federation, 2008
ДАЗО4-400Хк-4АУ1 250 kW, 6000 V, 1500 rpm	4Н	4	Kursk NPP, Russian Federation, 2008
АОД-1000-6У1 1000 kW, 6000 V, 1000 rpm	4Н	1	Rivne NPP, Ukraine, 2008
4АОВ-400У-4У3 500 kW, 6000 V, 1500 rpm	3Н	1	Kola NPP, Russian Federation, 2008
АОБ5А-400-4УХЛ4 АИШ А.528523.003ТУ 400 kW, 6000 V, 1500 rpm	3Н	2	Rostov NPP, Russian Federation, 2008

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
АОДЛ-630-8УХЛ4 АИШ А.528422.005 ТУ 630 kW, 6000 V, 750 rpm	2НО	6	Rostov NPP, Russian Federation, 2008
АОДБА-355Х-4УХЛЗ АИШ А.526822.002ТУ 250 kW, 6000 V, 1500 rpm	3Н	3	Rostov NPP, Russian Federation, 2008
ДАЗО4-400Хк-4ТВ3 315 kW, 6000 V, 1500 rpm	3Н	6	Leningrad NPP, Russian Federation, 2008
АОДЛ-630-8УХЛ4 АИШ А.528422.005 ТУ 630 kW, 6000 V, 750 rpm	2НО	6	Rostov NPP, Russian Federation, 2009
АОДБА-355У-4УХЛ4 АИШ А.526822.002ТУ 315 kW, 6000 V, 1500 rpm	3Н	3	Rostov NPP, Russian Federation, 2009
АОДЛ-800-6-2УХЛ4 АИШ А.528121.004 ТУ 800 kW, 6000 V, 3000 rpm	3Н	2	Rostov NPP, Russian Federation, 2009
АОДЛ-800-6-2УХЛ4 АИШ А.528121.003 ТУ 800 kW, 6000 V, 3000 rpm	23	3	Rostov NPP, Russian Federation, 2009
АОДЛ-800-6-2УХЛ4 АИШ А.528121.005 ТУ 800 kW, 6000 V, 3000 rpm	3Н	3	Kalinin NPP, Russian Federation, 2009
ВАНЗ-5А-1250-12У3, АИШ А.528725.004ТУ 1250 kW, 6000 V, 500 rpm	4Н	3	Zaporizhzhya NPP, Ukraine, 2009
АОДЛ-5-800-2УХЛ4, АИШ А.528121.003 ТУ 800 kW, 6 kV, 3000 rpm	2Н	3	Kalinin NPP, Russian Federation, 2009
АОБ5А-400-4УХЛ4, 400 kW, 6 kV, 1500 rpm АИШ А.528523.003 ТУ	3Н	2	Rostov NPP, Russian Federation, 2009
АОДБА-355Х-4 УХЛ4, 250 kW, 6 kV, 1500 rpm АИШ А.526822.002 ТУ	4Н	3	Rostov NPP, Russian Federation, 2009
АОДБА-355Х-4УХЛ4 250 kW, 6 kV, 1500 rpm АИШ А.526822.002 ТУ	3Н	2	Rostov NPP, Russian Federation, 2009
ДАЗОА-450Ук-8УХЛ4 400 kW, 6 kV, 750 rpm	4Н	3	Kalinin NPP, Russian Federation, 2009
АБ5А-800-8УХЛ4 800 kW, 6 kV, 750 rpm АИШ А.528725.007 ТУ	3Н	3	Kalinin NPP, Russian Federation, 2009
АБ5А-1000-4УХЛ4 1000 kW, 6 kV, 1500 rpm АИШ А.528725.008 ТУ	3Н	5	Kalinin NPP, Russian Federation, 2009
АОБ5А-630-4УХЛ4 630 kW, 6 kV, 1500 rpm АИШ А.528523.006 ТУ	3Н	2	Kalinin NPP, Russian Federation, 2009
АОДЛ-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИШ А.528121.003 ТУ	2Н	9	Kalinin NPP, Russian Federation, 2010
АОДЛ-800-10-2УХЛ4 800 kW, 10 kV, 3000 rpm АИШ А.528121.006 ТУ	3Н	6	Novovoronezh NPP, Russian Federation, 2010
АОДЛ-800-10-2УХЛ4 800 kW, 10 kV, 3000 rpm АИШ А.528121.006 ТУ	23	4	Leningrad NPP, Russian Federation, 2011



REFERENCE No 2

Asynchronous electric motors to drive pumps, delivered to NPP.

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
АОДЛАС-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИПГА.528121.003 ТУ	3H	3	Kalnin NPP, Russian Federation, 2011
А-400Х-8У3 250 kW, 6 kV, 750 rpm АИПГА.528113.006 ТУ	3H	4	Kursk NPP, Russian Federation, 2011
ДЛЗОМ-400Х-4АУ1 250 kW, 6 kV, 1500 rpm АИПГА.528122.003 ТУ	2H	4	Kursk NPP, Russian Federation, 2011
АБСА-800Д-6УХЛ4 800 kW, 10 kV, 1000 rpm АИПГА.528725.011 ТУ	3H	3	Novovoronezh NPP, Russian Federation, 2011
АБСА-2000Д-4УХЛ4 2000 kW, 10 kV, 1500 rpm АИПГА.528725.011 ТУ	3H	3	Novovoronezh NPP, Russian Federation, 2011
ДЛЗОМ-400Х-4АУ1 250 kW, 6 kV, 1500 rpm АИПГА.528122.003 ТУ	3H	3	Smolensk NPP, Russian Federation, 2012
ДЛЗОМ-450У-4У1 630 kW, 6 kV, 1000 rpm АИПГА.528222.002 ТУ	2HO	6	Rostov NPP, Russian Federation, 2012
ДЛЗО-450Х-4У1 630 kW, 6 kV, 1500 rpm ТУ. У 31.1-30955275-002-2001 2001	4C	4	Beloyarsk NPP, Russian Federation, 2012
АБСА-2000Д-4УХЛ4 2000 kW, 10 kV, 1500 rpm АИПГА.528725.011 ТУ	3H	1	Novovoronezh NPP, Russian Federation, 2012
АБСА-800Д-6УХЛ4 800 kW, 10 kV, 1000 rpm АИПГА.528725.011 ТУ	3H	1	Novovoronezh NPP, Russian Federation, 2012
АОБСА-400-4УХЛ4 400 kW, 6 kV, 1500 rpm АИПГА.528523.011 ТУ	4C	2	Beloyarsk NPP, Russian Federation, 2012
АБСА-800Д-6УХЛ4 800 kW, 10 kV, 1000 rpm АИПГА.528725.011 ТУ	3H	1	Leningrad NPP, Russian Federation, 2012
АОБСА-500-4УХЛ4 500 kW, 6 kV, 1500 rpm АИПГА.528523.011 ТУ	4C	5	Beloyarsk NPP, Russian Federation, 2012
АБСА-1250-4УХЛ4 1250 kW, 6 kV, 1500 rpm АИПГА.528725.013 ТУ	4C	3	Beloyarsk NPP, Russian Federation, 2012
АОДЛАС-800-10-2УХЛ4 800 kW, 10 kV, 3000 rpm АИПГА.528121.006 ТУ	3H	2	Leningrad NPP, Russian Federation, 2012
АОДЛАС-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИПГА.528121.006 ТУ	3H	4	Zaporizhzhya NPP, Ukraine, 2012
АБСА-2000Д-4УХЛ4 2000 kW, 10 kV, 1500 rpm АИПГА.528725.015 ТУ	4H	3	Leningrad NPP, Russian Federation, 2012
АБСА-800Д-4УХЛ4 800 kW, 10 kV, 1000 rpm АИПГА.528725.015 ТУ	4H	2	Leningrad NPP, Russian Federation, 2012
АСВО15-23-34МУ1 75 kW, 280 V, 176, 5 rpm ТУ У 3.07-21270229-035-95	4H	9	South-Ukraine NPP, Ukraine, 2012

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
АОДЛАС-500-6-2УХЛ4 500 kW, 6 kV, 3000 rpm АИПГА.528121.006 ТУ	2Л	3	South-Ukraine NPP, Ukraine, 2013:
АОДЛАС-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИПГА.528121.006 ТУ	23	6	South-Ukraine NPP, Ukraine, 2013
АОДЛАС-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИПГА.528121.006 ТУ	3H	4	Zaporizhzhya NPP, Ukraine, 2013
АБСА-800Д-6УХЛ4 800 kW, 10 kV, 1000 rpm АИПГА.528725.011 ТУ	3H	3	Novovoronezh NPP, Russian Federation, 2013
АБСА-2000Д-4УХЛ4 2000 kW, 10 kV, 1500 rpm АИПГА.528725.011 ТУ	3H	3	Novovoronezh NPP, Russian Federation, 2013
АОБСА-400-4УХЛ4 400 kW, 6 kV, 1500 rpm АИПГА.528523.003 ТУ	3H	2	Rostov NPP, Russian Federation, 2014
АОДА-630-8УХЛ4 630 kW, 6 kV, 750 rpm АИПГА.528422.005 ТУ	2HO	6	Rostov NPP, Russian Federation, 2014
АОДЛАС-800-6-2УХЛ4 800 kW, 6 kV, 3000 rpm АИПГА.528121.004 ТУ	3H	2	Rostov NPP, Russian Federation, 2014
АОДЛАС-800-10-2УХЛ4 800 kW, 10 kV, 3000 rpm АИПГА.528121.006 ТУ	3H	2	Leningrad NPP, Russian Federation, 2014
АОДЛАС-800-10-2УХЛ4 800 kW, 10 kV, 3000 rpm АИПГА.528121.006 ТУ	23	4	Leningrad NPP, Russian Federation, 2014
А4-450У-8У3 630 kW, 6 kV, 750 rpm АИПГА.528113.009 ТУ	3H	1	Zaporizhzhya NPP, Ukraine, 2014
ВАНЗ-5А-1250-12У3 1250 kW, 6 kV, 500 rpm АИПГА.528725.004 ТУ	4H	2	Zaporizhzhya NPP, Ukraine, 2014
АОДБА-355Х-4УХЛ4 250 kW, 6 kV, 1500 rpm АИПГА.528622.002 ТУ	3H	2	Rostov NPP, Russian Federation, 2014



REFERENCE No 3

Asynchronous electric motors to drive pumps, delivered to NPP.

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
4AMY132M2TB4 11 kW, 220/380V, 3000 rpm		5	Bushehr NPP, Iran, 2003
4AMY132M2A3TB4 11 kW, 220/380V, 3000 rpm		3	Bushehr NPP, Iran, 2003
4AMY180M2TB4 30 kW, 220/380V, 3000 rpm		6	Bushehr NPP, Iran, 2003
4AMY180S2A3TB4 22 kW, 220/380V, 3000 rpm		2	Bushehr NPP, Iran, 2003
4AMPY225M2A3TB4 55 kW, 380/660V, 3000 rpm		5	Bushehr NPP, Iran, 2003
4AMPY250S4TB4 75 kW, 380/660V, 1500 rpm		6	Bushehr NPP, Iran, 2003
4AMY132S4TB4 7,5 kW, 220/380V, 1500 rpm		2	Bushehr NPP, Iran, 2003
4AMY160S2TB4 15,0 kW, 220/380V, 3000 rpm		3	Bushehr NPP, Iran, 2003
4AMY160S2TB4 4,0 kW, 220/380V, 3000 rpm		4	Bushehr NPP, Iran, 2003
4AMY90L2TB4 3,0 kW, 220/380V, 3000 rpm	4	9	Bushehr NPP, Iran, 2004
4AMY90LB2TB4 2,2 kW, 220/380V, 3000 rpm	4H	4	Bushehr NPP, Iran, 2004
4AMY132M2TB4 11 kW, 220/380V, 3000 rpm	4	2	Bushehr NPP, Iran, 2004
4AMY132M2A3TB4 11 kW, 220/380V, 3000 rpm	3H	7	Bushehr NPP, Iran, 2004
4AMY160S8TB4 7,5 kW, 220/380V, 750 rpm	4	1	Bushehr NPP, Iran, 2004
4AMY160M6TB4 15 kW, 220/380V, 1000 rpm	4	2	Bushehr NPP, Iran, 2004
4AMY180S2TB4 22 kW, 220/380V, 3000 rpm	4	2	Bushehr NPP, Iran, 2004
4AMY180M2A3TB4 30 kW, 220/380V, 3000 rpm	3H	1	Bushehr NPP, Iran, 2004
4AMPY250S2A3TB4 75,0 kW, 380/660V, 3000 rpm		1	Bushehr NPP, Iran, 2004
4AMY180S4TB3 22 kW, 220/380V, 1500 rpm	4H	2	Bushehr NPP, Iran, 2004
4AMPY250M4A3TB4 90 kW, 380/660V, 1500 rpm	4H	6	Bushehr NPP, Iran, 2004
4AMY225M2TB4 55 kW, 380/660V, 3000 rpm	4H	4	Bushehr NPP, Iran, 2004
4AMY180M2A3TB4 30 kW, 220/380V, 3000 rpm	3H	2	Bushehr NPP, Iran, 2004
4AMY225M2TB4 55 kW, 380/660V, 3000 rpm		2	Bushehr NPP, Iran, 2004
4AMY132S4TB4 7,5 kW, 220/380V, 1500 rpm		2	Bushehr NPP, Iran, 2004
4AMY132S4A3TB4 7,5 kW, 220/380V, 1500 rpm	3H	10	Bushehr NPP, Iran, 2004

