

Въртящи електрически машини

Двигатели

Генератори

Постояннотокови

Променливотокови

Последователно
Паралелно
Независимо
Възбудане

С магнити

Синхронни

Асинхронни

С електромагнитно
възбудане

С магнити
в ротора

...

Повърхностни
магнити

Вградени
магнити

Реактивни

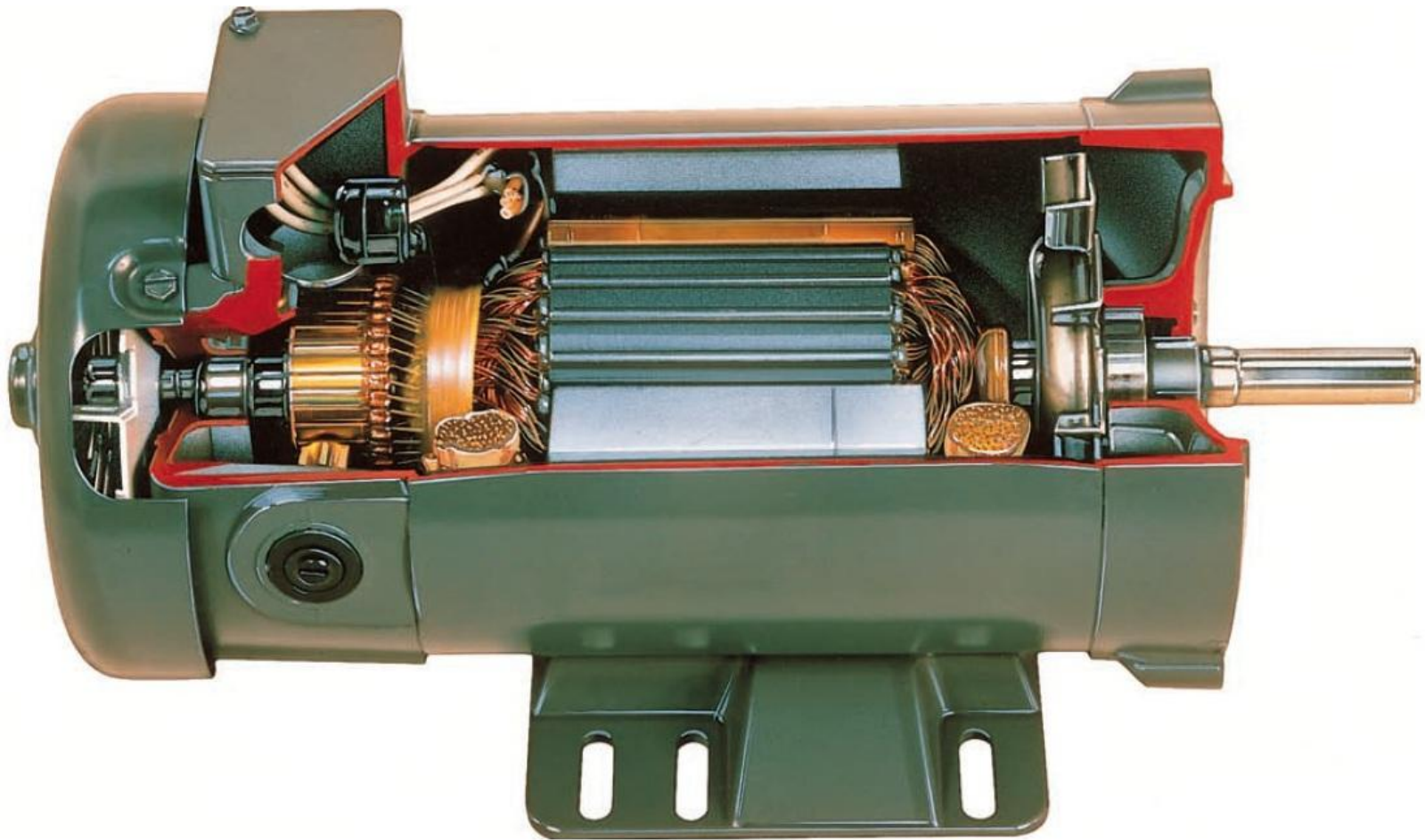
Стъпкови

Реактивни
С пускова
намотка

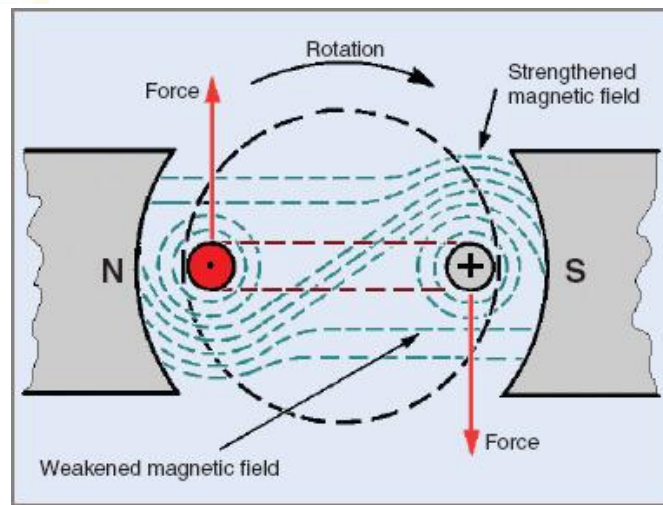
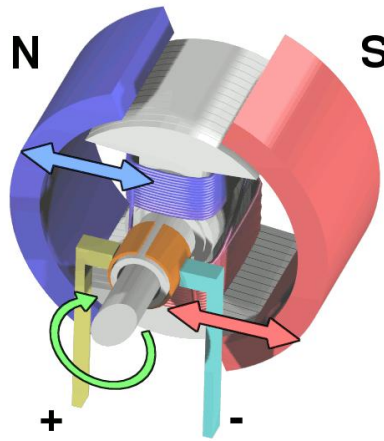
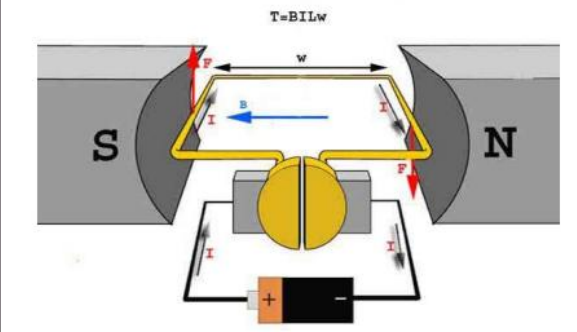
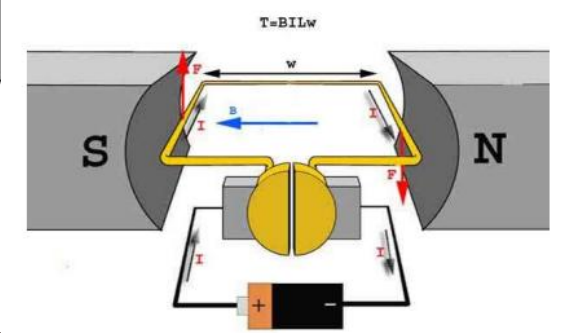
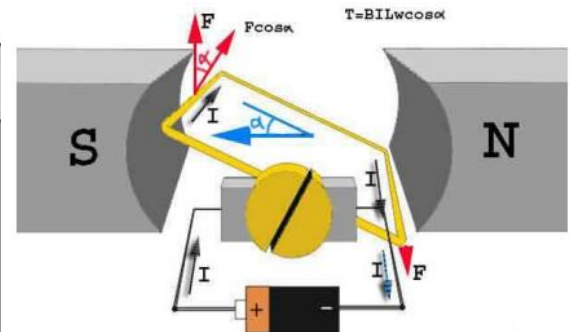
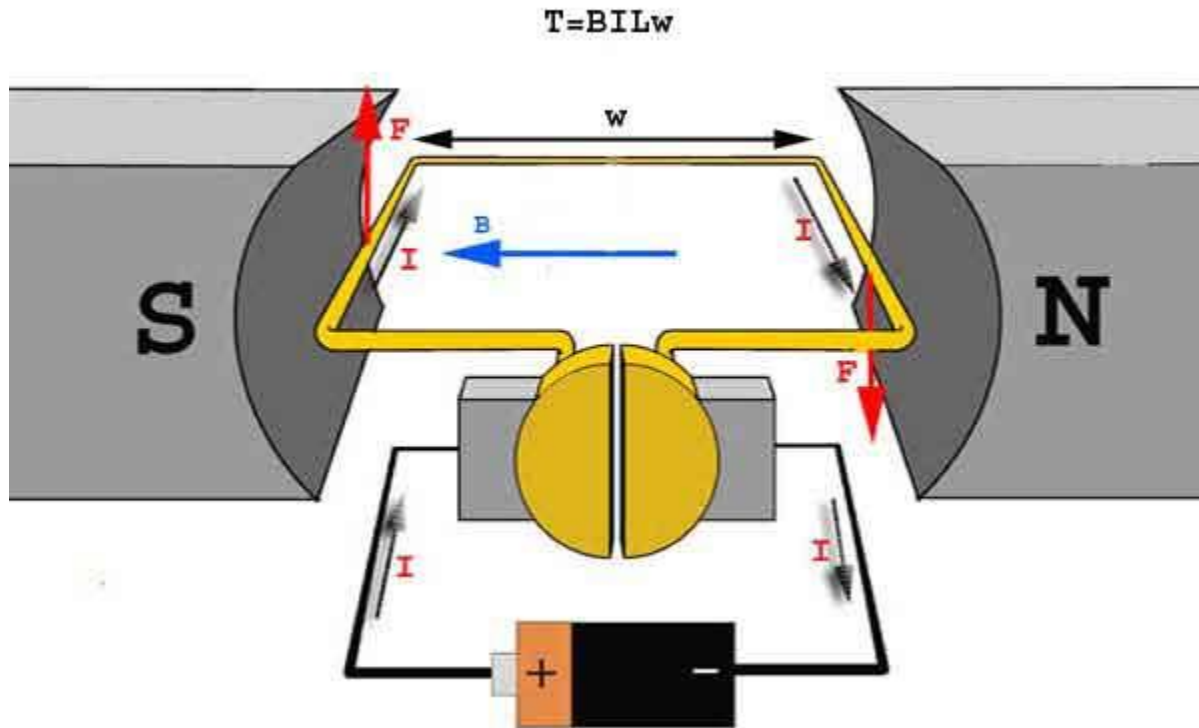
BLDC