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
4AMY180M2A3TB4 30 kW, 220/380V, 3000 rpm	3H	14	Bushehr NPP, Iran, 2004
4AMY280M4A3TB4 132 kW, 380/660V, 1500 rpm	3H	7	Bushehr NPP, Iran, 2004-4urr, India-3urr.
4AMY225M2A3TM2 55 kW, 380/660V, 3000 rpm	2H3J1	4	India, 2004
4AMY132S4A3TB4 7,5 kW, 220/380V, 1500 rpm	3H	2	Bushehr NPP, Iran, 2004
4AMY180S2TB4 22 kW, 220/380V, 3000 rpm		2	Bushehr NPP, Iran, 2004
4AMY160S2A3TM4 15 kW, 220/380V, 3000 rpm	4H	2	India, 2004
4AMY90LA2TB3 1,5 kW, 220/380V, 3000 rpm	4H	2	Bushehr NPP, Iran, 2004
4AMY280S4TB4 110,0 kW, 380/660V, 1500 rpm	4	4	Bushehr NPP, Iran, 2004
4AMY225M2A3T3 55 kW, 380/660V, 3000 rpm	2H3J1	4	Bushehr NPP, Iran, 2004
4AMY280M4A3TB3 132 kW, 380/660V, 1500 rpm	4H	3	India, 2004
4AMPY250M4TM2 90 kW, 380/660V, 1500 rpm		8	Bushehr NPP, Iran, 2004
4AMY180M2TB3 30 kW, 220/380V, 3000 rpm	3H	8	Bushehr NPP, Iran, 2004
4AMY225M2A3T3 55 kW, 380/660V, 3000 rpm		4	India, 2005
4AMY90LA2TM4 1,5 kW, 220/380V, 3000 rpm		10	India, 2005
4AMY280S6Y2 75 kW, 380/660V, 1000 rpm		3	Russian Federation, 2005
4AMY90LA2TM4 1,5 kW, 220/380V, 3000 rpm		2	Sumy, 2005
4AMY90L2A3T3 3,0 kW, 220/380V, 3000 rpm		28	India, 2005
4AMBY90L2TM3 2,2 kW, 220/380V, 3000 rpm		1	Iran, 2005
4AMY280S2TB3 110,0 kW, 380/660V, 3000 rpm		4	India, 2005
4AMBY90L2TM3 2,2 kW, 220/380V, 3000 rpm		1	India, 2005
4AMY180S2YXJ4 22 kW, 220/380V, 3000 rpm	4	4	Kalinin NPP, Russian Federation, 2010
4AMY180S4A3Y3 22,0 kW, 220/380V, 1500 rpm	4	2	Balakovsk NPP, Russian Federation, 2011
4AMY200L2YXJ4 45 kW, 220/380V, 3000 rpm	4	2	Leningrad NPP-2, Russian Federation, 2011
4AMY200M6A3Y3 22 kW, 380/660V, 1000 rpm	3H	3	Kursk NPP, Russian Federation, 2010
4AMY200L6A3Y3 30 kW, 380/660V, 1000 rpm	3H	2	Kursk NPP, Russian Federation, 2010



REFERENCE No 4

Asynchronous electric motors to drive pumps, delivered to NPP.

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
4AMY280S6A3Y3 75 kW, 380/660V, 1000 rpm	3H	4	Kursk NPP, Russian Federation, 2010
4AMY315M6A3Y3 132 kW, 380/660V, 1000 rpm	3H	5	Kursk NPP, Russian Federation, 2010
4AMY132M6A3Y3 7,5 kW, 380/660V, 1000 rpm	2	6	Kursk NPP, Russian Federation, 2010
4AMY132M6A3Y3 7,5 kW, 380/660V, 1000 rpm	4	3	Kursk NPP, Russian Federation, 2010
4AMY160M6A3Y3 15 kW, 380/660V, 1000 rpm	2	6	Kursk NPP, Russian Federation, 2010
4AMY132S4A3Y3 7,5 kW, 380/660V, 1500 rpm	2	6	Kursk NPP, Russian Federation, 2010
4AMY200L6Y3 30 kW, 380/660V, 1000 rpm	4H	5	Smolensk NPP, Russian Federation, 2010
4AMY200L2Y3 45 kW, 380/660V, 3000 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
4AMY90L4Y3 2,2 kW, 380/660V, 1500 rpm	4H	2	Smolensk NPP, Russian Federation, 2010
4AMY100L6Y3 2,2 kW, 380/660V, 1000 rpm	4H	3	Smolensk NPP, Russian Federation, 2010
4AMY90L2Y3 3,0 kW, 380/660V, 3000 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
AHPY112M4Y3 5,5 kW, 380/660V, 1500 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
4AMY280S6Y3 75 kW, 380/660V, 1000 rpm	4H	3	Smolensk NPP, Russian Federation, 2010
4AMY250M4Y3 90 kW, 380/660V, 1500 rpm	4H	3	Smolensk NPP, Russian Federation, 2010
4AMY35S6Y1 160 kW, 380/660V, 1000 rpm	4H	4	Smolensk NPP, Russian Federation, 2010
4AMY180M2Y3 30 kW, 380/660V, 3000 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
4AMY200L8Y3 22 kW, 380/660V, 750 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
AHMM180M6 18,5 kW, 380/660V, 1000 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
4AMY160S6Y3 11 kW, 380/660V, 1000 rpm	4H	1	Smolensk NPP, Russian Federation, 2010
4AMY100L2A3YXJ4 5,5 kW, 220/380V, 3000 rpm	4	10	Leningrad NPP, Russian Federation, 2010
4AMY90L2A3Y3 3,0 kW, 220/380V, 3000 rpm	3H	2	Kursk NPP, Russian Federation, 2010
4AMY180M4A3Y3 30 kW, 220/380V, 1500 rpm	3H	2	Kursk NPP, Russian Federation, 2010
4AMY200M8A3Y3 18,5 kW, 220/380V, 750 rpm	4H	2	Kursk NPP, Russian Federation, 2010
4AMY200L6A3Y3 30 kW, 220/380V, 1000 rpm	4H	2	Kursk NPP, Russian Federation, 2010
4AMY250M6A3Y3 55 kW, 380/660V, 1000 rpm	3H	2	Kursk NPP, Russian Federation, 2010

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
4AMY280S6A3Y3 75 kW, 380/660V, 1000 rpm	4H	2	Kursk NPP, Russian Federation, 2010
4AMY200M2Y3 37 kW, 220/380V, 3000 rpm	3H	4	Kursk NPP, Russian Federation, 2010
4AMY200L8A3Y3 22 kW, 220/380V, 750 rpm	4H	3	Kursk NPP, Russian Federation, 2010
4AMY225M2A3YXJ4 55 kW, 220/380V, 3000 rpm	4	2	Leningrad NPP, Russian Federation, 2012
4AMY225M4A3YXJ4 55 kW, 220/380V, 1500 rpm	3H	2	Leningrad NPP, Russian Federation, 2012
4AMY180S2A3YXJ4 22 kW, 380/660V, 3000 rpm	3H	2	Leningrad NPP, Russian Federation, 2012
4AMY250S2YXJ4 75 kW, 380/660V, 3000 rpm	4	1	Rostov NPP, Russian Federation, 2012
4AMY132M2Y2 11 kW, 380/660V, 3000 rpm	4	1	Rostov NPP, Russian Federation, 2012
4AMY200L6Y2 30 kW, 380/660V, 1000 rpm	3H	1	South-Ukraine NPP, Ukraine, 2012
4AMY250M6Y2 55 kW, 380/660V, 1000 rpm	3H	4	South-Ukraine NPP, Ukraine, 2012
4AMY250M6Y3 55 kW, 380/660V, 1000 rpm	3H	4	South-Ukraine NPP, Ukraine, 2012
4AMY225M2Y2 55 kW, 380/660V, 3000 rpm	3H	4	South-Ukraine NPP, Ukraine, 2012
4AMY225M4Y3 55 kW, 380/660V, 1500 rpm	23	3	South-Ukraine NPP, Ukraine, 2012
4AMY225M4Y2 55 kW, 380/660V, 1500 rpm	3H	3	South-Ukraine NPP, Ukraine, 2012
4AMY180M2YXJ4 30 kW, 220/380V, 3000 rpm	4	6	Beloyarsk NPP, Russian Federation, 2012
4AMY160M2YXJ4 15 kW, 220/380V, 3000 rpm	4	2	Beloyarsk NPP, Russian Federation, 2012
4AMY35S6A3Y3 160 kW, 380/660V, 1000 rpm	3H	1	Kursk NPP, Russian Federation, 2012
4AMY315M2A3YXJ4 200 kW, 220/380V, 3000 rpm	2H/LI	4	Leningrad NPP, Russian Federation, 2012
4AMY280S2A3YXJ4 110 kW, 220/380V, 3000 rpm	3H	2	Leningrad NPP, Russian Federation, 2012
4AMY200M2YXJ4 37 kW, 220/380V, 3000 rpm	3	4	Rostov NPP, Russian Federation, 2013
4AMY100L2A3YXJ4 5,5 kW, 220/380V, 3000 rpm	4	20	Leningrad NPP-2, Novovoronezh NPP, Russian Federation, 2013
4AMY100S2A3Y3 4,0 kW, 220/380V, 3000 rpm	3H	3	South-Ukraine NPP, Ukraine, 2013
4AMY180S2A3Y3 30 kW, 380/660 V, 3000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY200M2A3Y3 37 kW, 380/660 V, 3000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY200L4A3Y3 45 kW, 380/660 V, 1500 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013

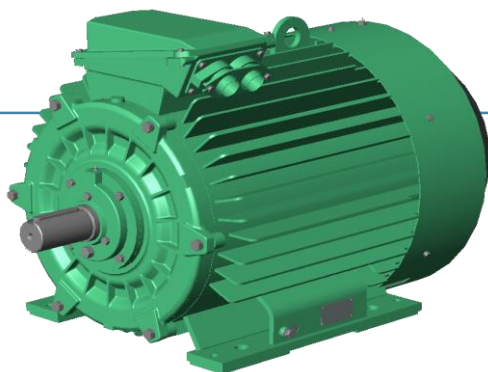


REFERENCE No 5

Asynchronous electric motors to drive pumps, delivered to NPP.

Name of the electric motor	Safety class	Q-ty, pcs.	Process facility, year of delivery.
4AMY200L2A3Y3 45 kW, 380/660 V, 3000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY225M4A3Y3 55 kW, 380/660 V, 1500 rpm	23	6	Balakovsk NPP, Russian Federation, 2013
4AMY250S4A3Y3 75 kW, 380/660 V, 1500 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY250S6A3Y3 45 kW, 380/660 V, 1000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY280M4A3Y3 132 kW, 380/660 V, 1500 rpm	3O	3	Balakovsk NPP, Russian Federation, 2013
4AMY315S2A3YXJ4 160 kW, 380/660V, 3000 rpm	4H	1	Beloyarsk NPP, Russian Federation, 2013
4AMY132S4A3Y3 7,5 kW, 380/660 V, 1500 rpm	3HY	5	Balakovsk NPP, Russian Federation, 2014
4AMY180M2A3Y3 30 kW, 380/660 V, 3000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2014
4AMY200M2A3Y3 37 kW, 380/660 V, 3000 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY160S2A3Y3 15 kW, 380/660 V, 3000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2014
4AMY132S4A3Y3 7,5 kW, 380/660 V, 1500 rpm	4H	1	Balakovsk NPP, Russian Federation, 2014
4AMY132S4A3Y3 7,5 kW, 380/660 V, 1500 rpm	3HY	5	Balakovsk NPP, Russian Federation, 2014
4AMY280S6A3Y3 75 kW, 380/660 V, 1000 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY160S6A3Y3 11 kW, 220/380 V, 1000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2014
4AMY160S2A3Y3 15 kW, 220/380 V, 3000 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY225M6A3Y3 37 kW, 220/380 V, 1000 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY200L4A3Y3 45 kW, 220/380 V, 1500 rpm	4H	1	Balakovsk NPP, Russian Federation, 2014
4AMY250S6A3Y3 45 kW, 220/380 V, 1000 rpm	4H	1	Balakovsk NPP, Russian Federation, 2013
4AMY225M2A3Y3 55 kW, 220/380 V, 3000 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY225M4A3Y3 55 kW, 220/380 V, 1500 rpm	4H	2	Balakovsk NPP, Russian Federation, 2014
4AMY200M2YXJ2 37 kW, 220/380 V, 3000 rpm	3H	1	Rostov NPP, Russian Federation, 2014
4AMY250S2YXJ4 75 kW, 220/380 V, 3000 rpm	4	1	Rostov NPP, Russian Federation, 2014
4AMBY90L2A3YXJ4 2,2 kW, 220/380 V, 3000 rpm	4	2	Novovoronezh NPP, Russian Federation, 2014
4AMY315S2YXJ4 160 kW, 380/660V, 3000 rpm	4	2	Leningrad NPP-2, Russian Federation, 2015

PRODUCTION ACCEPTED BY CUSTOMER REPRESENTATIVE AND REGISTER OF SHIPPING



Motor name	Ratings		Application	
АН-81-2, (4,6) АН-82-2, (4,6) АН-91-2, (4,6) АН-92-2, (4,6,8) АН-101-2, (4,6,8) АН-102-2, (4,6) АН-111-2, (4,6,8) АН-112-2, (4) Modifications: АН-НШ, АНМ, АНУ	Power – from 22 to 185 kW Rotation frequency – from 750 to 3000 rpm Voltage – 380 V, 220/380 V	РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА RUSSIAN MARITIME REGISTER OF SHIPPING 6.8.3  СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ ТИПА ПРОДУКЦИИ Изготовитель: ПРИВАТНЕ АКЦІОНЕРНЕ ТОВАРИСТВО "НАУКОВО-ВИРОБНИЧЕ ОБ'ЄДНАННЯ "ЕТАЛ" Manufacturer: PRIVATE JOINT-STOCK COMPANY "RESEARCH-& PRODUCTION ASSOCIATION "ETAL" Адрес: Україна, 28000, Кіровоградська обл., Олександрія, вул. Заводська, будинок 1. Address: 1, Zavodskaya Str., 28000, Alexandriia, Kirovograd region, Ukraine	For operation at sea-going vessels as a drive of auxiliary mechanisms	
3АН315S2/4П22-OM5	Power – 90 / 18,5 kW Rotation frequency– 3000/1500 rpm Voltage – 380 V	Изделие* Product* Пускатель электромагнитный с плавным пуском Motor starter series PML	For operation at sea-going vessels as a pump unit drive	
2АН400S6П22-OM5	Power – 132 kW; Rotation frequency– 1000 rpm; Voltage – 380 V	Код номенклатуры Code of nomenclature 11040503	For operation at sea-going vessels as a monoblock pump drive	
МАФ85-53/4-OM5 МАФ85-54/4-OM5 МАФ95-93/4-OM5	Power – 7,5, 13, 42 kW; Rotation frequency– 1500 rpm; Voltage – 380 V, 220/380 V	На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутые(ые) изделие(я) удовлетворяют требованиям Российского Морского Регистра Судоходства. This is to certify that on the basis of the survey and tests carried out the above mentioned item(s) comply with the requirements of Russian Maritime Register of Shipping. Часть XI Правил Классификации и Регистрации Судов Part XI Rules for the Classification and Registration of Ships	For operation at sea-going vessels as a drive of stationary submersible drainage pumps of H1QB type	
МА91-71/6-OM5	Power – 250 kW; Rotation frequency– 1000 rpm; Voltage – 380 V	Настоящее Свидетельство выдано на основании освидетельствования и проведенных испытаний. This Type Approval Certificate is issued on the basis of the survey and tests carried out. Техническое надзорное ведомство Construction of Ships and Manufacture of Ship Equipment	For operation at sea-going vessels as a drive of piston compressors of K30A type	
4АМУ, 6АМУ 90-355	Power – 0,75 - 315 kW Rotation frequency– 750; 1000;1500; 3000 rpm Voltage – 220/380 V	Дата выпуска: 29.11.2013 г. Российский морской регистр судоходства Russian Maritime Register of Shipping	For operation at sea-going vessels as a drive of console monoblock pumps	

*См. дополнительную информацию
Additional information see overleaf.



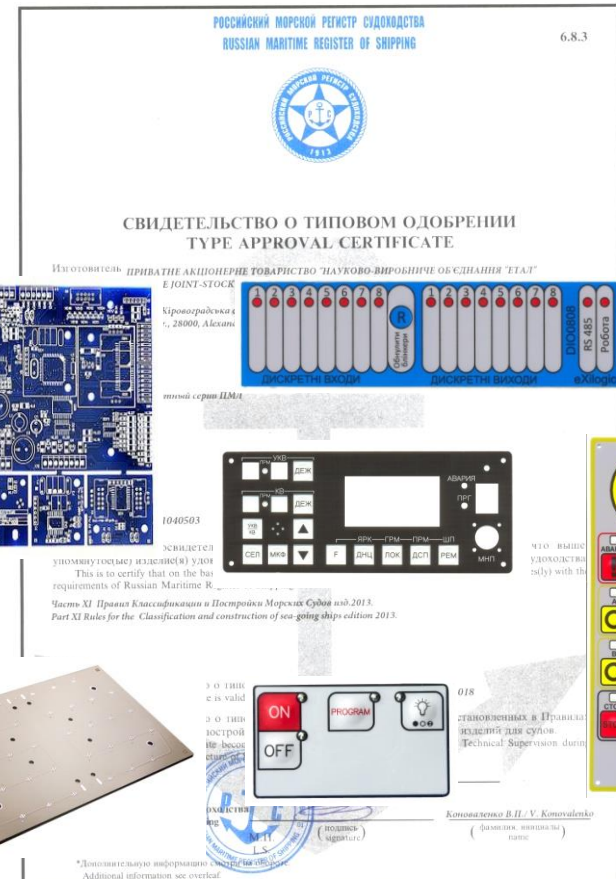
Modern equipment of leading firms of France, Great Britain, USA, Belgium made it possible to organize production of high-quality contact devices:

- ✓electromagnetic contactors and starters of ПМЛ type for current from 10 to 400A reversible and nonreversible, open-type and enclosed, with/without thermal relay;
- ✓contactors for capacitive loads «condenser-type»;
- ✓electromagnetic contactors of ПМЛ type DC controlled for 10, 25A;
- ✓contactors of ПМЛ-Н type from materials of V 1 class for current of 10, 25A;
- ✓contactors for lift stations of ПМЛ-НЛ, ПМЛ-ДНЛ types;
- ✓thermal current relays of РТЛ type and intermediate relays of РПЛ type;
- ✓interference filters of ОПН type;
- ✓attachments of ПКЛ, ПКБ, ПВЛ type;
- ✓control buttons of KEA type;
- ✓push button controllers of ПКЕА type.



In 1992 a plant, producing printed wire boards, was commissioned. It was turnkeyed by MUP firm (France) and ensures high-quality closed cycle manufacture of:

- ✓ single layer printed wire boards;
- ✓ double layer printed wire boards;
- ✓ multilayer (up to 20 layers) printed wire boards;
- ✓ aluminum based boards;
- ✓ membrane keyboards;
- ✓ front panels;



* Дополнительную информацию см. на сайте.
Additional information see on website.

The following low-voltage equipment is produced: electric drives for DC motors, boxes, control panels, transportation system control stations, low voltage complete devices for control of process equipment operating mechanisms, distributing and stabilizing electric power supply systems, lift control stations and blocks, installation of printed wire assemblies, power units for lighting devices etc, including low voltage complete exciter for machines synchronization with microprocessor control system of BTE type, soft starting devices.



РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА
RUSSIAN MARITIME REGISTER OF SHIPPING

6.8.3





ТАМЖОНЫЙ СОЮЗ

СЕРТИФИКАТ

№ (В С/С НАИМЕНОВАНИЕ)

С/С № 12 218298

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации/подписывающий и регистрирующий документы в Таможенный союз: Федеральное таможенное управление (ФТС) России, 119991, Москва, Армянский переулок, 25 (таможенное управление), 4-й этаж, телефон: (495) 397-7670, факс: (495) 397-7670, 397-7678, адрес электронной почты: fts@fts.gov.ru, fts@fts.ru, fts@mail.ru, факс: (495) 393-0013, 393-0014, 393-0220, 393-0221, 393-0222, 393-0223, 393-0224, 393-0225, 393-0226, 393-0227, 393-0228, 393-0229, 393-0230, 393-0231, 393-0232, 393-0233, 393-0234, 393-0235, 393-0236, 393-0237, 393-0238, 393-0239, 393-0240, 393-0241, 393-0242, 393-0243, 393-0244, 393-0245, 393-0246, 393-0247, 393-0248, 393-0249, 393-0250, 393-0251, 393-0252, 393-0253, 393-0254, 393-0255, 393-0256, 393-0257, 393-0258, 393-0259, 393-0260, 393-0261, 393-0262, 393-0263, 393-0264, 393-0265, 393-0266, 393-0267, 393-0268, 393-0269, 393-0270, 393-0271, 393-0272, 393-0273, 393-0274, 393-0275, 393-0276, 393-0277, 393-0278, 393-0279, 393-0280, 393-0281, 393-0282, 393-0283, 393-0284, 393-0285, 393-0286, 393-0287, 393-0288, 393-0289, 393-0290, 393-0291, 393-0292, 393-0293, 393-0294, 393-0295, 393-0296, 393-0297, 393-0298, 393-0299, 393-0300, 393-0301, 393-0302, 393-0303, 393-0304, 393-0305, 393-0306, 393-0307, 393-0308, 393-0309, 393-0310, 393-0311, 393-0312, 393-0313, 393-0314, 393-0315, 393-0316, 393-0317, 393-0318, 393-0319, 393-0320, 393-0321, 393-0322, 393-0323, 393-0324, 393-0325, 393-0326, 393-0327, 393-0328, 393-0329, 393-0330, 393-0331, 393-0332, 393-0333, 393-0334, 393-0335, 393-0336, 393-0337, 393-0338, 393-0339, 393-0340, 393-0341, 393-0342, 393-0343, 393-0344, 393-0345, 393-0346, 393-0347, 393-0348, 393-0349, 393-0350, 393-0351, 393-0352, 393-0353, 393-0354, 393-0355, 393-0356, 393-0357, 393-0358, 393-0359, 393-0360, 393-0361, 393-0362, 393-0363, 393-0364, 393-0365, 393-0366, 393-0367, 393-0368, 393-0369, 393-0370, 393-0371, 393-0372, 393-0373, 393-0374, 393-0375, 393-0376, 393-0377, 393-0378, 393-0379, 393-0380, 393-0381, 393-0382, 393-0383, 393-0384, 393-0385, 393-0386, 393-0387, 393-0388, 393-0389, 393-0390, 393-0391, 393-0392, 393-0393, 393-0394, 393-0395, 393-0396, 393-0397, 393-0398, 393-0399, 393-0400, 393-0401, 393-0402, 393-0403, 393-0404, 393-0405, 393-0406, 393-0407, 393-0408, 393-0409, 393-0410, 393-0411, 393-0412, 393-0413, 393-0414, 393-0415, 393-0416, 393-0417, 393-0418, 393-0419, 393-0420, 393-0421, 393-0422, 393-0423, 393-0424, 393-0425, 393-0426, 393-0427, 393-0428, 393-0429, 393-0430, 393-0431, 393-0432, 393-0433, 393-0434, 393-0435, 393-0436, 393-0437, 393-0438, 393-0439, 393-0440, 393-0441, 393-0442, 393-0443, 393-0444, 393-0445, 393-0446, 393-0447, 393-0448, 393-0449, 393-0450, 393-0451, 393-0452, 393-0453, 393-0454, 393-0455, 393-0456, 393-0457, 393-0458, 393-0459, 393-0460, 393-0461, 393-0462, 393-0463, 393-0464, 393-0465, 393-0466, 393-0467, 393-0468, 393-0469, 393-0470, 393-0471, 393-0472, 393-0473, 393-0474, 393-0475, 393-0476, 393-0477, 393-0478, 393-0479, 393-0480, 393-0481, 393-0482, 393-0483, 393-0484, 393-0485, 393-0486, 393-0487, 393-0488, 393-0489, 393-0490, 393-0491, 393-0492, 393-0493, 393-0494, 393-0495, 393-0496, 393-0497, 393-0498, 393-0499, 393-0500, 393-0501, 393-0502, 393-0503, 393-0504, 393-0505, 393-0506, 393-0507, 393-0508, 393-0509, 393-0510, 393-0511, 393-0512, 393-0513, 393-0514, 393-0515, 393-0516, 393-0517, 393-0518, 393-0519, 393-0520, 393-0521, 393-0522, 393-0523, 393-0524, 393-0525, 393-0526, 393-0527, 393-0528, 393-0529, 393-0530, 393-0531, 393-0532, 393-0533, 393-0534, 393-0535, 393-0536, 393-0537, 393-0538, 393-0539, 393-0540, 393-0541, 393-0542, 393-0543, 393-0544, 393-0545, 393-0546, 393-0547, 393-0548, 393-0549, 393-0550, 393-0551, 393-0552, 393-0553, 393-0554, 393-0555, 393-0556, 393-0557, 393-0558, 393-0559, 393-0560, 393-0561, 393-0562, 393-0563, 393-0564, 393-0565, 393-0566, 393-0567, 393-0568, 393-0569, 393-0570, 393-0571, 393-0572, 393-0573, 393-0574, 393-0575, 393-0576, 393-0577, 393-0578, 393-0579, 393-0580, 393-0581, 393-0582, 393-0583, 393-0584, 393-0585, 393-0586, 393-0587, 393-0588, 393-0589, 393-0590, 393-0591, 393-0592, 393-0593, 393-0594, 393-0595, 393-0596, 393-0597, 393-0598, 393-0599, 393-0600, 393-0601, 393

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29.07.2010 _____ О.В. Аранов



VERTICAL ELECTRIC MOTORS OF BAOB5K TYPE

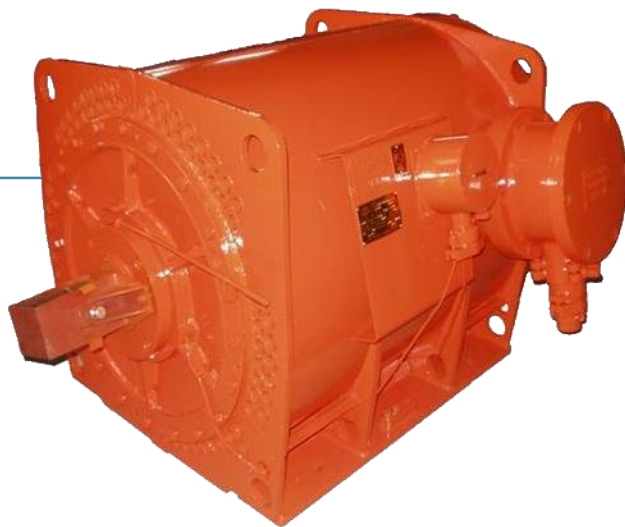
Electric motors are intended to drive oil charging pumps of NPV, NPV-M types, utilized under moderate and cold climate conditions at operating sites where by processing technique formation of explosive concentration of gases, vapors and dust is possible, i.e. enterprises of fuel and energy complex and chemical industry.

Explosion protection version of electric motors: 1ExdIIBT4

Basic technical data

Power range	315-2250 kW
Rotation frequency	1000, 1500 rpm
Ingress Protection Rating	IP54; outer fan shell – IP20, stator terminal boxes, sensors, oil heaters – IP55
Voltage	6000, 10000 V
Mounting version	IM 4011
Insulation thermal class	“ F ” with thermal usage at a level of “B” class





ELECTRIC MOTORS OF BAO8K SERIES

Electric motors are intended to drive pumps, blowers, coal pumps and other mechanisms, operated under explosive conditions in mines and petrochemical industry facilities.