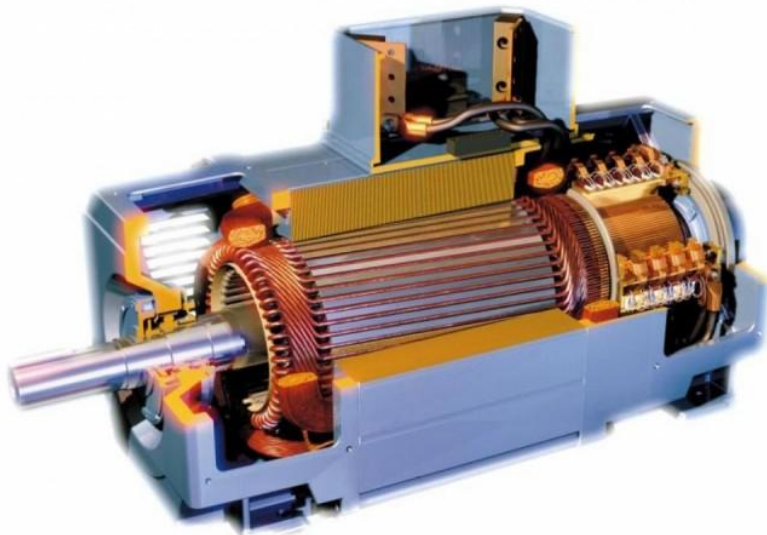
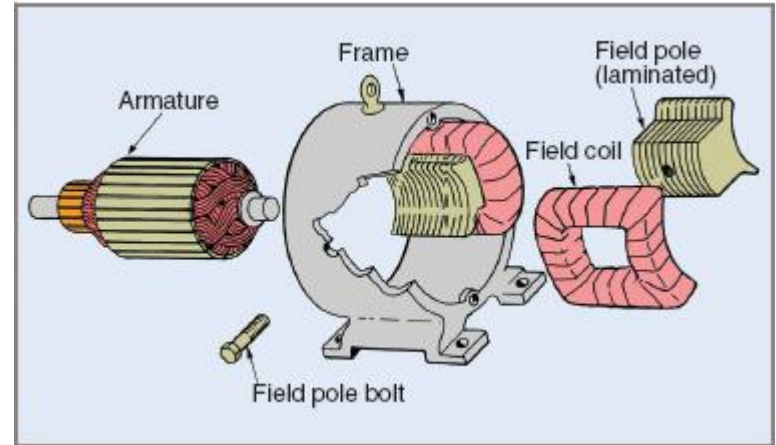
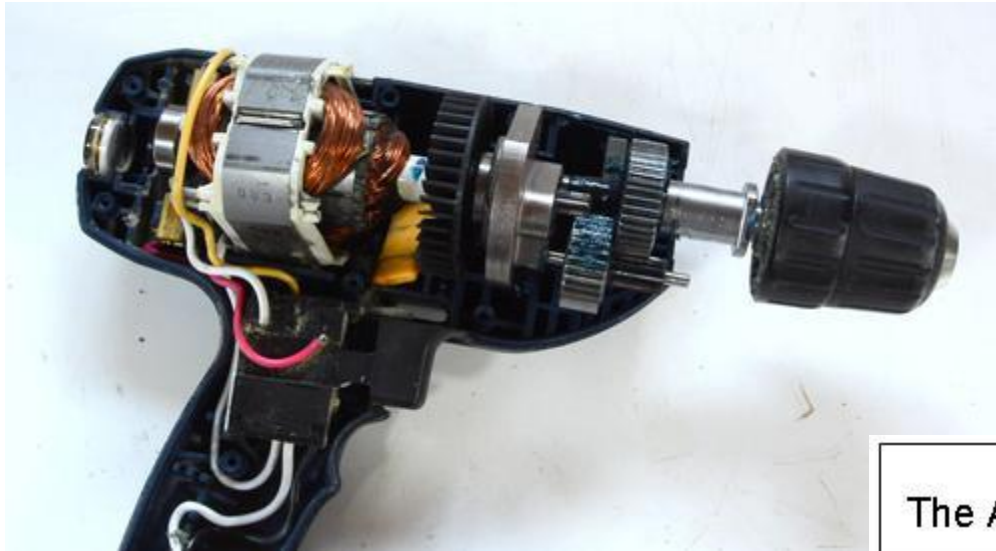
Машины за постоянен ток



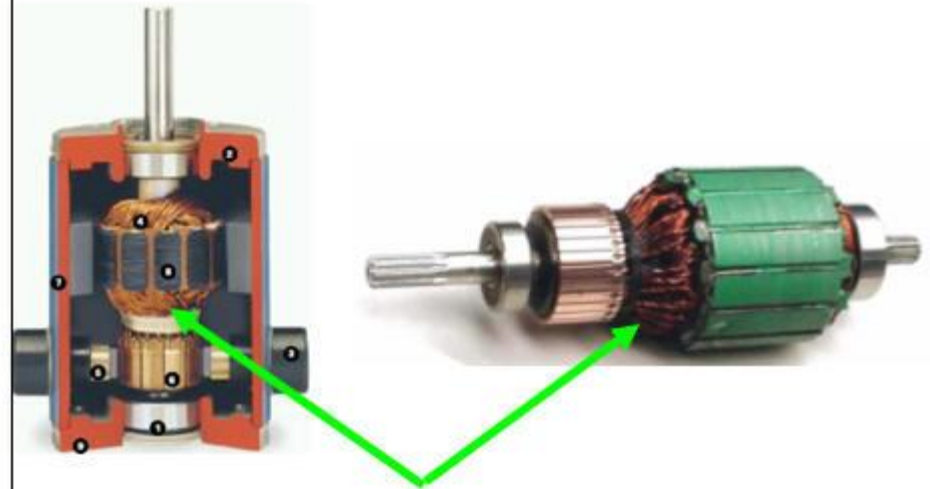
Машины за постоянен ток



Машины за постоянен ток



The Armature of a DC Permanent Magnet Motor



Magnet Field Windings Act as Heaters

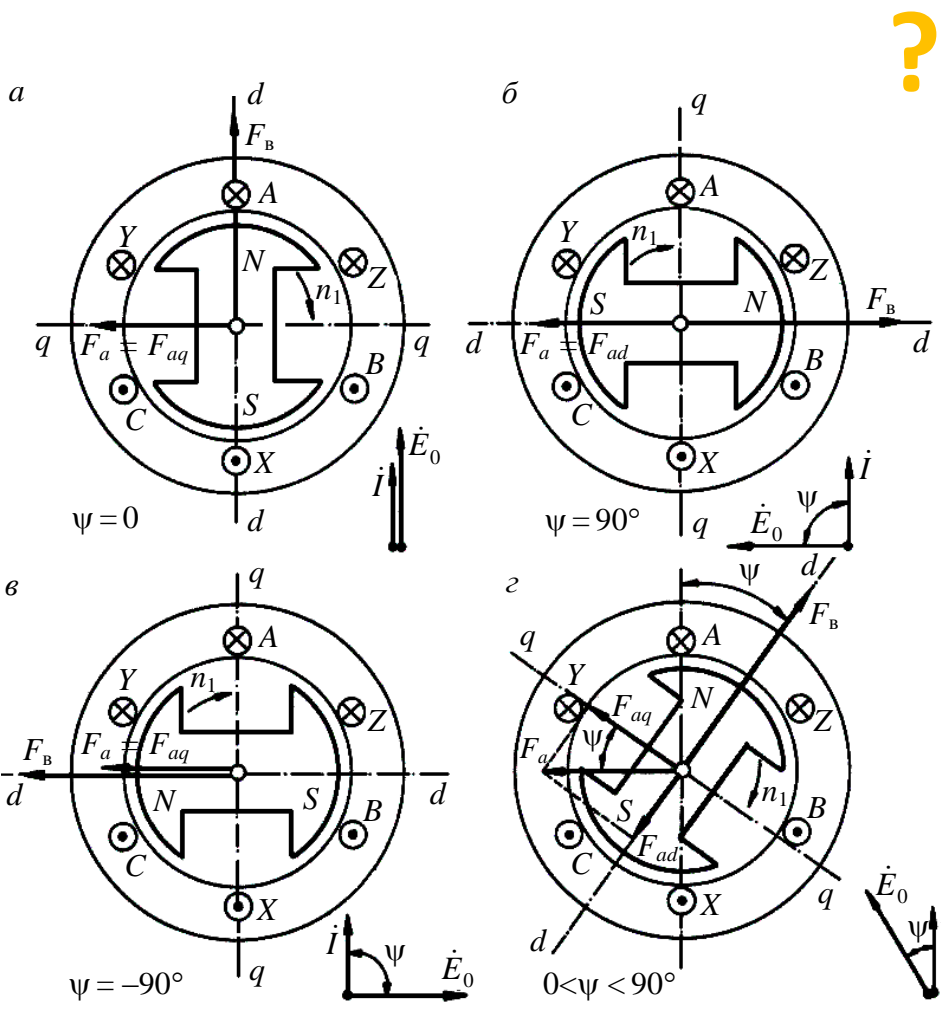
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Машини за променлив ток

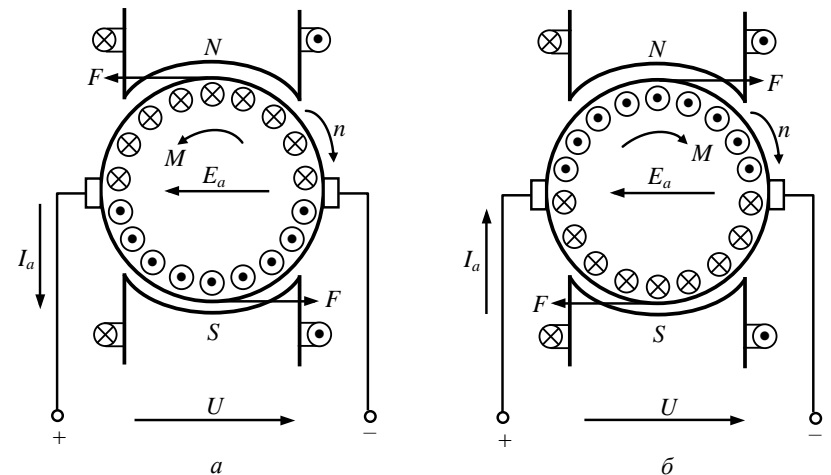
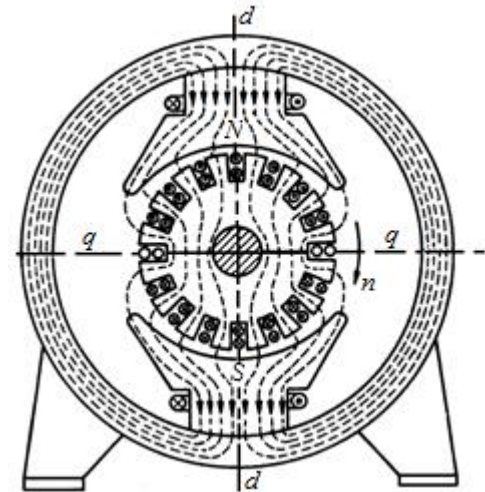
Синхронна vs Постояннотокова