Preparation for delivery to Transneft, JSC



Basic technical data

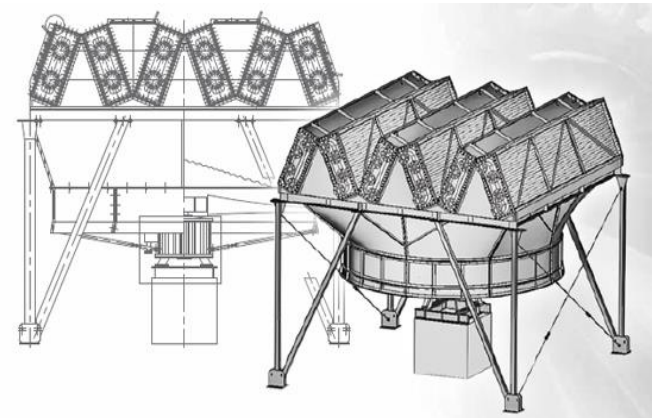
Power range	200 – 2000 kW
Rotation frequency	750, 1000, 1500, 3000 rpm
Ingress Protection Rating Explosion protection version	IP54, 1ExdIIBT4, PBExdI
Voltage	3000, 6000, 10000 V
Mounting version	IM1001
Insulation thermal class	«F»



ELECTRIC MOTORS OF BACO5K SERIES

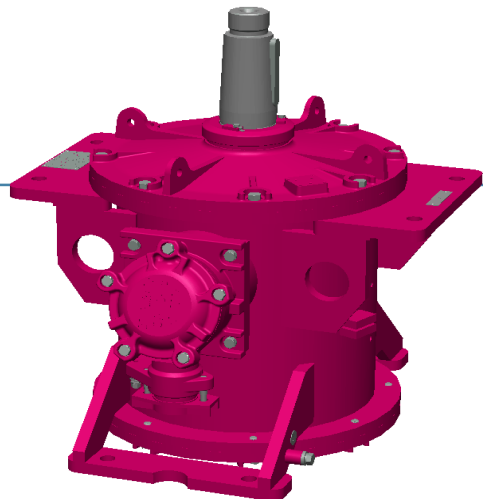
Vertical electric motors with squirrel-cage rotor are intended for operation as gearless drive of air-cooled exchanger fans utilized in explosive environment at facilities of gas and petroleum refining industries.

Air-cooled heat exchangers



Basic technical data	
Power range	30 – 90 kW
Rotation frequency	250, 187,5 rpm
Ingress Protection Rating	IP54, 1ExdIIBT4
Voltage	380 V
Mounting version	IM9601
Insulation thermal class	«F»





ASYNCHRONOUS ELECTRIC MOTORS OF BAC07K SERIES

Asynchronous explosion-proof vertical electric motors with squirrel-cage rotor of **BAC07K** type are used as gearless drive of air-cooled exchanger fans of ABГ type intended for natural gas cooling at compressor stations of main gas pipelines and also for condensation and cooling of vaporized, gaseous and liquid mediums, applied in process procedures of petroleum refining, petrochemical and chemical industries.

Basic technical data

Power range	6,5-37 kW
Rotation frequency	187, 5; 250 rpm
Ingress Protection Rating	IP 54 (standard), IP 55 (on request)
Voltage	380; 380/660 V
Mounting version	IM9733, M9633, IM9633, IM3011, IM3031
Insulation thermal class	“ F ”



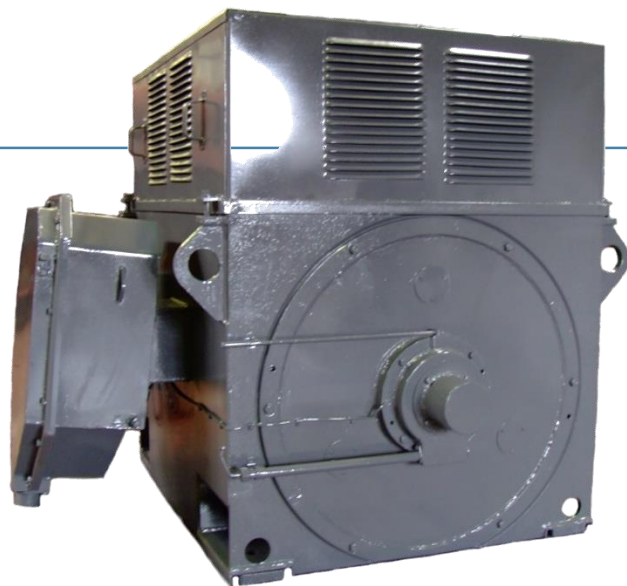
ELECTRIC MOTORS OF ДА30 and АОД TYPE

Motors are intended for operation at facilities of Transneft, JSC and are designed as special versions of general purpose motors of ДА30 and АОД series.

Basic technical data

Power range	200- 2000 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Height of axis of rotation	400, 450, 560 mm
Ingress Protection Rating	IP54, output device - IP55 outer fan - IP51
Voltage	380, 660, 690, 3000, 6000, 10000 V
Insulation thermal class	«F»
Weight	From 2 000 to 7 000 kg





ELECTRIC MOTORS OF A AND AK SERIES WITH HEIGHT OF AXIS OF ROTATION 400 AND 450 MM

Electric motors with squirrel-cage rotor are intended to drive pumps, blowers, smoke exhausters and other mechanisms, which do not require rotation frequency adjustment. Application specific motors of special design are operated at facilities of Transneft, JSC.

Basic technical data

Power range	200- 1000 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Ingress Protection Rating	IP23 output device - IP55
Voltage	380, 660, 3000, 6000, 10000 V
Mounting version	«F»



ELECTRIC MOTORS OF СДКП TYPE

Synchronous explosion-proof electric motors are intended to drive piston-type compressors.



Basic technical data

Power range	315 - 2000 kW
Rotation frequency	375, 500, 600 rpm
Ingress Protection Rating	IP-44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM 5710, IM 7125
Insulation thermal class	F
Weight	4000 ...16000 kg





ELECTRIC MOTORS OF «UKRAINE» SERIES

Explosion-proof motors with phase rotor (or with squirrel-cage rotor) of «Ukraine» series are designed for national economy needs and for export to countries with moderate climate, for operation in stationary installations of mining and coal industries, including gas (methane) and coal dust hazardous mines.

Basic technical data

Power range	With phase rotor - 315, 400, 500 kW With squirrel-cage rotor – 200 -1600 kW
Rotation frequency	With phase rotor - 1000 rpm With squirrel-cage rotor – 1500, 3000 rpm
Ingress Protection Rating	motor casing and terminal box – IP54, outer fan shell – IP20
Voltage	6000 V
Mounting version	IM1001
Insulation thermal class	«F»

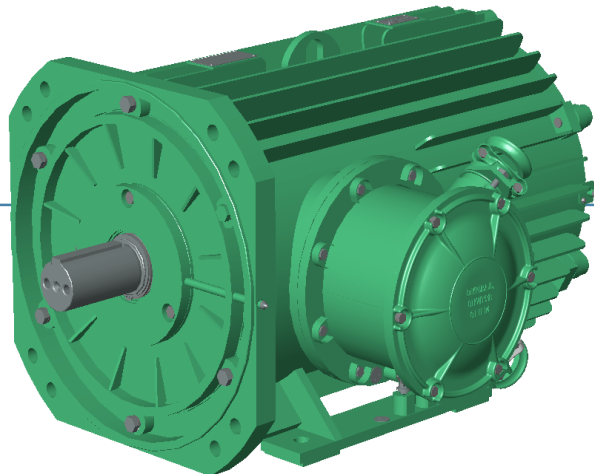


ELECTRIC MOTORS OF 2MA SERIES

Asynchronous explosion-proof motors of **2MA36** type frame sizes **6** and **7** with phase (squirrel-cage) rotor are intended for continuous operation mode in underground workings of mines and quarries which are gas and dust hazardous (group I), and also in premises of all classes and gas and vapor hazardous outdoor installations (group II).

Basic technical data

Basic technical data	
Power range	With phase rotor - 125-315 kW With squirrel-cage rotor - 125 – 320 kW
Rotation frequency	With phase rotor - 750, 1000 rpm With squirrel-cage rotor – 750, 1000, 1500, 3000 rpm
Ingress Protection Rating	motors casing and terminal box – IP54, outer fan shell – IP20
Voltage	380/660 V
Mounting version	With phase rotor – IM 1001 With squirrel-cage rotor - IM 1001 , IM 3011
Insulation thermal class	«F»

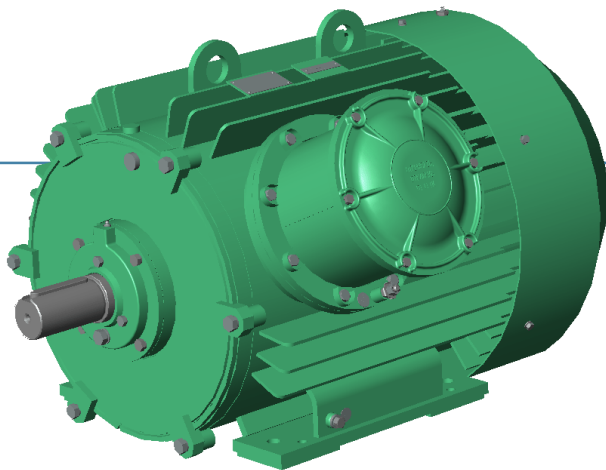


ASYNCHRONOUS MOTORS OF ANY, 2ANY 90 – 355 SERIES

Asynchronous explosion-proof electric motors with squirrel-cage rotor are intended to drive:
stationary machines in explosion-hazardous production of coal industry, in underground and aboveground workings of coal mines and quarries, which are methane and dust hazardous; scraper conveyors in underground workings of coal and shaly mines, which are methane and dust hazardous.

Basic technical data

Power range	0,75 – 315 kW
Rotation frequency	750, 1000, 1500, 3000 rpm
Ingress Protection Rating	IP 54, IP 55
Voltage	220; 380; 415 660 V
Mounting version	IM 1081, IM 2081, IM 3081
Insulation thermal class	“ F ”



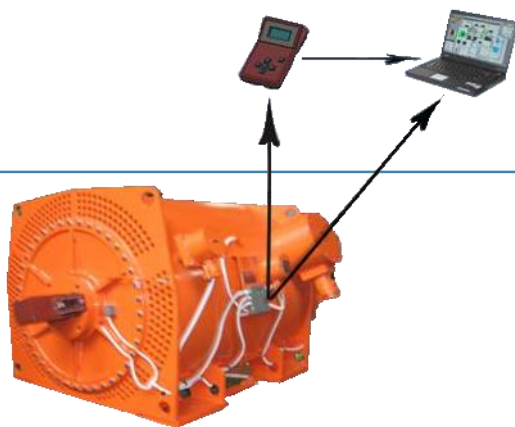
ASYNCHRONOUS MOTORS OF AИММ, 2ИММ 90 – 355 SERIES

Asynchronous explosion-proof electric motors with squirrel-cage rotor are intended to drive fixed machines utilized at explosive facilities of chemical, gas, petroleum refining industries.

Basic technical data

Power range	0,75 – 315 kW
Rotation frequency	750, 1000, 1500, 3000 rpm
Ingress Protection Rating	IP 54, IP 55
Voltage	220; 380; 415 660 V
Mounting version	IM 1081, IM 2081, IM 3081
Insulation thermal class	“ F ”

Device controlling vibration speed rate and temperature of YCBT, YCBT-M type



The device of YCBT type controlling vibration speed rate and temperature (further “device”) is designed to control state of electric motors for general industrial purposes and explosion-proof electric motors.

The device of YCBT type ensures:

- * temperature control of electric motor bearings, windings and casing;
- * bearings vibration speed rate control;
 - * temperature and vibration speed rate control of drive mechanism bearings;
- * delivery of a warning signal about temperature and vibration overranging;
- * delivery of a warning signal about sensor breakout;
- * delivery of electric signals for connection of external fault signalling and control units;
- * possibility of data transferring and reading on PC using general purpose industrial standard «**MODBUS**»/RS485.
- * possibility of disconnecting temperature and vibration speed sensors of drive mechanism using additionally delivered device.

TECHNICAL CHARACTERISTICS

operation mode of device	continuous
temperature control range, °C	from 0 to plus 180
admissible set value range of controlled temperatures of signal circuits activation, °C	from 10 to plus 180
vibration speed control range, mm/sec	from 0,2 to 25
input power voltage of power unit, V	~220, ~127, ~36, ~24

PRODUCTION OF LEMP - FOR WIND POWER ENGINEERING, WATER POWER ENGINEERING



HYDROGENERATORS OF СГГ, ВГС TYPES

Synchronous generators are operated being driven by hydraulic turbines, as AC electric power sources with frequency of 50 Hz.

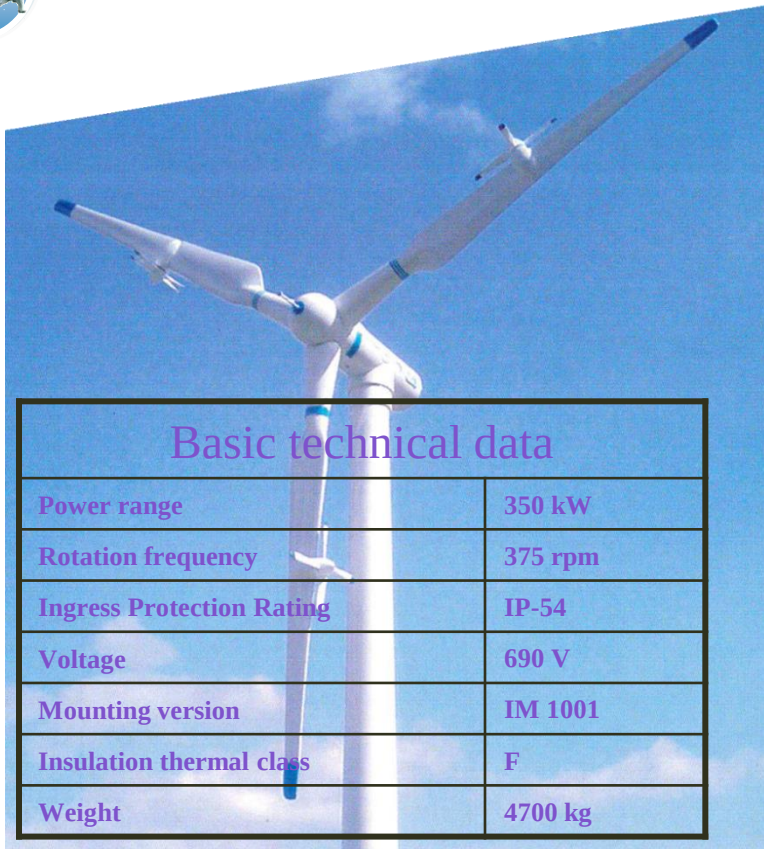
Basic technical data

Power range	200 – 4000 kW
Rotation frequency	150 ... 1000 rpm
Ingress Protection Rating	IP-11; IP-21
Voltage	400; 6300; 10500 V
Mounting version	IM 7115; IM 8425
Insulation thermal class	F
Weight	3500 ... 18000 kg



GENERATOR OF CFM TYPE

Synchronous inductor generator is driven by wind turbine, is used as AC electric power source with frequency of 50 Hz.



Basic technical data

Power range	350 kW
Rotation frequency	375 rpm
Ingress Protection Rating	IP-54
Voltage	690 V
Mounting version	IM 1001
Insulation thermal class	F
Weight	4700 kg





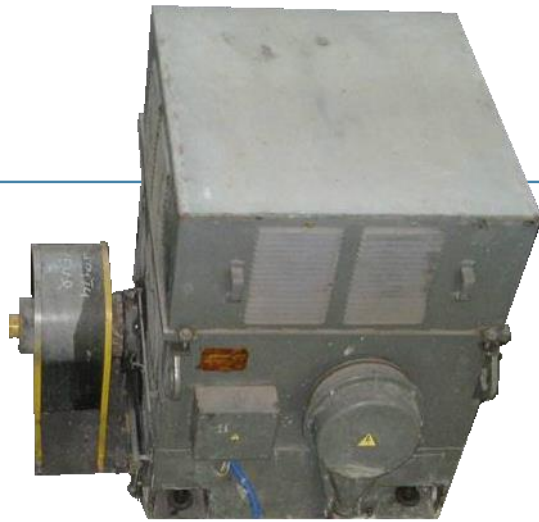
ASYNCHRONOUS GENERATOR OF AГB TYPE

Asynchronous generator of **AГB280M4OM2** type is designed to be a part of a complete set with wind-driven power plants connected to mains in order to generate electric power.

Basic technical data

Basic technical data	
Power range	110 kW
Rotation frequency	1500 rpm
Ingress Protection Rating	IP 54
Voltage	380 V
Mounting version	IM 1001
Insulation thermal class	F

HORIZONTAL ASYNCHRONOUS GENERATORS OF АГГ SERIES

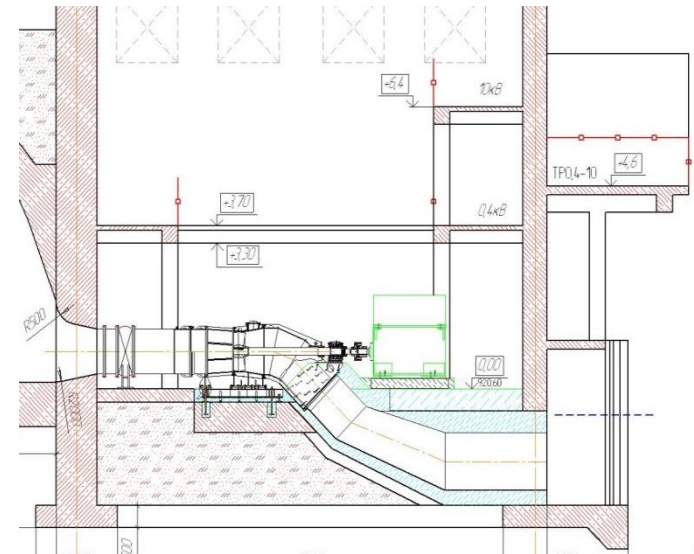


Generators of **АГГ** series are designed to generate electric power, are fed by horizontal hydraulic turbines and used as small generators i.e. at hydroelectric power plants which operate using power of small rivers.

Generator of АГГ-800-10,5-8Y3 type used in a small hydroelectric power plant project at the Cherniy Cheremosh River, Ivano-Frankovsk region.

Basic technical data

Power range	200 – 1000 kW
Rotation frequency	500, 600, 750 rpm
Ingress Protection Rating	IP23
Voltage	400, 10500 V
Mounting version	IM1001
Insulation thermal class	«F»



PRODUCTION OF LEMP – FOR ENTERPRISES OF MINING AND PROCESSING, CHEMICAL, METALLURGICAL INDUSTRIES



SYNCHRONOUS VERTICAL ELECTRIC MOTORS OF CDB SERIES

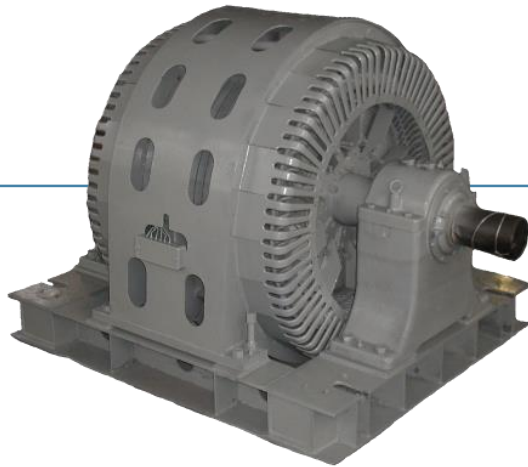
Motors are intended to drive vertical centrifugal hydraulic pumps of B, CDB types, axial pumps of OB, OPIB types.



Basic technical data

Power range	1000-3150 kW
Rotation frequency	375, 500, 600, 750 rpm
Ingress Protection Rating	IP23, terminal box – IP55, slip rings – IP11
Voltage	6000, 10000 V
Mounting version	IM8425
Insulation thermal class	“ F ” with thermal usage at a level of “B” class

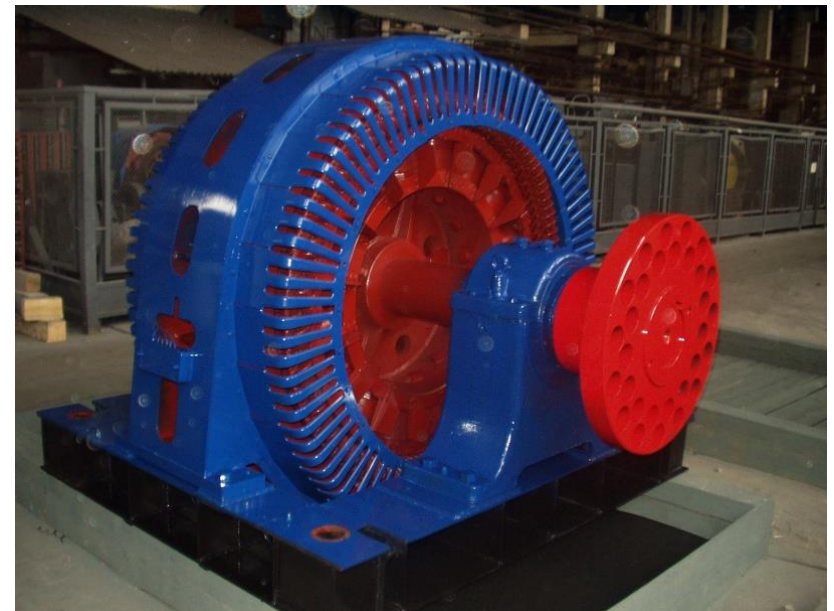


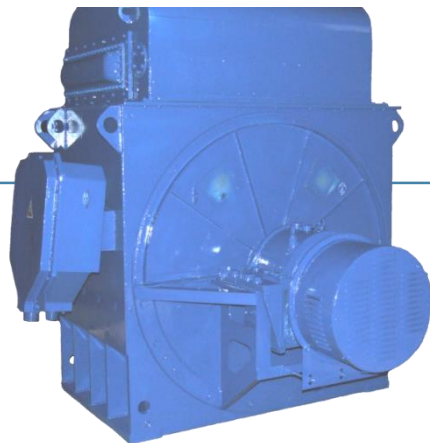


ELECTRIC MOTORS OF СДМ, СДВ, СДВС TYPE

Synchronous electric motors are intended to drive mills, smoke exhausters and other mechanisms.

Basic technical data	
Power range	500 – 2000 kW
Rotation frequency	375, 500, 600, 750, 1000 rpm
Ingress Protection Rating	IP-00, IP-21
Voltage	6000; 10000 V
Mounting version	IM 7311
Insulation thermal class	F
Weight	6200 ...11000 kg





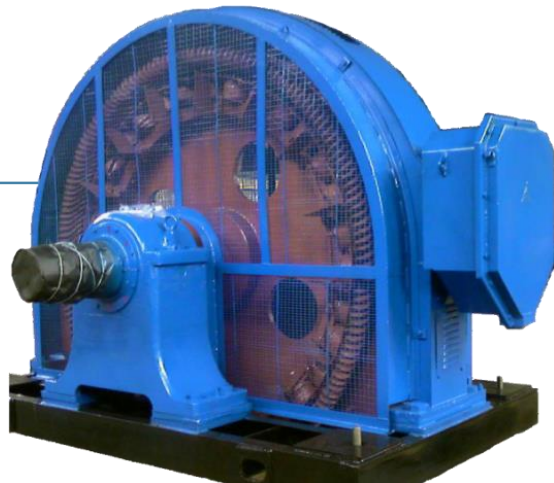
ELECTRIC MOTORS OF СДC3 2 TYPE

Synchronous electric motors are intended to drive disk mills and other mechanisms.

Basic technical data

Power range	1000 – 1600 kW
Rotation frequency	500, 600, 1000 rpm
Ingress Protection Rating	IP-43
Voltage	6000 V
Mounting version	IM 7611
Insulation thermal class	F
Weight	8700 ...10500 kg





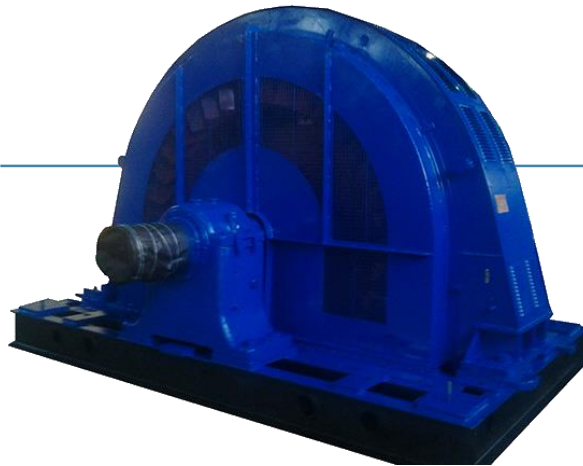
ELECTRIC MOTORS OF СДМ(П) 4-1250 TYPE

Synchronous electric motors are intended to drive vacuum pumps, ore-pulverizing and raw mills, applied in processing lines of mining and concentration complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors of СДМ(П)-215; ДС(П)-213 series.

Basic technical data

Power range	400; 500; 630 kW
Rotation frequency	187,5; 250 rpm
Ingress Protection Rating	IP21; IP44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM7311
Insulation thermal class	“F”





ELECTRIC MOTORS OF СДМ(П) 4-1500 TYPE

Synchronous electric motors are intended to drive ore-pulverizing and raw mills, applied in processing lines of mining and concentration complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors of СДМ(П)-260; ДС(П)-260; СДС 18 series.

Basic technical data

Power range	900; 1000; 1120; 1250;1600 kW
Rotation frequency	166,6; 187,5 rpm
Ingress Protection Rating	IP21; IP44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM7311; IM7312
Insulation thermal class	“F”





ELECTRIC MOTORS OF CДC3 4 TYPE frame size 19

Synchronous electric motors are intended to drive ore-pulverizing and cement mills, applied in processing lines of mining and concentration, cement complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors.



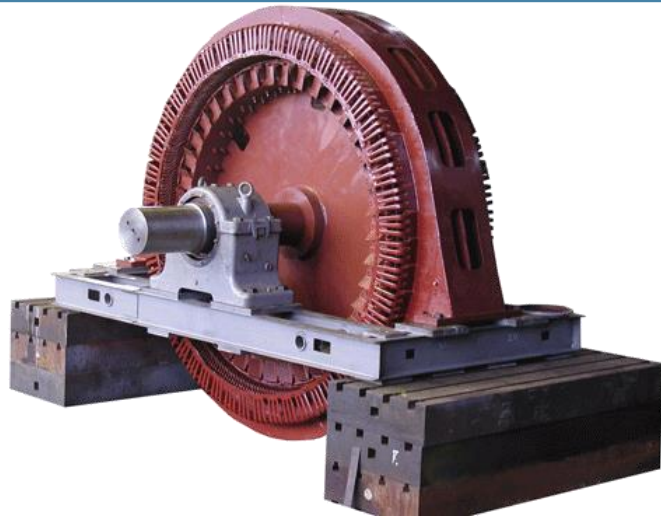
Basic technical data

Power range	3150; 3200 kW
Rotation frequency	500 rpm
Ingress Protection Rating	IP21; IP44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM7311; IM7312; IM7321; IM7322
Insulation thermal class	“F”





ELECTRIC MOTORS OF CDM(3) 4 TYPE frame size 21



Synchronous electric motors are intended to drive ore-pulverizing and raw mills, applied in processing lines of mining and concentration complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors of CMC -19; CDM(3) 2 series.