Статор – въртящо поле

Статор – статично поле



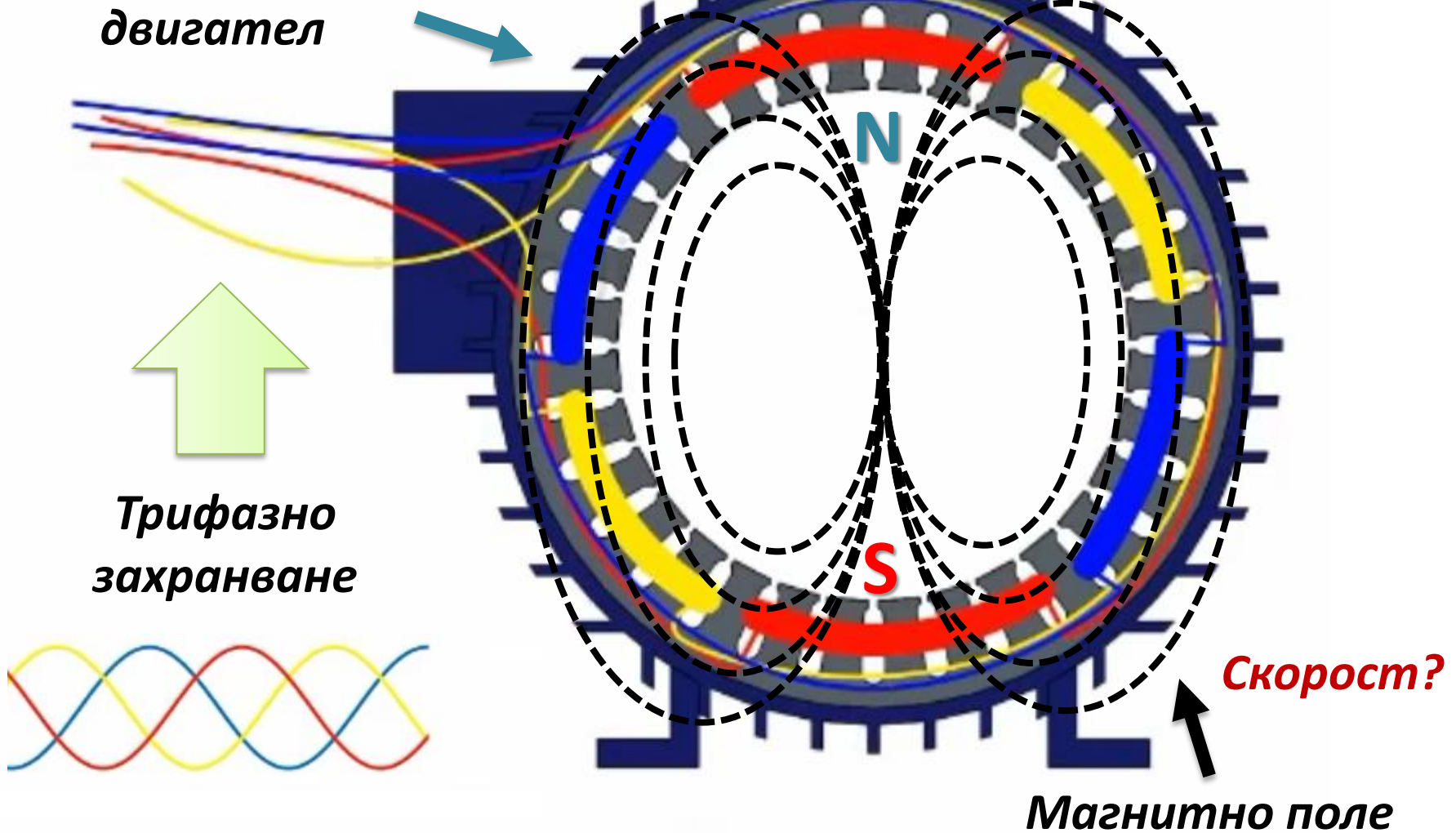
?