Basic technical data

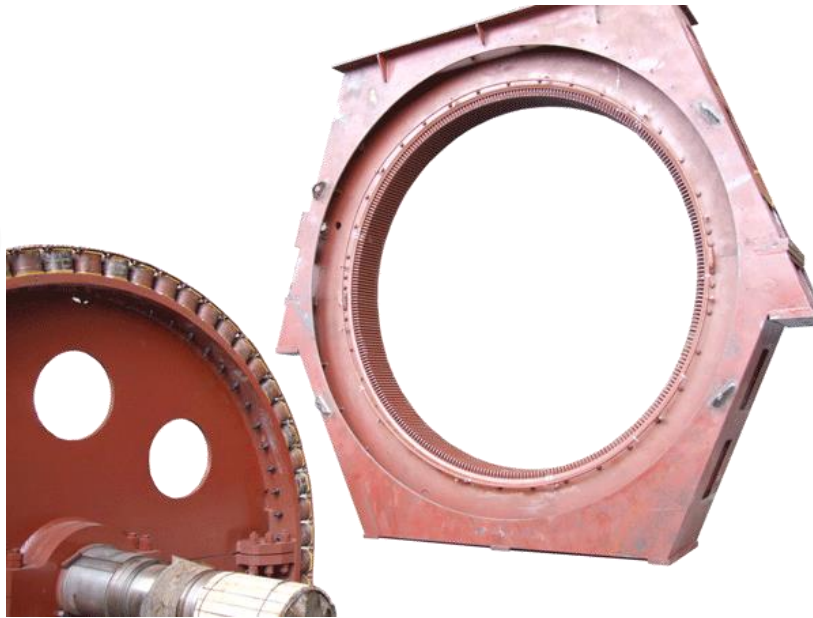
Power range	1600; 2000; 2500; 3150; 4000 kW
Rotation frequency	125; 150 rpm
Ingress Protection Rating	IP00; IP21; IP44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM7311; IM7321
Insulation thermal class	“F”
Weight	24 000 ... 57 000 kg





ELECTRIC MOTORS OF СДМ(3) 4 TYPE frame size 22

Synchronous electric motors are intended to drive ore-pulverizing, raw, coal-grinding and cement mills, applied in processing lines of mining and concentration complexes, cement complexes and thermal power plants. Motors can be used not only for new construction, but also for replacement of earlier installed motors of СДМ(3) 2; СДС-20 series.



Basic technical data

Power range	1600; 2000 kW
Rotation frequency	100 rpm
Ingress Protection Rating	IP21; IP44
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM7321; IM7322
Insulation thermal class	“F”
Weight	39 000 ... 52 000 kg





ELECTRIC MOTORS OF СДМ(3) 4 TYPE frame size 24

Synchronous electric motors are intended to drive ore-pulverizing and raw mills, applied in processing lines of mining and concentration complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors of СДМ(3) 2 series.



Basic technical data

Power range	4000 kW
Rotation frequency	75 rpm
Ingress Protection Rating	IP21; IP44
Voltage	6000 V
Mounting version by GOST 2479	IM7321
Insulation thermal class	“F”
Weight	165 000 kg



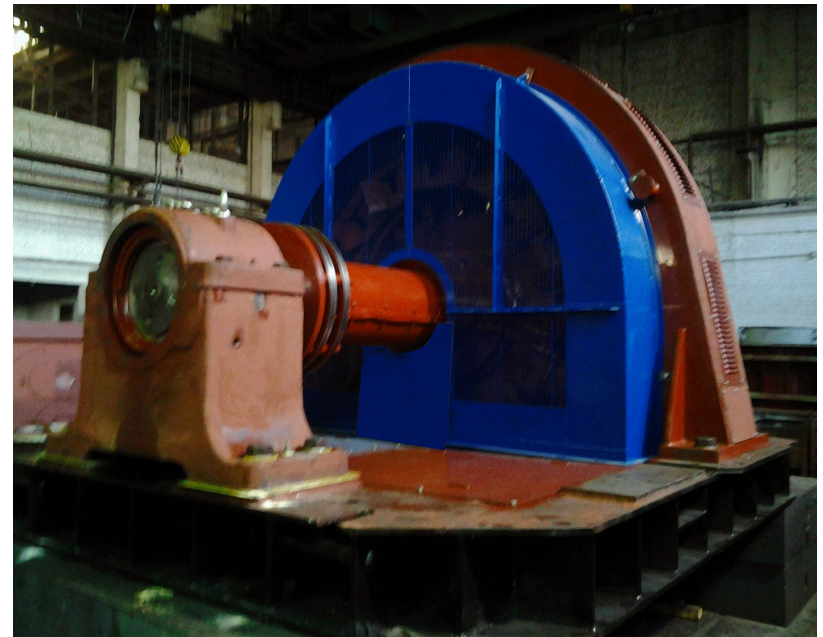


ELECTRIC MOTORS OF СДC3 4-1600-16 TYPE

Synchronous electric motors are intended to drive centrifugal fans. Motors can be used not only for new construction, but also for replacement of earlier installed motors: СДC3 17-41-16; 2СДC3-630S-16.

Basic technical data

Power range	1600 kW
Rotation frequency	375 rpm
Ingress Protection Rating	IP21
Voltage	6000 V
Mounting version by GOST 2479	IM7311; IM7312
Insulation thermal class	“F”



ELECTRIC MOTORS OF СДН, СДС, СДНЗ, СДСЗ TYPE

Synchronous electric motors are intended to drive pumps, mills and other mechanisms.



Basic technical data

Power range	315 – 3150 kW
Rotation frequency	375, 500, 600, 750, 1000 rpm
Ingress Protection Rating	IP-00, IP-43
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM 7311; IM 7312
Insulation thermal class	F
Weight	4500 ... 26 000 kg





ELECTRIC MOTORS OF СДН2, СДН32 TYPE

Synchronous electric motors are intended to drive pumps, mills and other mechanisms.

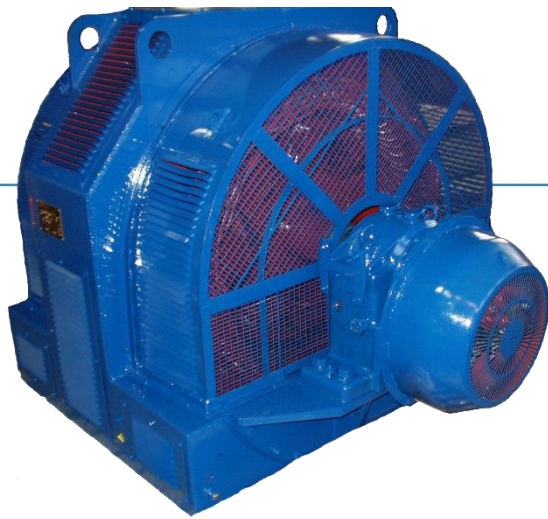
Basic technical data

Power range	315 –2500 kW
Rotation frequency	375, 500, 600, 750, 1000 rpm
Ingress Protection Rating	IP-11, IP-43
Voltage	6000 V
Mounting version by GOST 2479	IM 7621
Insulation thermal class	F
Weight	4500 ... 12 400 kg



ELECTRIC MOTORS OF СДН4, СДН34 TYPE

Synchronous electric motors are intended to drive pumps, mills and other mechanisms.



Basic technical data

Power range	315 – 4000 kW
Rotation frequency	375, 500, 600, 750, 1000 rpm
Ingress Protection Rating	IP-21, IP-43
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM 7621
Insulation thermal class	F
Weight	4500 ...12400 kg



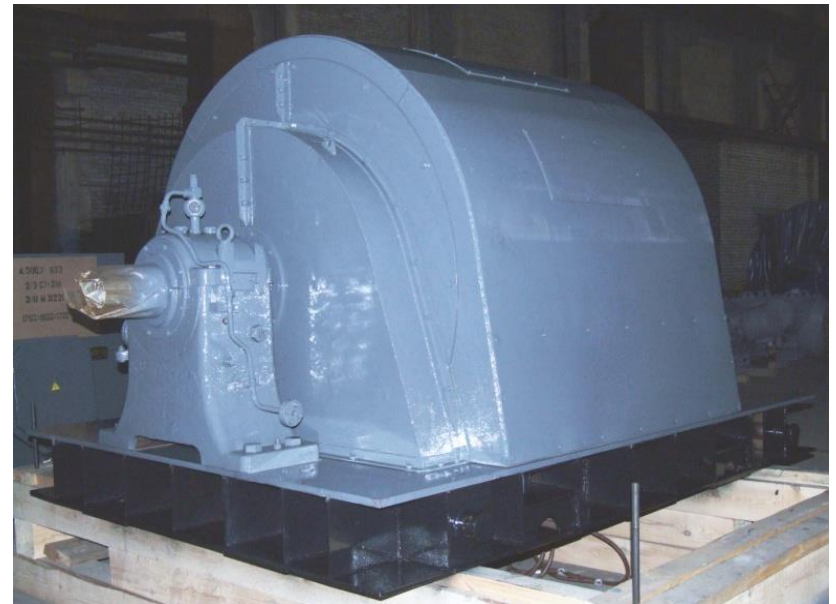
ELECTRIC MOTORS OF ДСП, ДСПУ, СДПН TYPE



Synchronous electric motors are intended to drive pumps, blowers, smoke exhausters and other mechanisms.

Basic technical data

Power range	2000 – 3150 kW
Rotation frequency	750, 1500 rpm
Ingress Protection Rating	IP-43
Voltage	6000; 10000 V
Mounting version by GOST 2479	IM 7311
Insulation thermal class	F
Weight	13200 ...15100 kg





ELECTRIC MOTORS OF 4СД, СД4, СДУ4 TYPE

Synchronous electric motors are intended for aggregating with centrifugal soil pumps, which transfer axial loads to motor bearing supports. Motors are used for abrasive hydraulic fluids pumping at mining and concentration complexes. Motors can be used not only for new construction, but also for replacement of earlier installed motors of 2СД, СДУ-18 types.

Basic technical data

Power range	3150 kW
Rotation frequency	375 rpm
Ingress Protection Rating	IP21
Voltage	6000 V
Mounting version by GOST 2479	IM7315
Insulation thermal class	“F”





ELECTRIC MOTORS OF СДК, СДК3 TYPE

Synchronous electric motors are intended to drive piston-type compressors.

Basic technical data

Power range	315 - 2000 kW
Rotation frequency	375, 500, 600 rpm
Ingress Protection Rating	IP-21, IP-44
Voltage	6000; 10000 V
Mounting version	IM 5710, IM 7125
Insulation thermal class	F
Weight	4000 ...16000 kg





ELECTRIC MOTORS OF СДРЗ TYPE

Synchronous electric motors are intended to drive rubber mixers, granulators, rollers.

Basic technical data

Power range	315 – 800 kW
Rotation frequency	500, 600, 750, 1000 rpm
Ingress Protection Rating	IP-54
Voltage	6000 V
Mounting version by GOST 2479	IM 7601
Insulation thermal class	F
Weight	6000 ...7500 kg





Double machine unit of СДC4-1600-16 and AKHC2-18-36-24M types



Electric motors of double machine unit are intended to drive centrifugal fans with large moments of inertia of rotating parts. Asynchronous electric motor with phase rotor of **AKHC2** type is used for fan direct asynchronous start and speeding-up (speeding-up being completed, motor of **AKHC2** type is disconnected from mains). Motors can be used not only for new construction, but also for replacement of the following earlier installed motors: **СДC3-17-41-16; AKC-16-44-24.**

Basic technical data		
Name	СДC4	AKHC2
Power range	1600 kW	500 kW
Rotation frequency	375 rpm	245 rpm
Ingress Protection Rating	IP00; IP21	IP00
Voltage	6000 V	
Mounting version by GOST 2479	IM7312	IM7115
Insulation thermal class	“F”	





GENERATOR OF ГГСБ TYPE

Synchronous generator is intended for work being driven from gas turbine motor, as AC electric power source with frequency of 50 Hz.

Basic technical data

Power range	2500 kW
Rotation frequency	1000 rpm
Ingress Protection Rating	IP-11
Voltage	6300; 10500 V
Mounting version	IM 7601
Insulation thermal class	F
Weight	9650 kg



GENERATORS OF ГСС, ГСБ TYPE

Synchronous generators are intended for work with internal combustion motors as AC electric power sources with frequency of 50 Hz.



Basic technical data

Power range	800 – 1000 kW
Rotation frequency	375, 500 rpm
Ingress Protection Rating	IP-11
Voltage	400; 6300; 10500 V
Mounting version	IM 7115
Insulation thermal class	F
Weight	5900 ... 7400 kg



GENERATORS OF СГД, СГС2 TYPE



Synchronous generators are intended for work with internal combustion motors as AC electric power sources with frequency of 50 Hz.

Basic technical data

Power range	300 – 630 kW
Rotation frequency	500; 600; 750 rpm
Ingress Protection Rating	IP-21
Voltage	400; 6300; 10500 V
Mounting version	IM 7115
Insulation thermal class	F
Weight	2600 ... 4600 kg



Electric converting units



Units are intended for voltage conversion and feeding of motors of excavator main electric drives as their components. Units consist of a synchronous drive motor and three DC generators.



Type designation of machines comprising a unit	Q-ty of machines in a unit	Rated data					
		Power, kW	Voltage, V	Current, A	Rotation frequency, rpm	Efficiency, %	Mains frequency, Hz
Unit СДЭ-16-46-6+ГПЭ-1250-6+ГПЭ-1250-6+ГПЭ-1250-6							
СДЭ-16-46-6	1	1250	6000	140	1000	95.5	50
ГПЭ-1250-6	3	1250	930	1344	1000	94.5	-
Unit СДЭ-16-46-6+ГПЭ-1000-6+ГПЭ-1000-6+ГПЭ-1000-6							
СДЭ-16-46-6	1	1000	6000	140	1000	95.5	50
ГПЭ-1000-6	3	1000	900	1111	1000	94.5	-

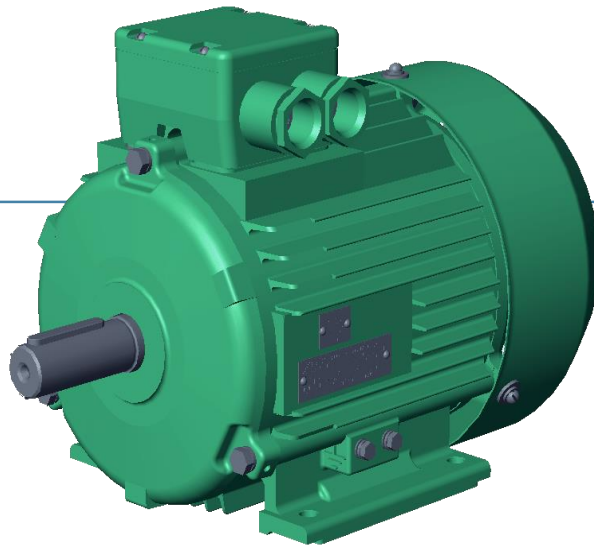
MINE BOOSTER FANS



Mine booster fans are axial, single-stage, explosion-proof with electric drive, explosion protection degree – PB 3B. Intended for forced ventilation of blind mining workings by air feeding through flexible and rigid (metallic) ventilation duct.

BMЭУ-5/1, 6/1, 6/1-01 – designs with a noise limiter.

Parameter name	BMЭУ-5 BMЭУ-5/1*	BMЭУ-6 BMЭУ-6/1*	BMЭУ-6-01 BMЭУ-6/1-01*
Rated diameter D, mm	500	600	
Rated capacity, m ³ /sec,	3,65	6,0	7,0
Electric drive power, kW	15,0	18,5	25,0
Rotation frequency of propeller, rpm	3000		

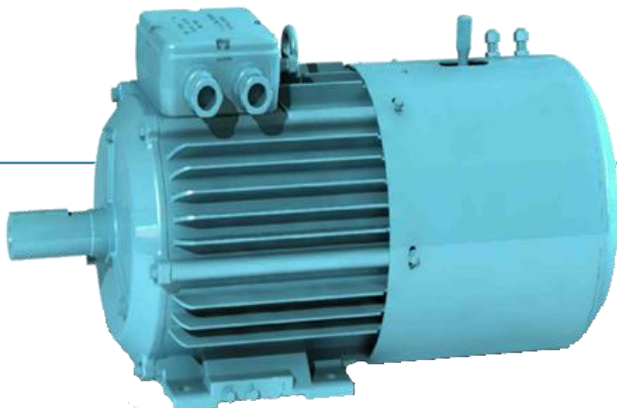


ASYNCHRONOUS MOTORS OF AMY SERIES

Asynchronous three-phase squirrel-cage general purpose motors of AMY112-280 type are used to drive machines and mechanisms utilized in different industries. Binding of motor capacity to overall linkage dimensions corresponds to DIN 42673 and DIN 42677.

Basic technical data

Power range	1,5 – 90,0 kW
Rotation frequency	750; 1000; 1500; 3000 rpm
Ingress Protection Rating	IP 54; IP 55
Voltage	220 ... 660 V
Mounting version	IM 1081; IM 2081; IM 3081
Insulation thermal class	«F»



ASYNCHRONOUS MOTORS OF 6AMY PΠ TYPE

Asynchronous motors with squirrel-cage rotor of **6AMY90 - 355 PΠ** type are designed for operation as a part of variable-frequency drive unit of machines and mechanisms with rotation frequency adjustment.

Basic technical data

Power range	From 0,75 up to 315 kW
Rotation frequency	3000, 1500, 1000, 750 rpm
Ingress Protection Rating	IP 55
Voltage	From 220 up to 660 V
Mounting version	IM 1001, IM 2001, IM 3001
Insulation thermal class	H



ASYNCHRONOUS MOTORS OF 4AЖ SERIES

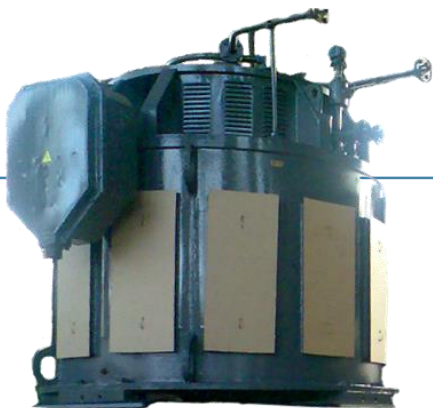
Motors of **4AЖ** series are intended to drive a cooling fan of propulsion motors and other units, powering mode being from traction or auxiliary generators of diesel-electric locomotive.

Basic technical data

Motor designation	4AЖ112M4O2	4AЖ225M6O2
Power range	2,2 kW	45 kW
Rotation frequency	3150 rpm	2100 rpm
Ingress Protection Rating	IP 54	
Voltage	305/535 V	
Mounting version	IM 2001	
Insulation thermal class	F	

VERTICAL ASYNCHRONOUS ELECTRIC MOTORS OF BAH5 SERIES

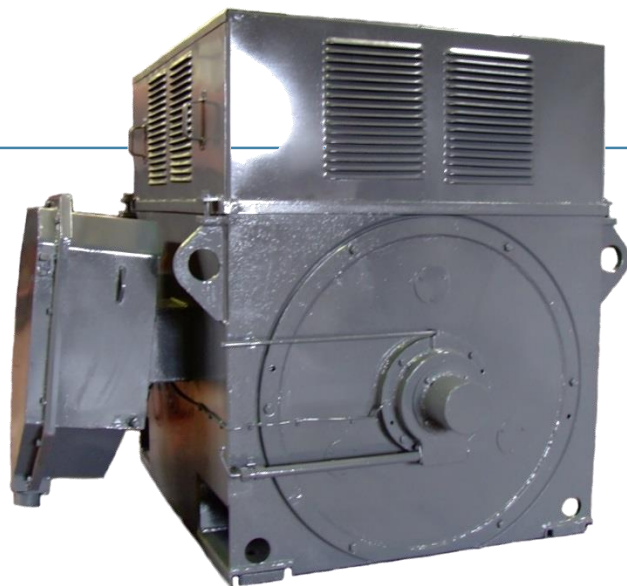
Asynchronous vertical electric motors with squirrel-cage rotor of **BAH5** type are intended to drive vertical hydraulic pumps for national economy needs.



Basic technical data

Power range	315-2500 kW
Rotation frequency	400, 500, 600, 750 rpm
Ingress Protection Rating	IP23, terminal box - IP55
Voltage	6000 V
Mounting version	IM8425
Insulation thermal class	“ F ” with thermal usage at a level of “B” class





ELECTRIC MOTORS OF A AND AK SERIES WITH HEIGHT OF AXIS OF ROTATION 400 AND 450 MM

Electric motors with squirrel-cage rotor are intended to drive pumps, blowers, smoke exhausters and other mechanisms, which do not demand rotation frequency adjustment.

Basic technical data

Power range	200- 1000 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Ingress Protection Rating	IP23 output device - IP55
Voltage	380, 660, 3000, 6000, 10000 V
Insulation thermal class	«F»





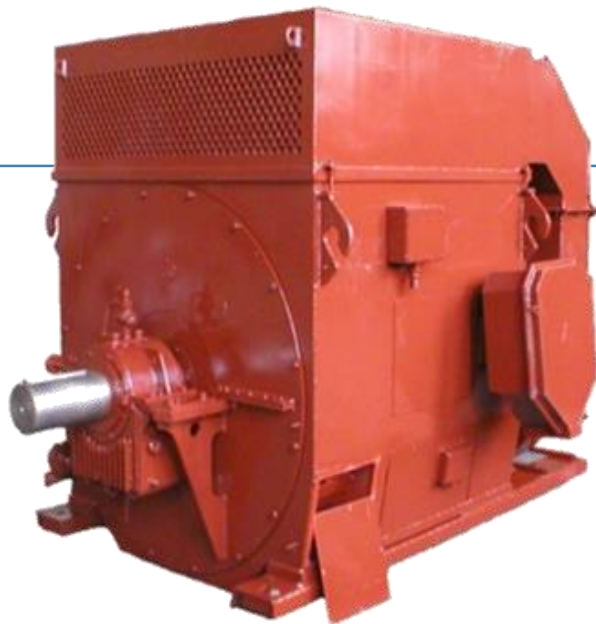
ELECTRIC MOTORS OF ДА30 and АОД TYPES

Ventilated electric motors with squirrel-cage rotor are intended to drive pumps, fans, smoke exhausters and other mechanisms, which do not require rotation frequency adjustment.

Basic technical data

Power range	200- 2000 kW
Rotation frequency	500,600, 750, 1000, 1500 rpm
Height of axis of rotation	400, 450, 560 mm
Ingress Protection Rating	IP54, output device - IP55 outer fan - IP51
Voltage	380, 660, 690, 3000, 6000, 10000 V
Insulation thermal class	«F»
Weight	From 2 000 to 7 000 kg





ELECTRIC MOTORS OF 2DAO and AOD TYPES frame size 17

Asynchronous electric motors with squirrel-cage rotor are intended to drive draft mechanisms with heavy starting duty, which do not require rotation frequency adjustment (air blowers, fans, smoke exhausters and other mechanisms with similar starting characteristics).

Version with antifriction bearings



Basic technical data

Power range	1250-2000 kW
Rotation frequency	500, 600, 750, 1000 rpm
Ingress Protection Rating	IP54, terminal box - IP55
Voltage	6000, 10000 V
Mounting version	IM1101
Insulation thermal class	“ F ”



DOUBLE-SPEED ELECTRIC MOTORS OF AOD TYPE

Asynchronous double-speed electric motors are intended to drive draft mechanisms with heavy starting duty, which require dual-mode operation with different rotation frequencies and productivity.

Version with antifriction bearings

Basic technical data	
Power range	400/170 – 1600/1000 kW
Rotation frequency	600/500, 750/600, 1000/750 rpm
Ingress Protection Rating	IP54, terminal box IP55
Voltage	6000 V
Mounting version	IM1001; IM1101
Insulation thermal class	"F"
Weight	from 4 000 to 19 000 kg

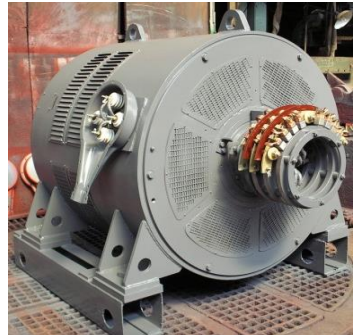
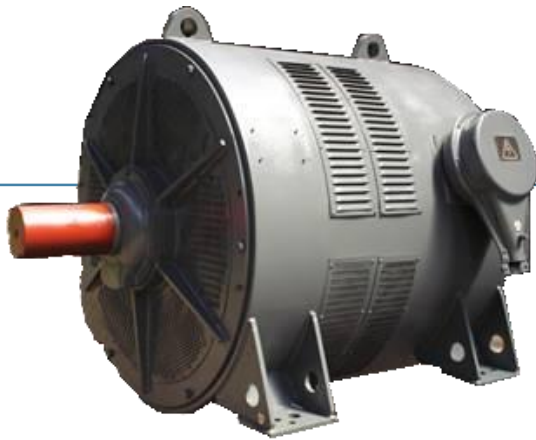


ELECTRIC MOTORS OF AH, AH3, AKH, AKH3 TYPES

2-nd and 4-th series, frame sizes 15, 16 and 17

Asynchronous horizontal motors of the following types:

- **AKH** and **AKH3** with phase rotor are intended to drive mine hoist machines, conveyors, draft mechanisms, other mechanisms with heavy starting duty;
- **AH** and **AH3** with squirrel-cage rotor are intended to drive blowers, pumps and similar mechanisms with light starting duty.



Mill drive at mining and concentration complex

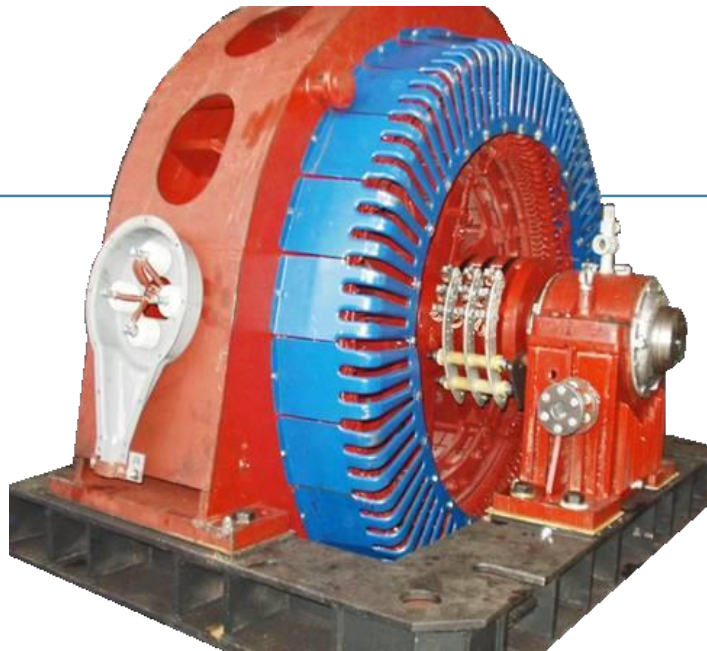


Basic technical data

Power range	315 – 2000 kW
Rotation frequency	1000;750;600;500;375;300 rpm
Ingress Protection Rating	IP21, IP44
Voltage	3000, 6000 V
Mounting version	IM1101
Insulation thermal class	«F»

Pump station at heat electric generation plant

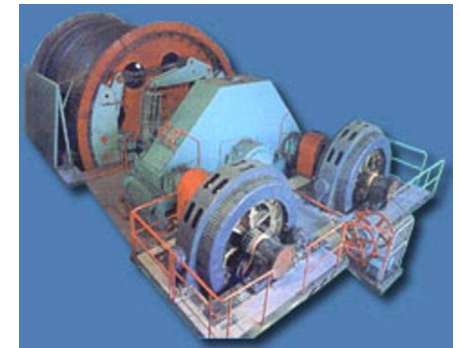




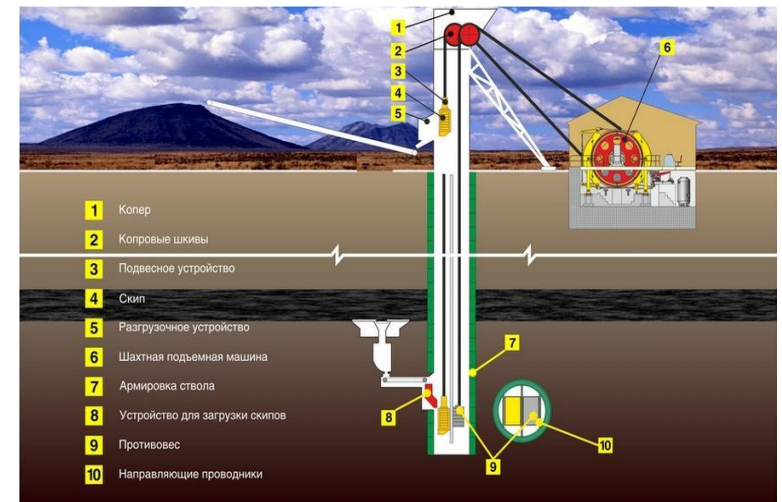
ELECTRIC MOTORS OF AKH2 SERIES frame sizes 18 and 19

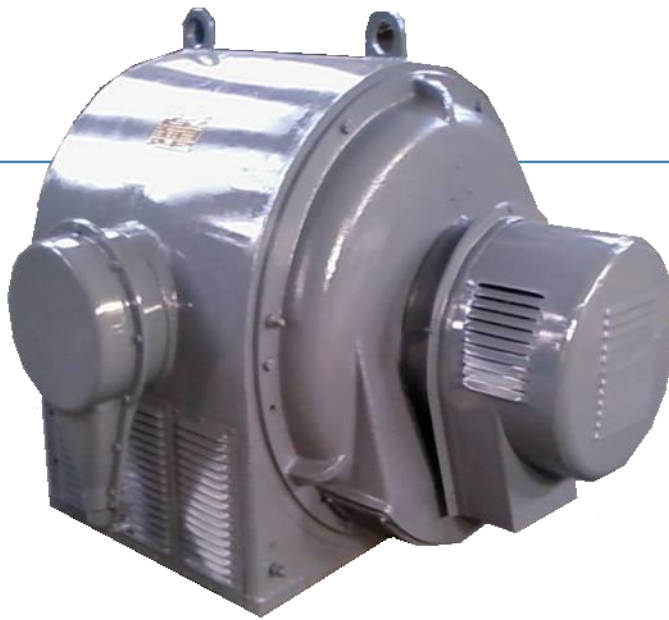
Asynchronous horizontal motors with phase rotor are intended to drive mine hoist mechanisms with frequent starts. Motors of special design are used in double machine unit for synchronous motor speeding-up.