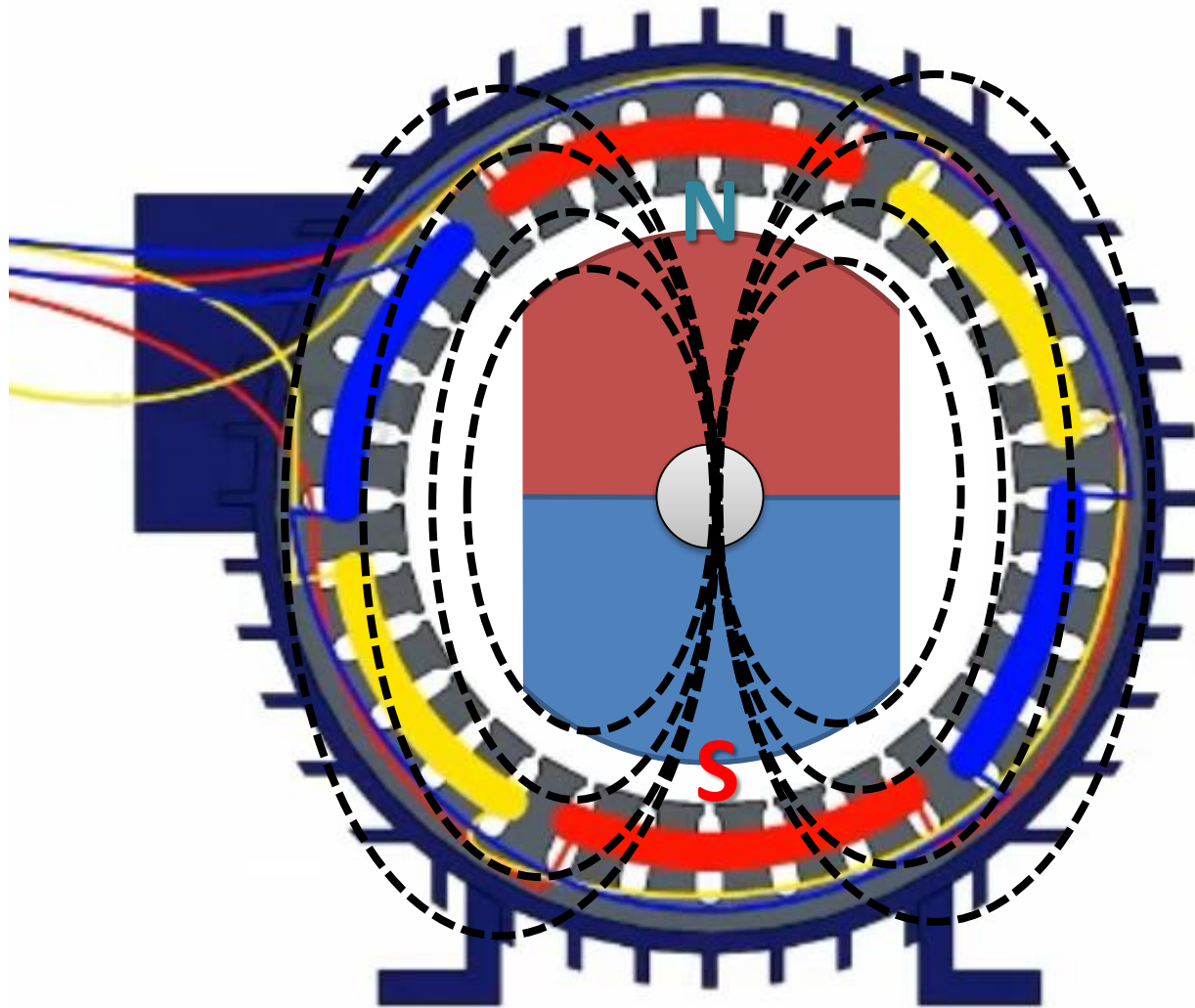
Машины за променлив ток

Статор на
променливотоков
двигател

СТАТОР

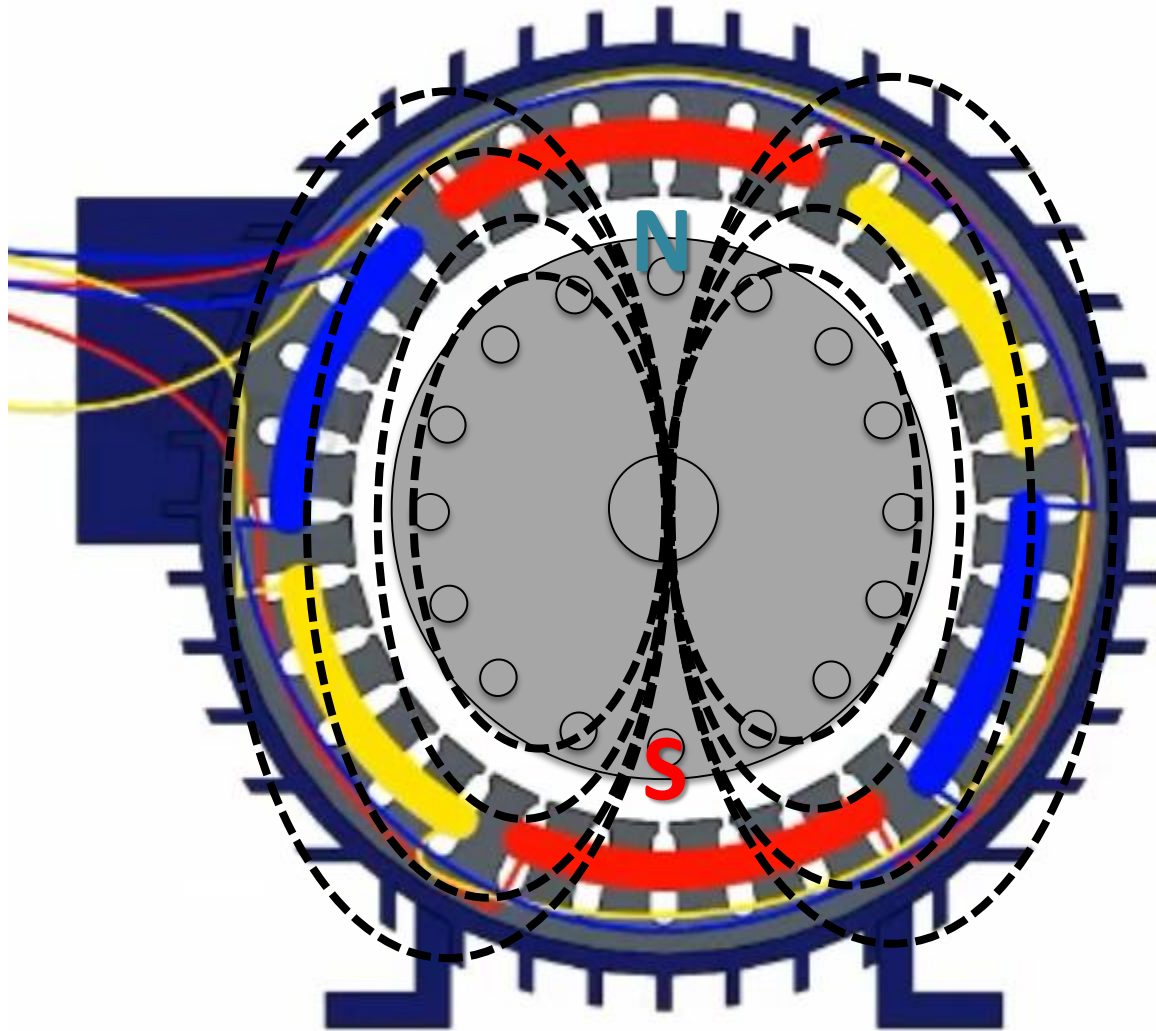


Машины за променлив ток



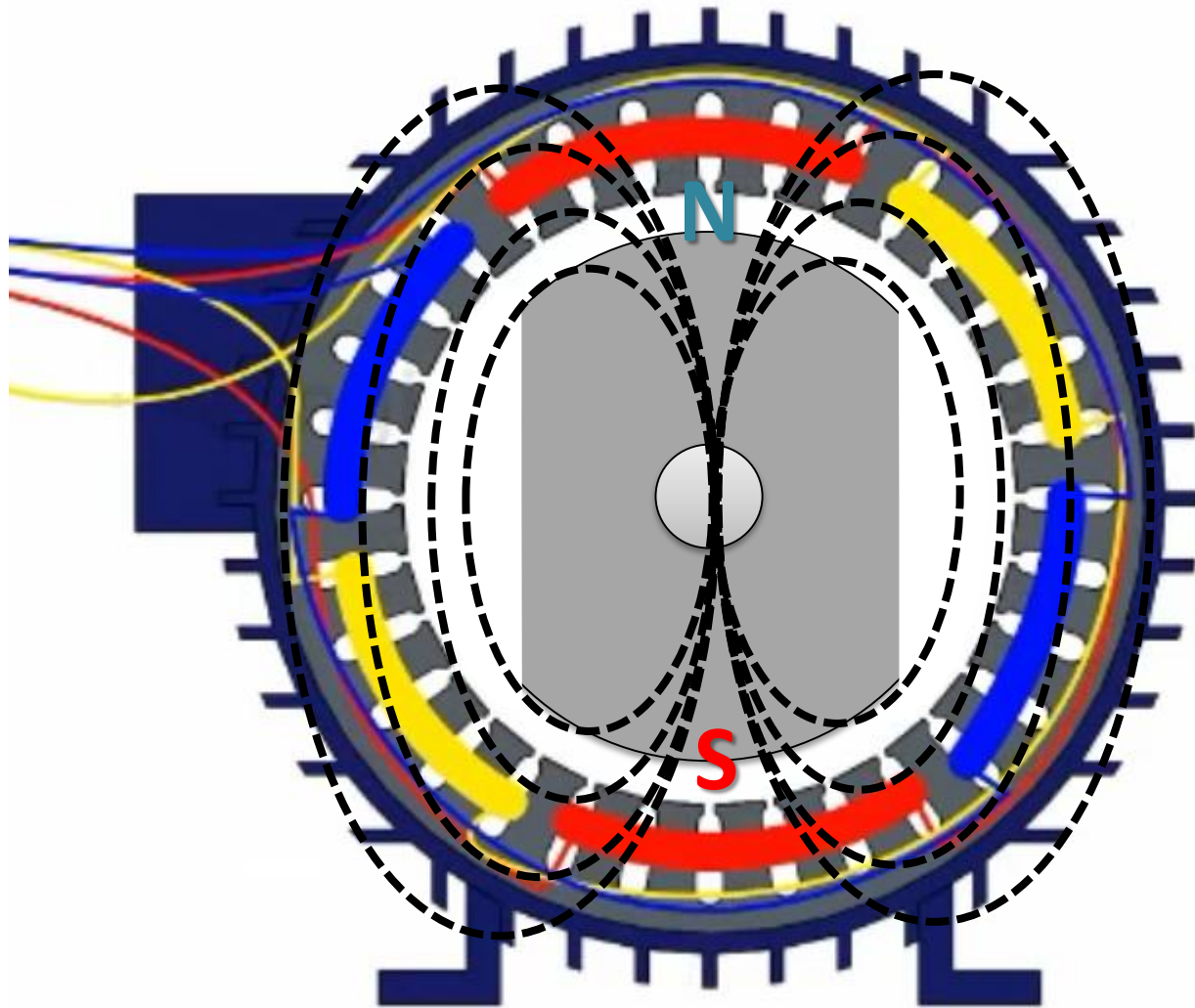
Синхронна ? Асинхронна

Машины за променлив ток



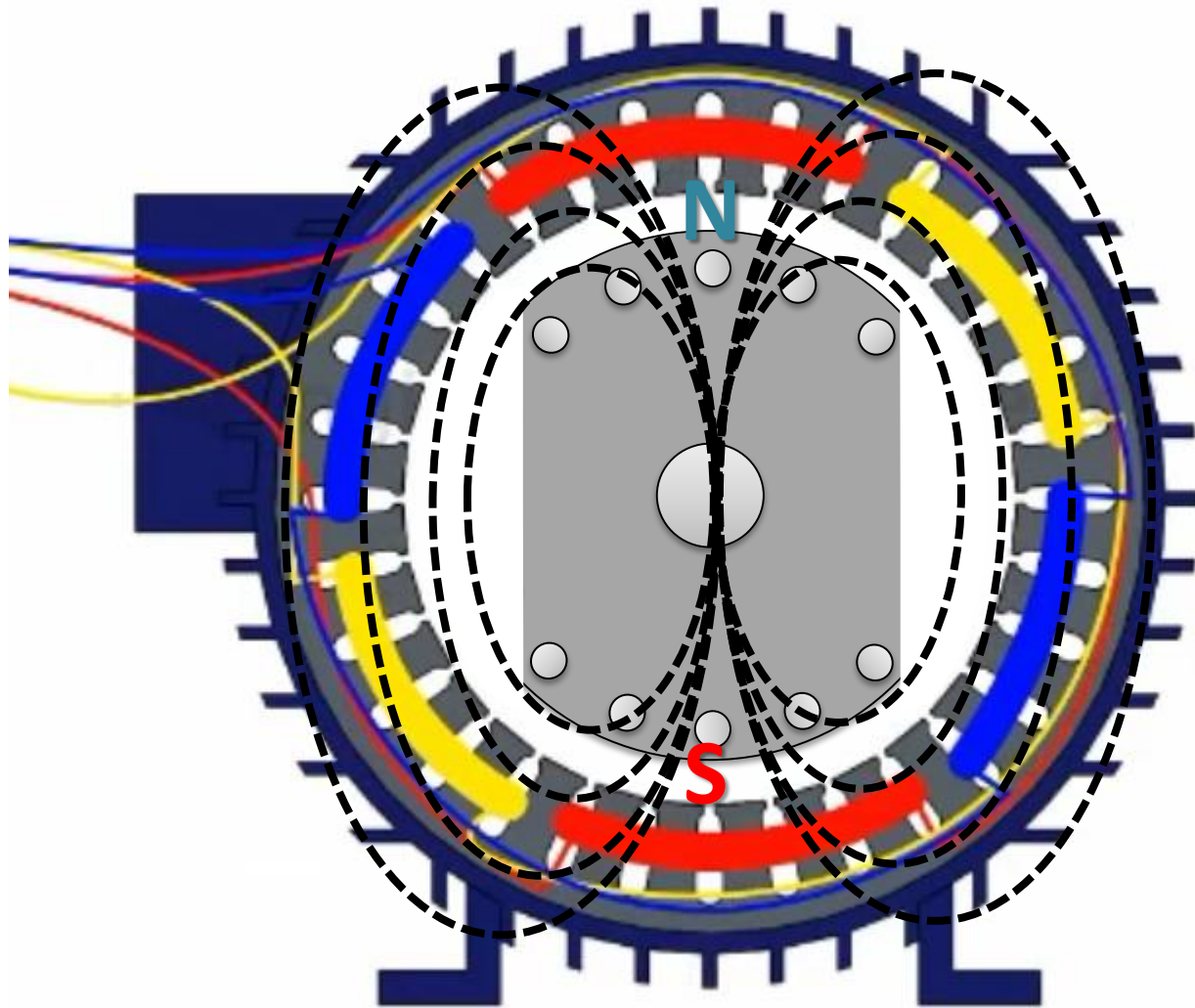
Синхронна ? Асинхронна

Машины за променлив ток



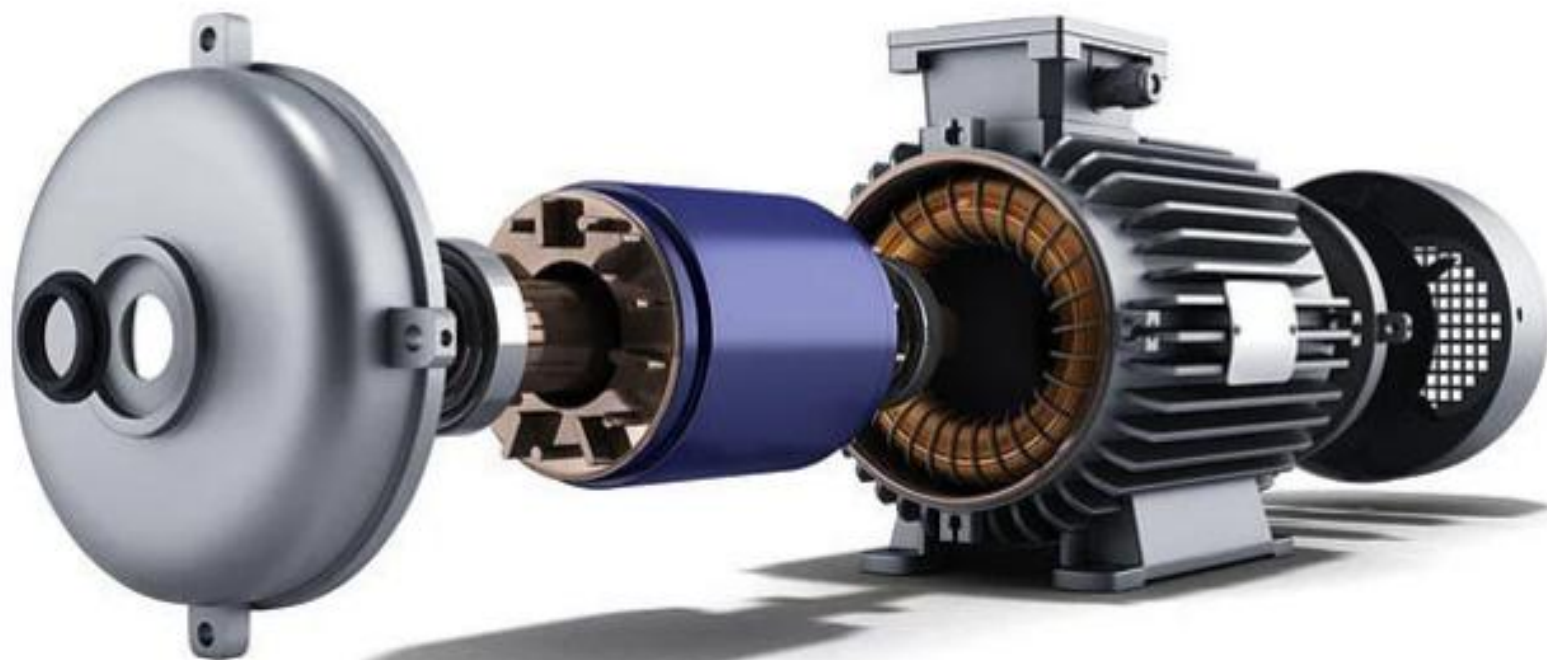
Синхронна ? Асинхронна

Машины за променлив ток



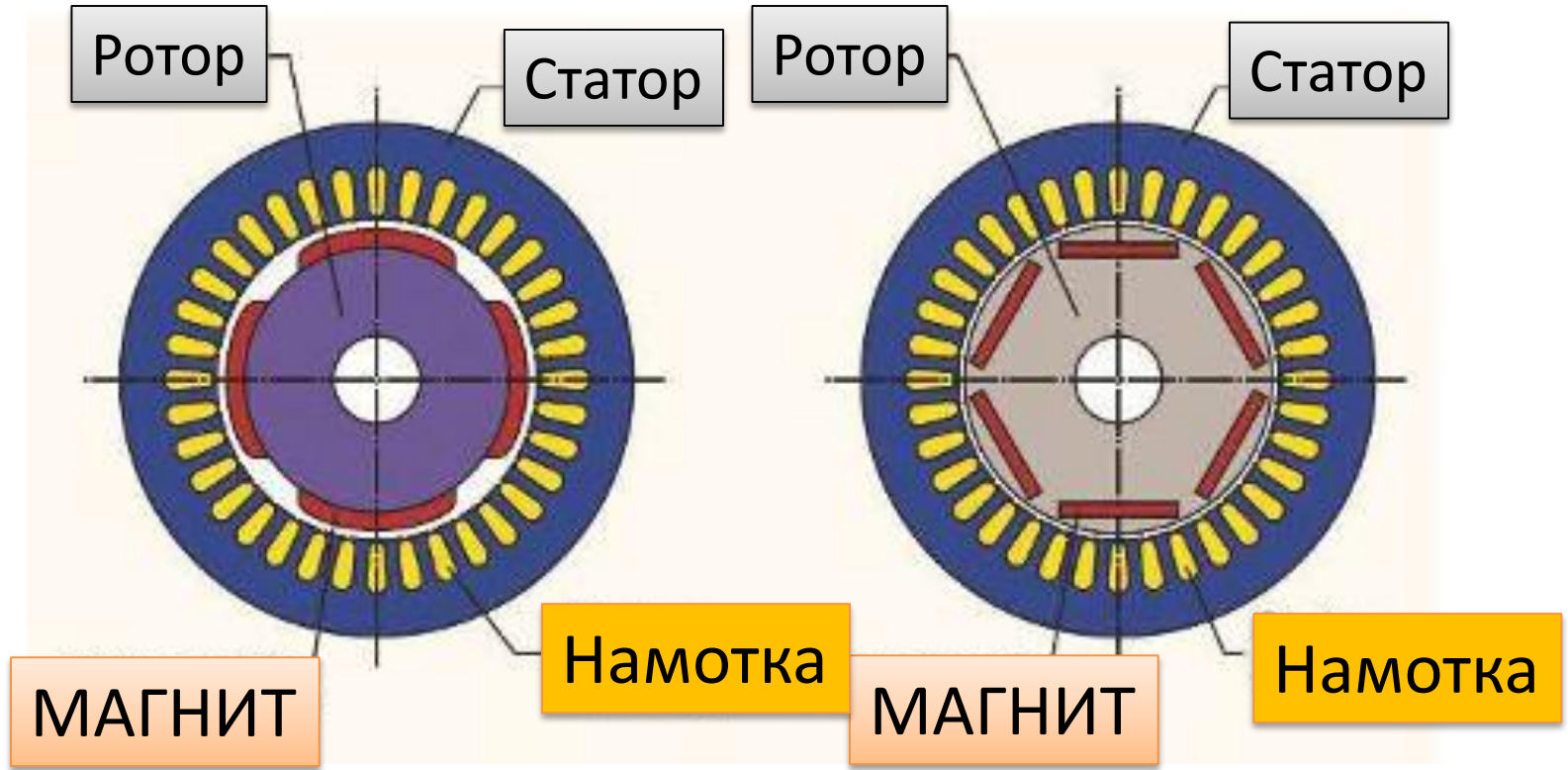
Синхронна ? Асинхронна

Машины за променлив ток



Синхронна ? Асинхронна

Машини за променлив ток



Повърхностни
магнити

Вътрешно разположение
магнити

Синхронна ? Асинхронна

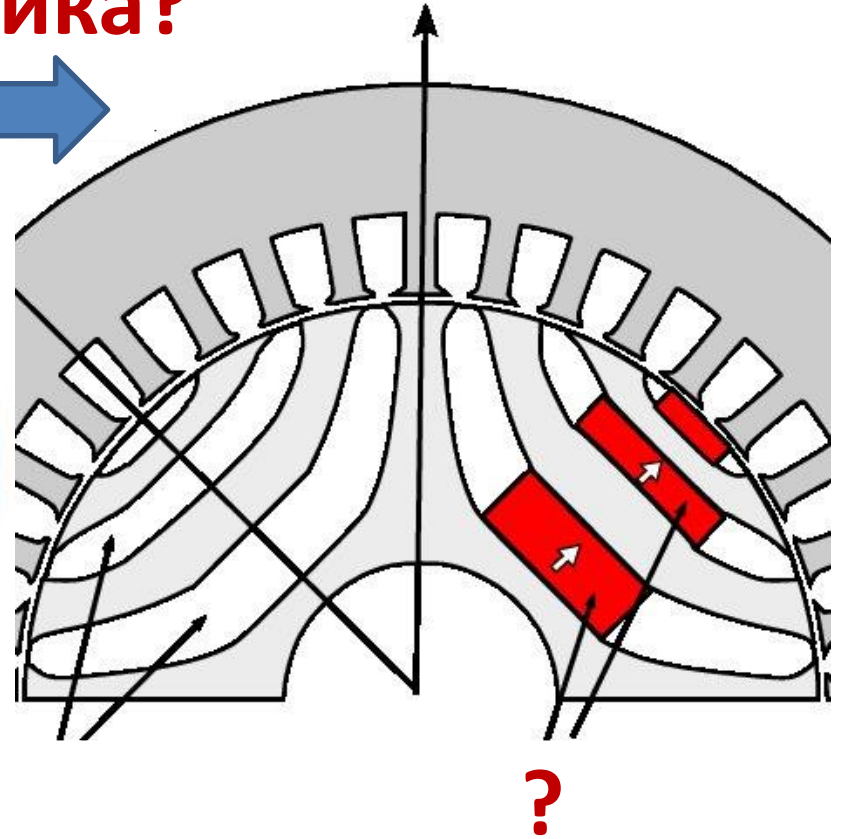
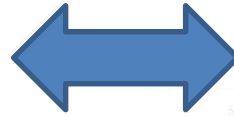
Машины за променлив ток



Синхронна ? Асинхронна

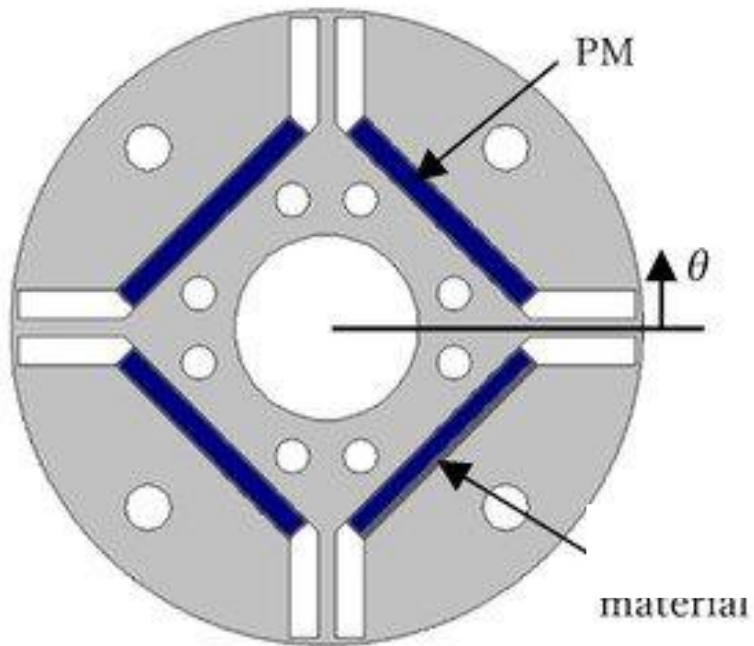
Машины за променлив ток

Разлика?



Синхронна ? Асинхронна

Машини за променлив ток



(a)

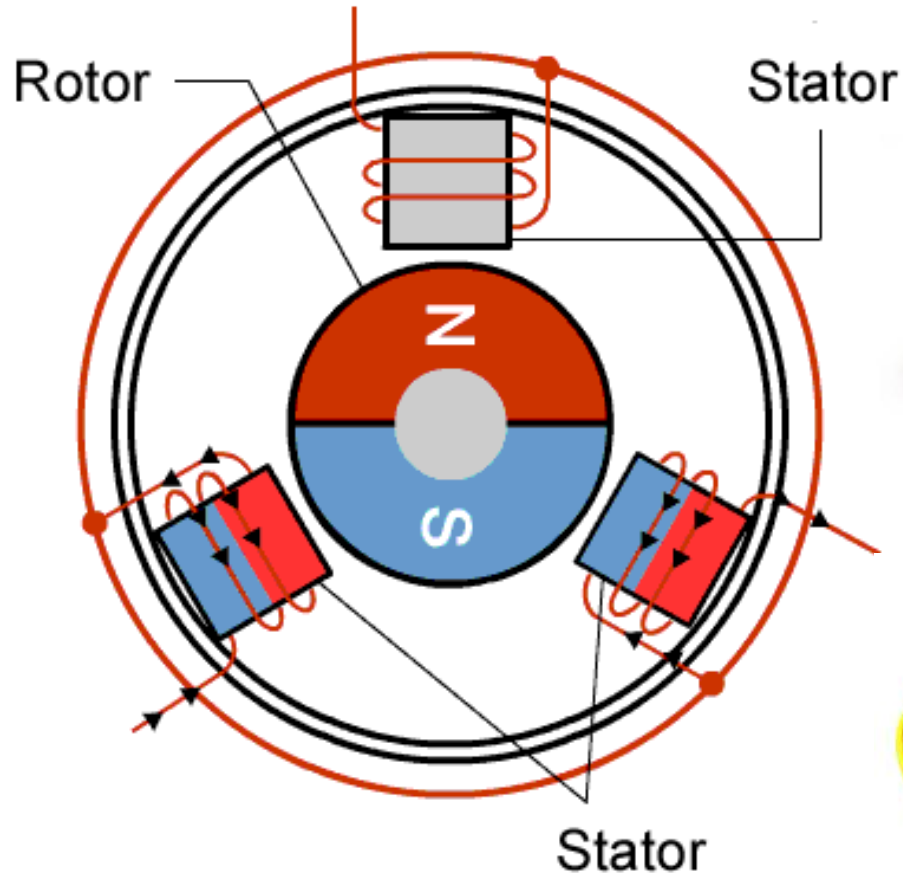


(b)

Синхронна ? Асинхронна

Машины за променлив ток

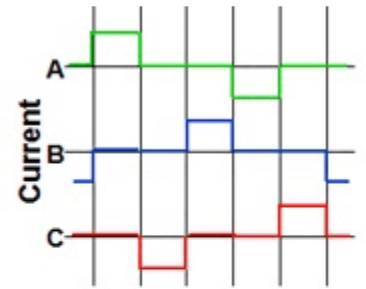
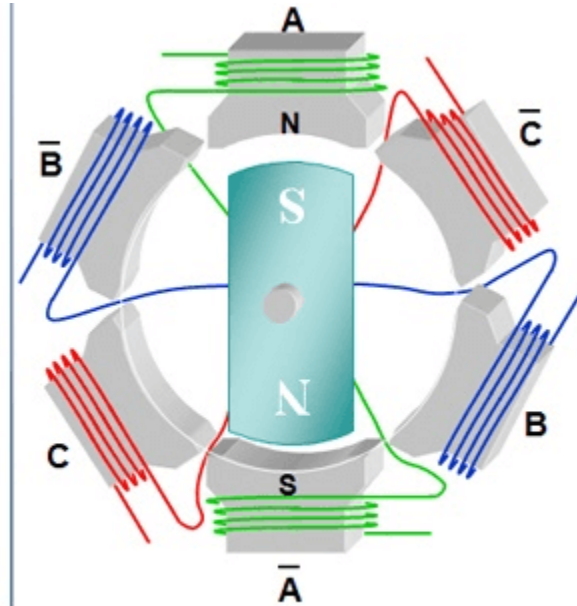
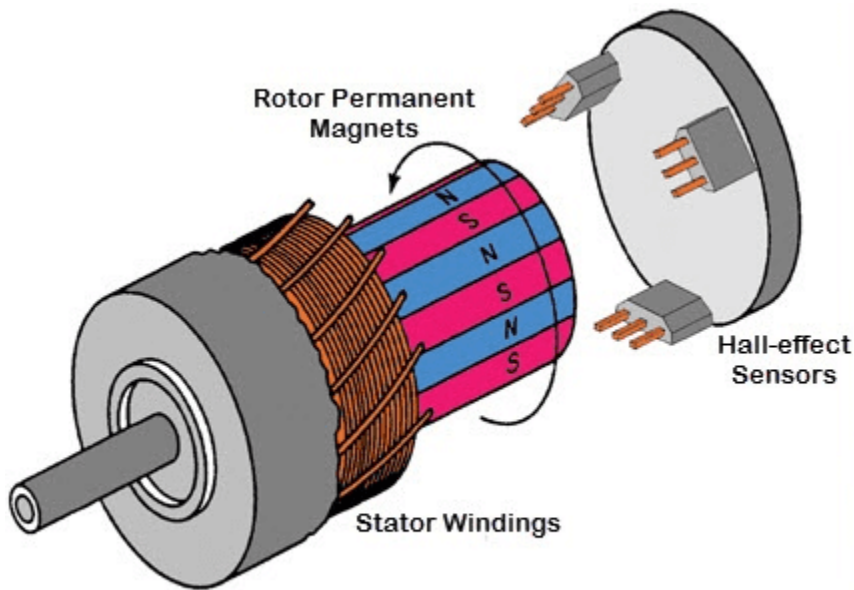
BLDC ???