Mine hoist
machine



Basic technical data	
Power range	315 – 2000 kW
Rotation frequency	250; 300; 375; 500 rpm
Ingress Protection Rating	IP00
Voltage	3000, 6000 V
Mounting version	IM7311
Insulation thermal class	«F»





ELECTRIC MOTORS OF AK and AK3 TYPES Frame sizes 12 and 13

AC electric motors with phase rotor are intended to drive mechanisms having heavy starting duty and/or requiring rotation frequency adjustment such as conveyors, mills etc.

Brush unit of phase rotor



Basic technical data

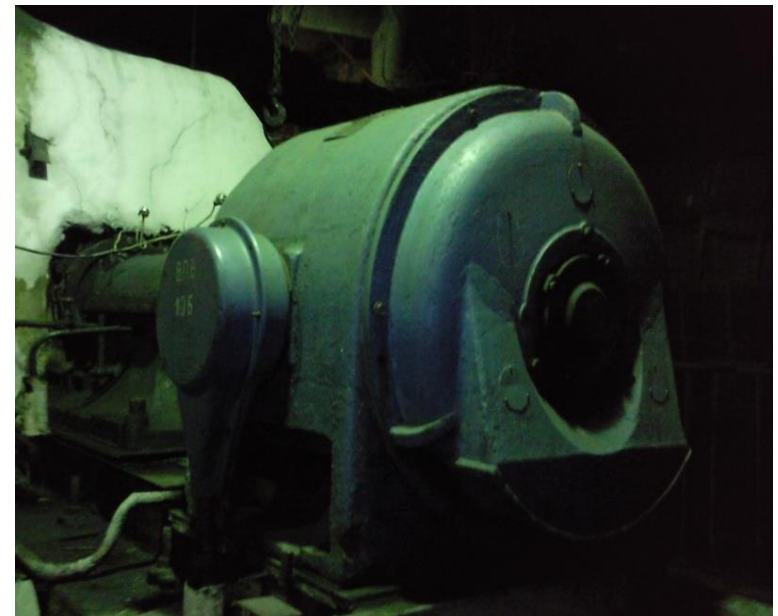
Power range	200 – 1000 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Ingress Protection Rating	IP23, IP44
Voltage	380, 660, 3000, 6000 V
Mounting version	IM1001
Insulation thermal class	«F»



ELECTRIC MOTORS OF A and A3 TYPES frame sizes 12 and 13

AC electric motors with squirrel-cage rotor are designed to drive pumps, blowers, smoke exhausters and other mechanisms, which do not require rotation frequency adjustment.

Motor of A3 series at the South Mining and Concentration Complex



Basic technical data

Power range	200 – 1000 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Ingress Protection Rating	IP23, IP44
Voltage	380, 660, 3000, 6000 V
Mounting version	IM1001
Insulation thermal class	«F»



ELECTRIC MOTORS OF A5K-355 STANDARD SIZE



Electric motors are intended to drive pumps, air blowers, fans and other mechanisms, which do not require rotation frequency adjustment.

Motor of A5K-355-315-2Y3 type as a part of compressor



Basic technical data

Power range	200 – 500 kW
Rotation frequency	1000, 1500, 3000 rpm
Ingress Protection Rating	IP23, terminal box - IP54
Voltage	3000, 6000 V
Mounting version	IM1001
Insulation thermal class	«F»



Asynchronous motors of A4P series

ASYNCHRONOUS MOTORS OF A4P AND A4PO SERIES

Asynchronous motors of **A4P** and **A4PO** series are intended for operation as a part of variable-frequency drives to drive mechanisms, which require rotation frequency adjustment.

Asynchronous motors of A4PO series



Basic technical data

Power range	200 – 1500 kW
Rotation frequency	500, 600, 750, 1000, 1500 rpm
Ingress Protection Rating	IP23; IP54
Voltage	380, 660, 3000, 6000 V
Mounting version	IM1001
Insulation thermal class	«F»



ACBO5K-15-12Y1,5



ACBO5K-75-34Y1.5



BACB 17-40-52Y1

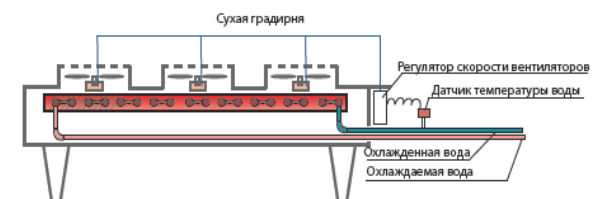
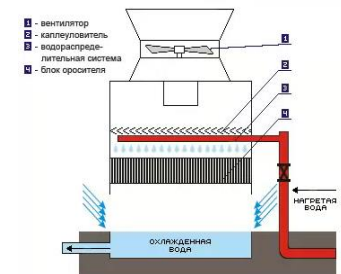


ACBO 15-23-34MY1

ELECTRIC MOTORS OF ACBO 15-23-34MY1, BACB 17-40-52Y1 TYPES AND OF ACBO5K SERIES

Vertical electric motors with squirrel-cage rotor are designed to be used as a direct (gearless) drive of cooling tower fans. Motors of **ACBO5K** series have been put into production to replace motors of **ACBO 15-23-34** type, which have large weight and dimensions.

Fan cooling tower



Basic technical data

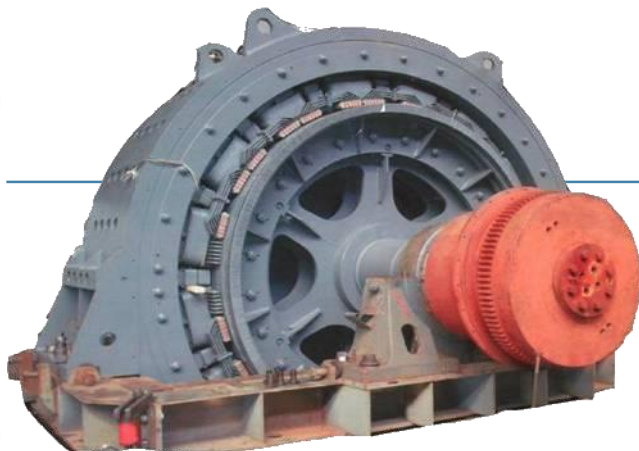
Power range	6,5 – 200 kW
Rotation frequency	500; 428,6; 250; 176,4; 187,5 rpm
Ingress Protection Rating	IP54
Voltage	380, 6000 (BACB) V
Mounting version	IM8421; IM8221; IM9601; IM3011; IM3231
Insulation thermal class	«F»

DC ELECTRIC MOTORS OF Π2ΠМ SERIES, FRAME SIZES 12-14 AND OF Π2 SERIES, FRAME SIZE 17

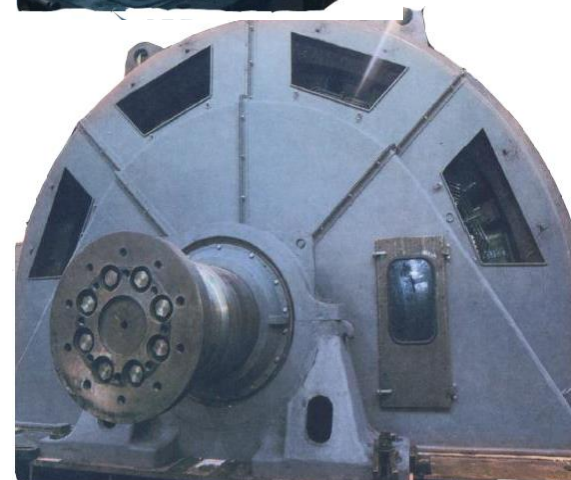
Motors are intended to complete electric drives of rolling mills and other mechanisms, which require a wide range of rotation frequency adjustment.

Basic technical data	
Power range	110 - 1250 kW
Rotation frequency	315 - 1400 rpm
Ingress Protection Rating	IP22
Voltage	440, 600 V
Mounting version	Can be horizontal or vertical. Vertical version implies that there is a letter «B» in motor type designation.
Insulation thermal class	Π2 series, frame size 17 — «F», motors of Π2ΠМ series, frame sizes 12-14: windings of armature circuit — «H», excitation winding — «F»

DC MOTORS OF Π2 TYPE



Motor of **Π2-630-204,5-4 K** type is intended to drive blooming mill manipulator heads. **Reversible** motors of **Π2** series, **frame sizes 21-25**, **nonreversible** motors of **Π2** series, **frame sizes 20, 21, 24** are to be operated as main electric drives of rolling mills and can be used as electric drives for other mechanisms.



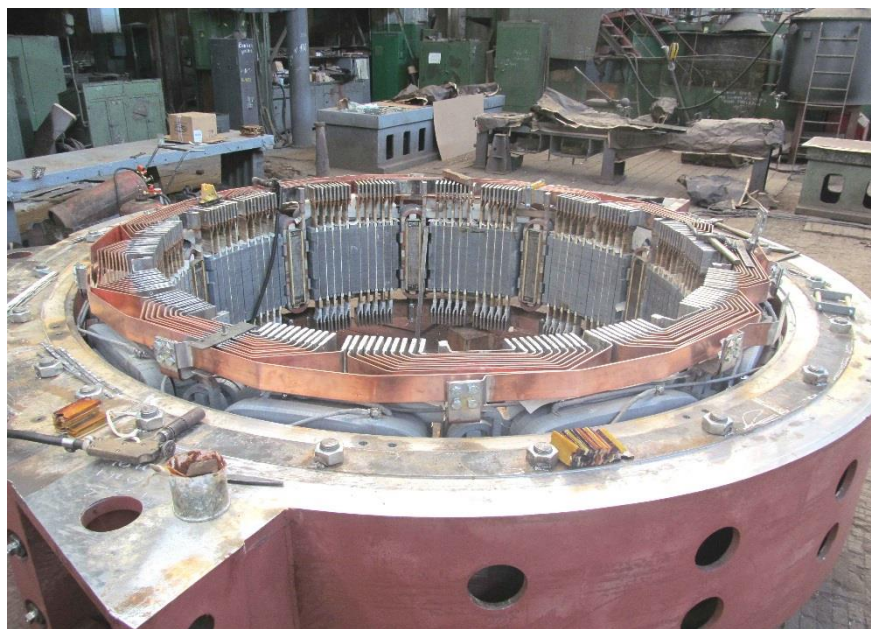
Basic technical data

Power	Π2-630-204,5-4 K – 800 kW Π2 frame sizes 21-25 – 3150 – 12500 kW Π2 frame sizes 20, 21, 24 – 1600 – 5000 kW
Rotation frequency	Π2-630-204,5-4 K – 40 rpm Π2 frame sizes 21-25 – 36/71 – 125/150 rpm Π2 frame sizes 20, 21, 24 – 100/200 – 500/600 rpm
Voltage	Π2-630-204,5-4 K – 750 V Π2 frame sizes 21-25 – 930 V Π2 frame sizes 20, 21, 24 – 930 V
Insulation thermal class	«F»



DC MOTORS OF Π2Ш SERIES frame sizes 21, 25

Used in a complete set with electric drives for mine hoist mechanisms.



Basic technical data

Power	1600, 3150, 5000 kW
Rotation frequency (synchr.)	40 - 125 rpm
Voltage	930 V
Insulation thermal class	armature circuit windings – «H», excitation winding – «F»



DC MOTORS OF Π2Э, Π2ЭВ SERIES

Motors of **Π2Э, Π2ЭВ** series are intended to drive swing, linkage, lifting and walking mechanisms of excavators.

Motors are fully interchangeable with motors of the following **МПЭ** types:



Basic technical data

Power	500 kW
Rotation frequency	900, 1000 rpm
Ingress Protection Rating	IP 21
Voltage	440 V
Mounting version	IM 1003, IM 1004, IM 3014
Insulation thermal class	«H»

Motor name	Name of the interchangeable motor
Π2Э-134-8	МПЭ-450-900-M
Π2Э-134-8-2	МПЭ-450-900
Π2ЭВ-134-8	МПЭВ-400-900-M



Extensive scientific and research, experimental and production capabilities, modern technologies and qualified personnel make it possible for enterprises-members of Corporation to create high-quality electrical equipment in short terms.