Синхронна ? Асинхронна

Машины за променлив ток

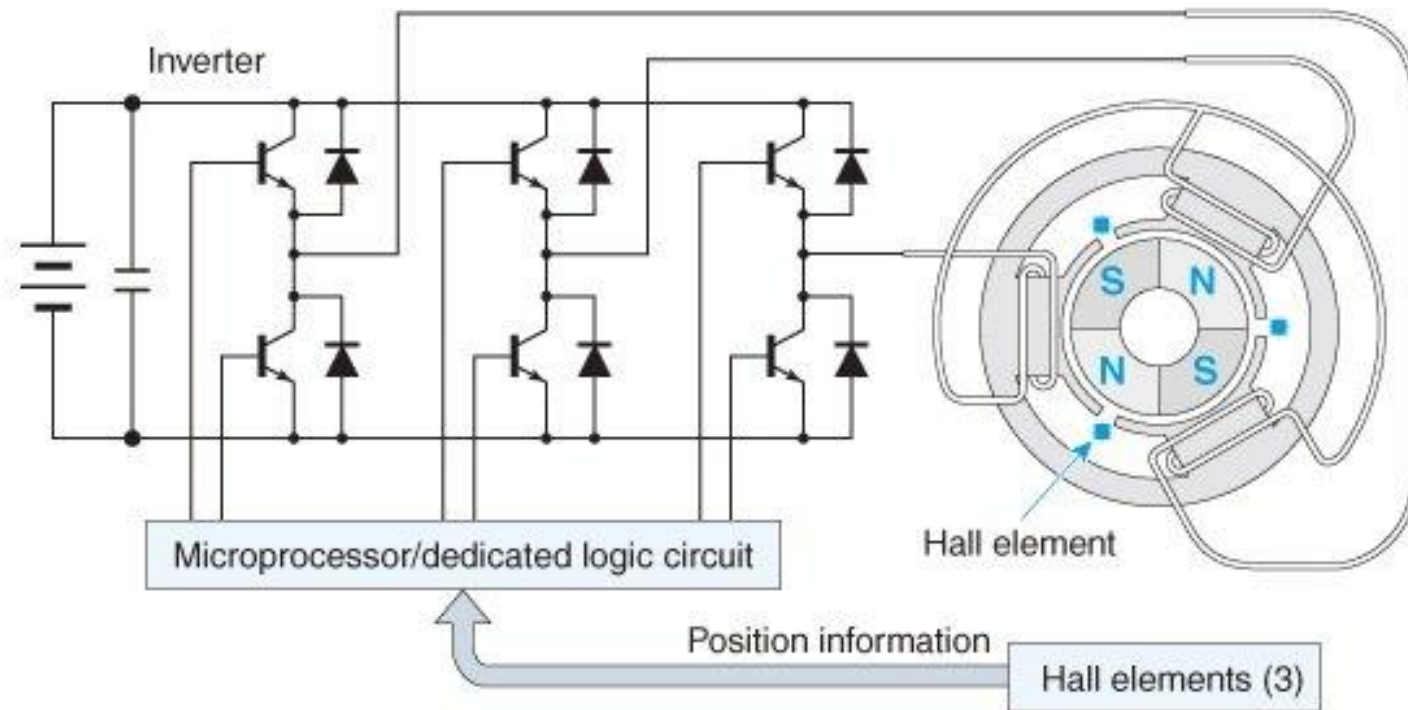
BLDC ???



Синхронна ? Асинхронна

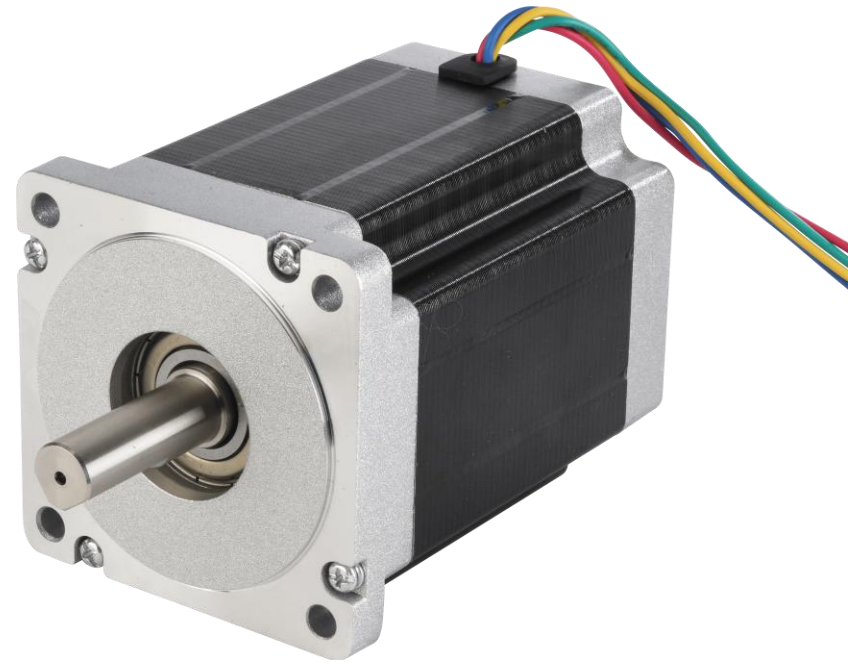
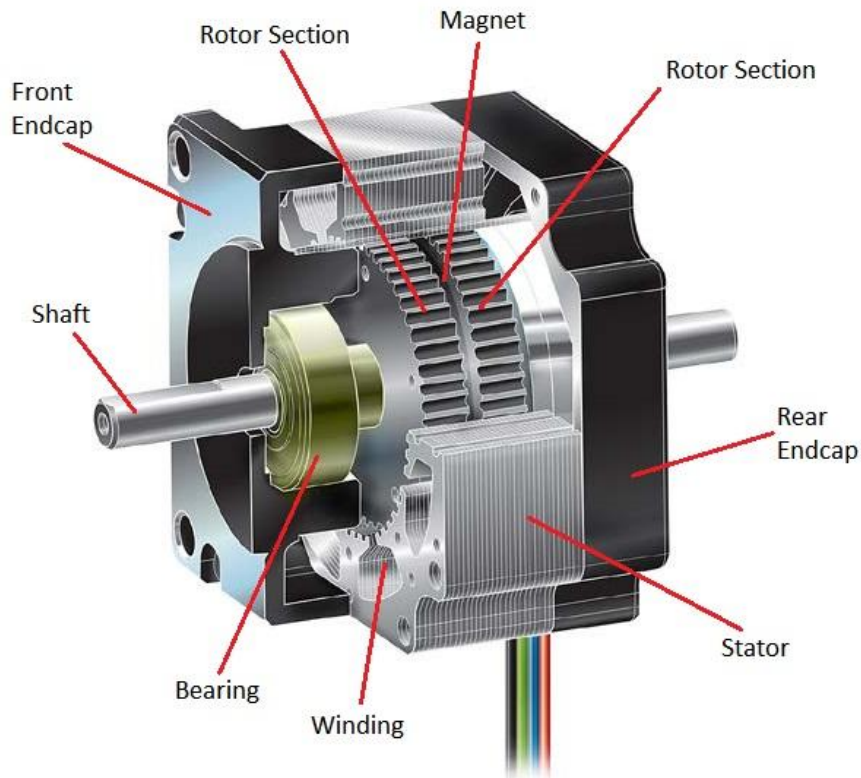
Машины за променлив ток

BLDC ???



Синхронна ? Асинхронна

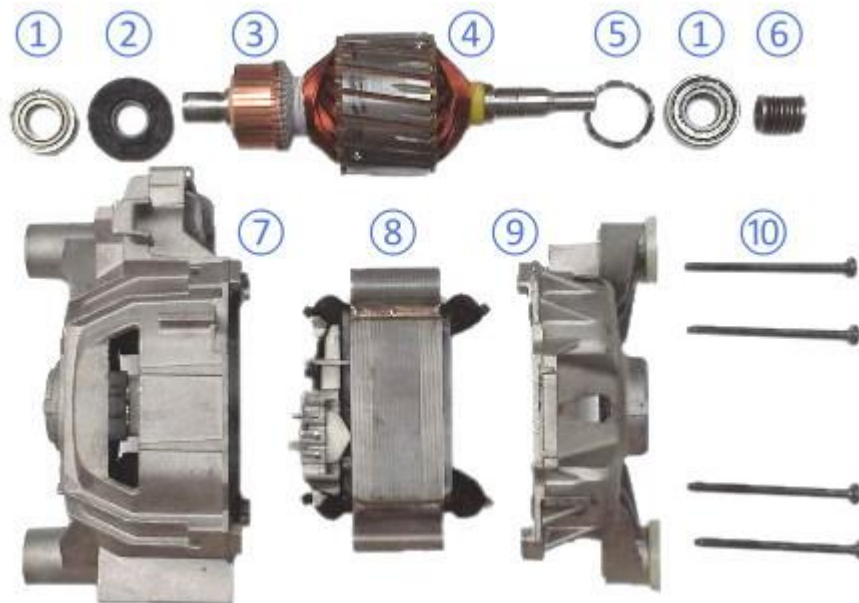
Машины за променлив ток



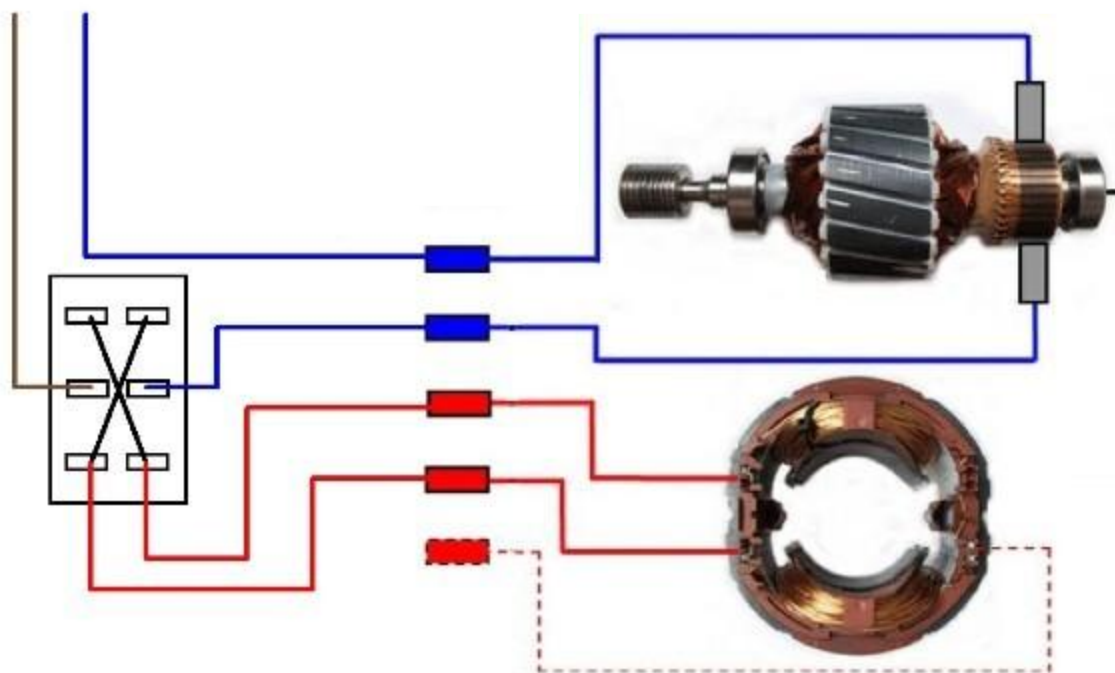
Синхронна ? Асинхронна

Машины за променлив ток

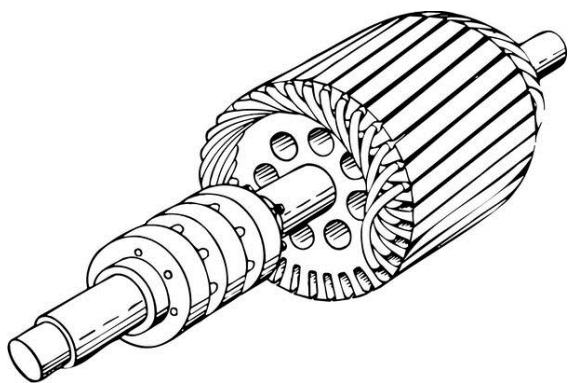
КОЛЕКТОР ???



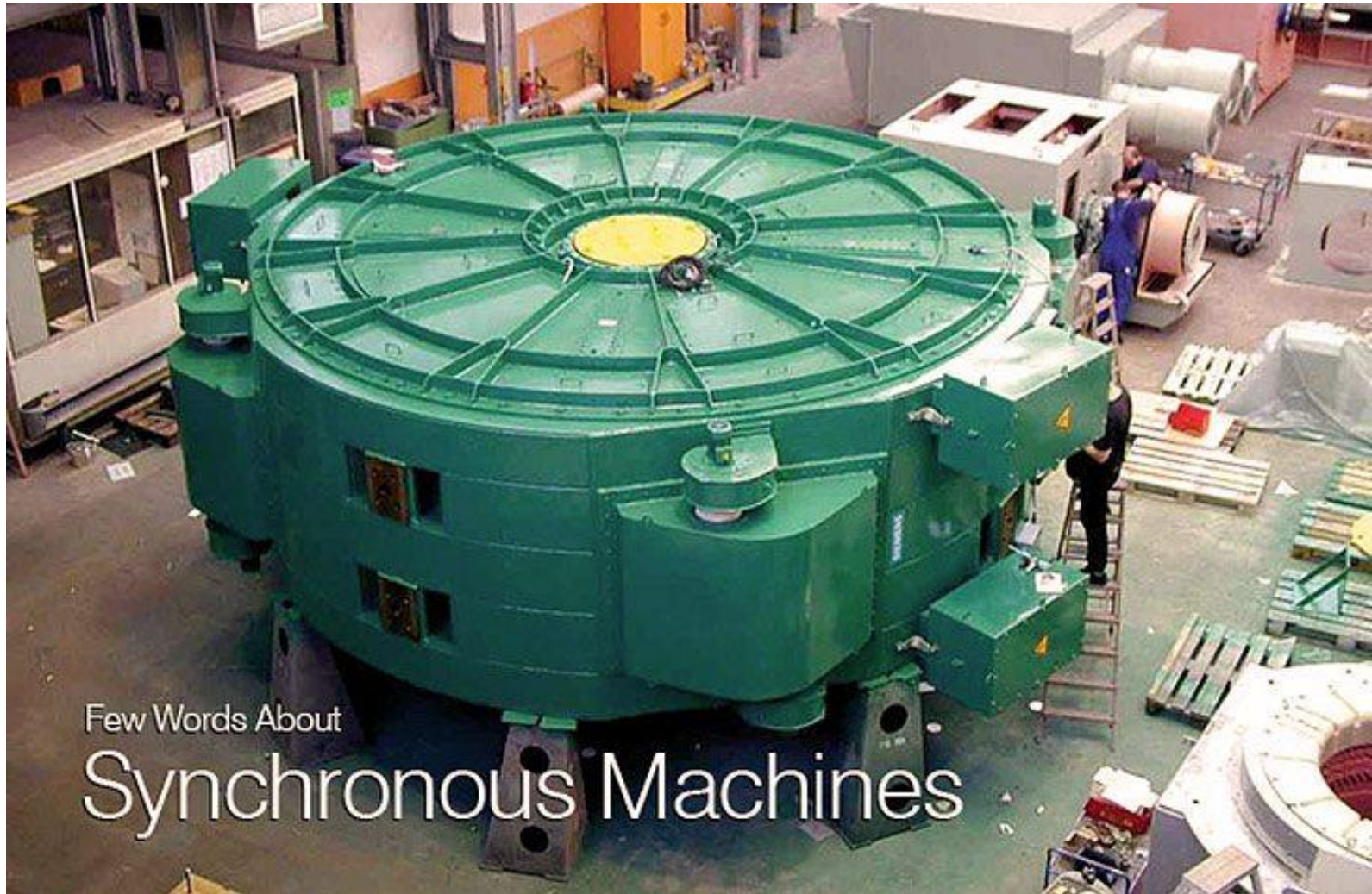
~220V



Машины за ...



Машины за ...

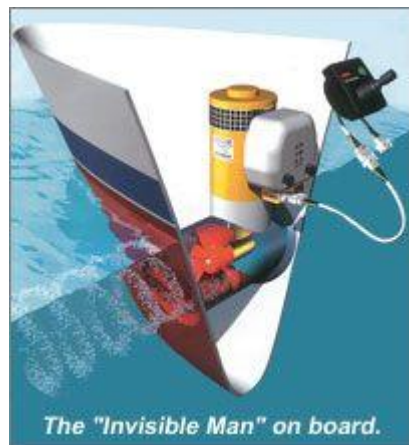


Few Words About
Synchronous Machines

Машины за ...



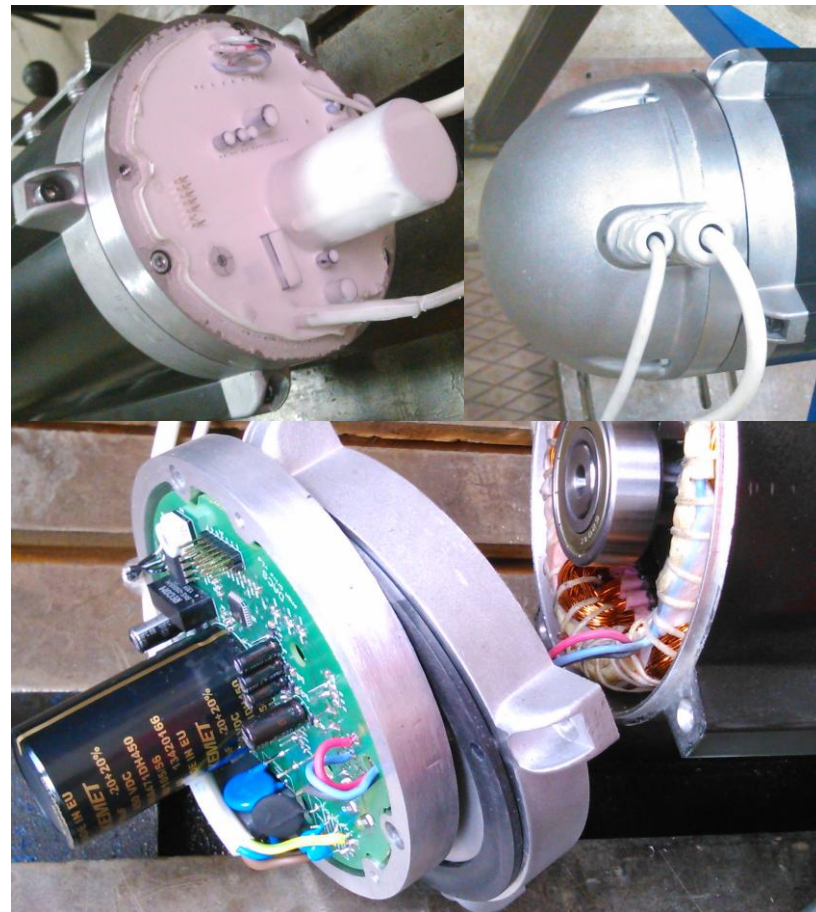
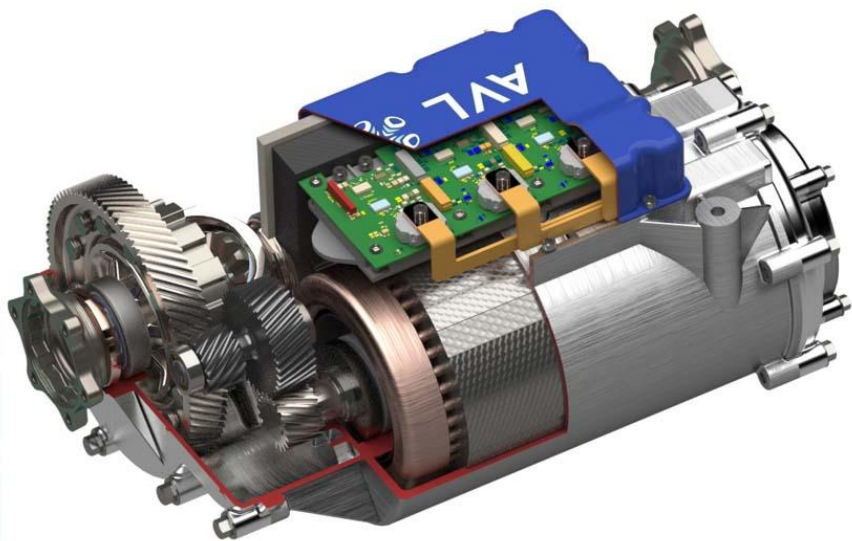
Машины за ...



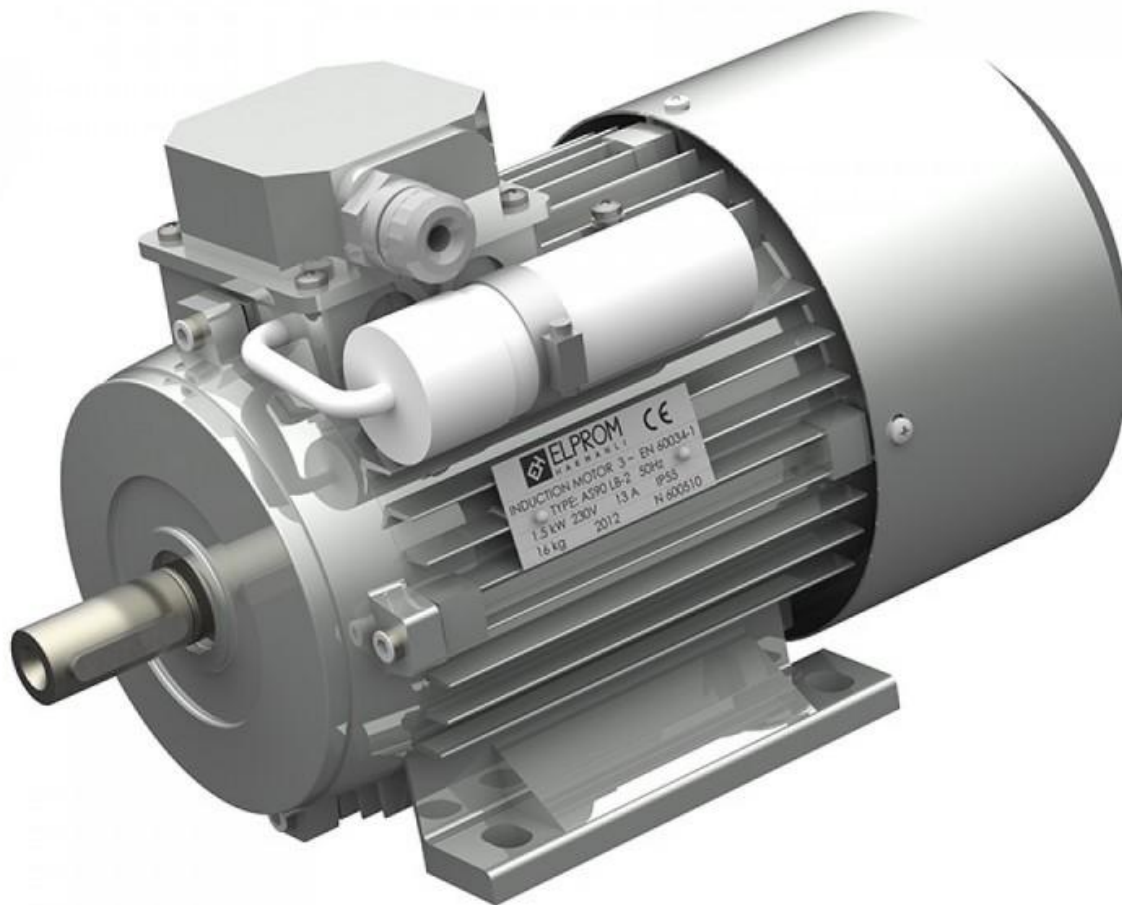
Машины за ...



Машины + Электроника



Еднофазен двигател с кондензатор ?

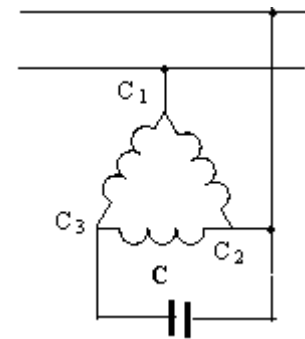


Асинхронните двигатели са трифазни, но има и еднофазни, които са двуфазни?!?

Трифазен асинхронен двигател – работен кондензатор

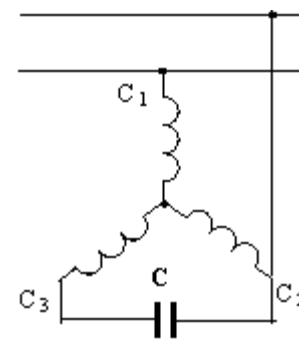
Звезда

$$C_p = 2800 \frac{I}{U}$$



Триъгълник

$$C_p = 4800 \frac{I}{U}$$



$\sim 7 \mu F$ за всеки 100W

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ELPROM
HARMANLI

AC ELECTRIC MOTORS

SPECIAL ELECTRIC MOTORS AND DRIVES

WE DEVELOP
CUSTOMISED
SOLUTIONS

FOR YOUR INDUSTRIAL AUTOMATION.

Наши производители



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Quality Motors

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The company is specialized in the production of electric motors

with applications in the electric vehicle and materials handling (traction), hydraulic and pleasure marine industries.



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EXPO
2020
DUBAI
UAE

BE THERE FOR THE
WORLD'S GREATEST
SHOW



70
години

Today, Elprom Troyan is proud to announce , that for the seventy years of operation the factory has manufactured and sold over 27 000 000 electric motors in 123 countries around the world. That is why the company is known as a leading standard for quality everywhere in the world.

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LABORATORY

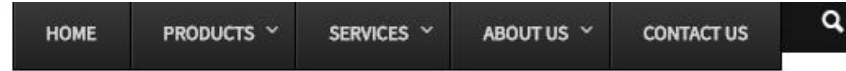


DENTISTRY



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Electroinvent Infrastructure

For the achievement of company goals and for the execution of its current and future projects, Electroinvent has build two buildings with total internal floor area 4 000 sq.m.

Electroinvent Building is located in the Economic Zone – Bozhurishte. The Economic zone – Bozhurishte is fast growing industrial area for inovative word wiide companies.



electroinvent

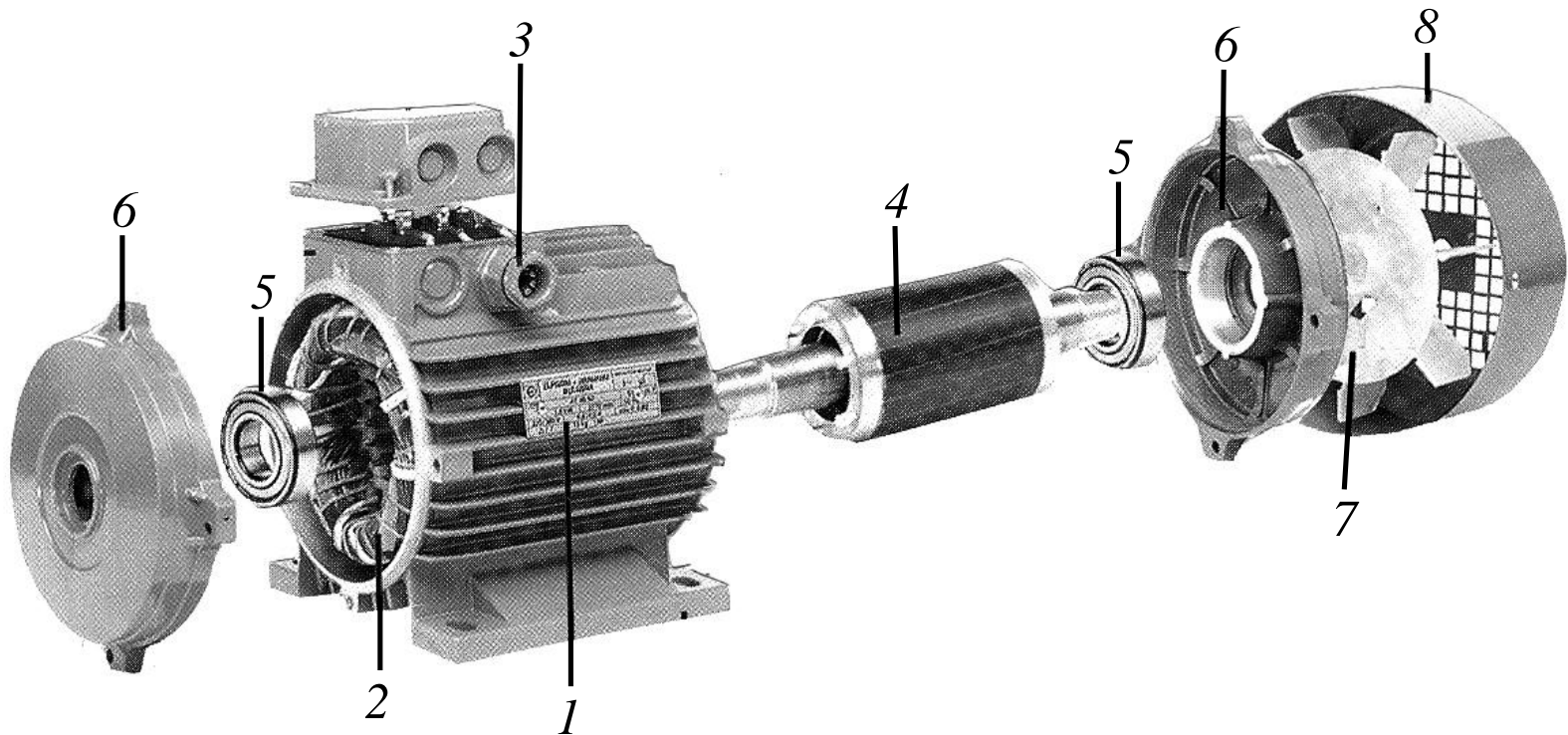
PCB Assembling
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Engineering
Service

AC Drives
DC Drives
Servo Drives
EI. Cabinets

1407 София, п.к. 74 бул. "Черни връх" 43
Tel : (+359 2) 862 14 06; 862 30 96; 862 24 06
Fax : (+359 2) 962 52 63
www.electroinvent.com
office@elinvent.com

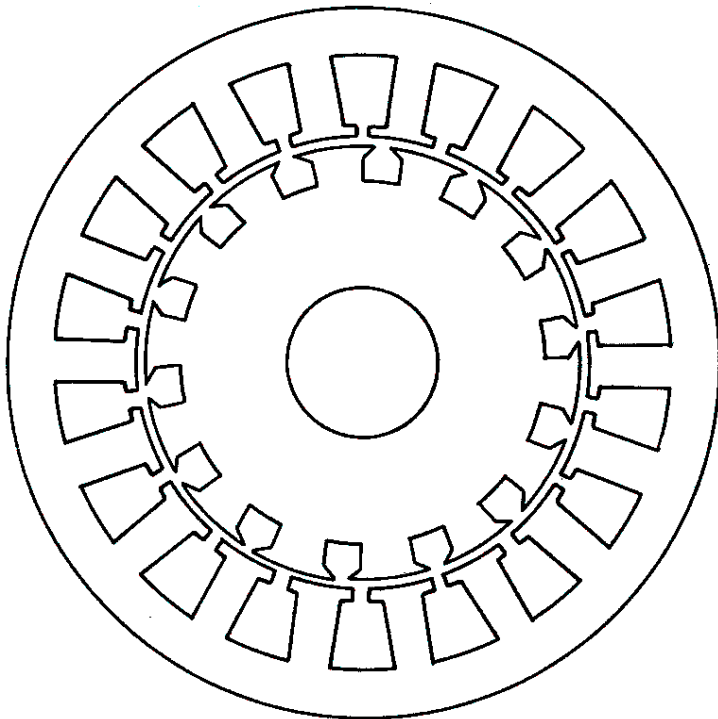


АСИНХРОННИ МАШИНИ

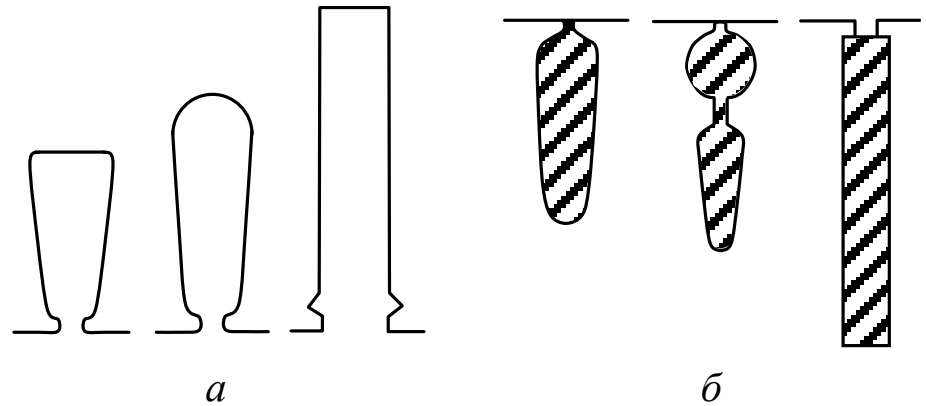


Фиг. 7.1. Устройство на асинхронен двигател с накъсосъединен ротор:
1 – статор; 2 – статорна намотка; 3 – вход на клемната кутия; 4 – ротор;
5 – лагери; 6 – лагерни щитове; 7 – вентилатор; 8 – вентилаторен кожух

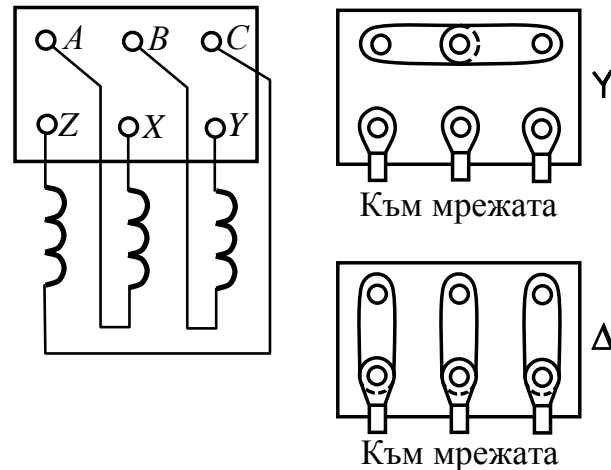
АСИНХРОННИ МАШИНИ



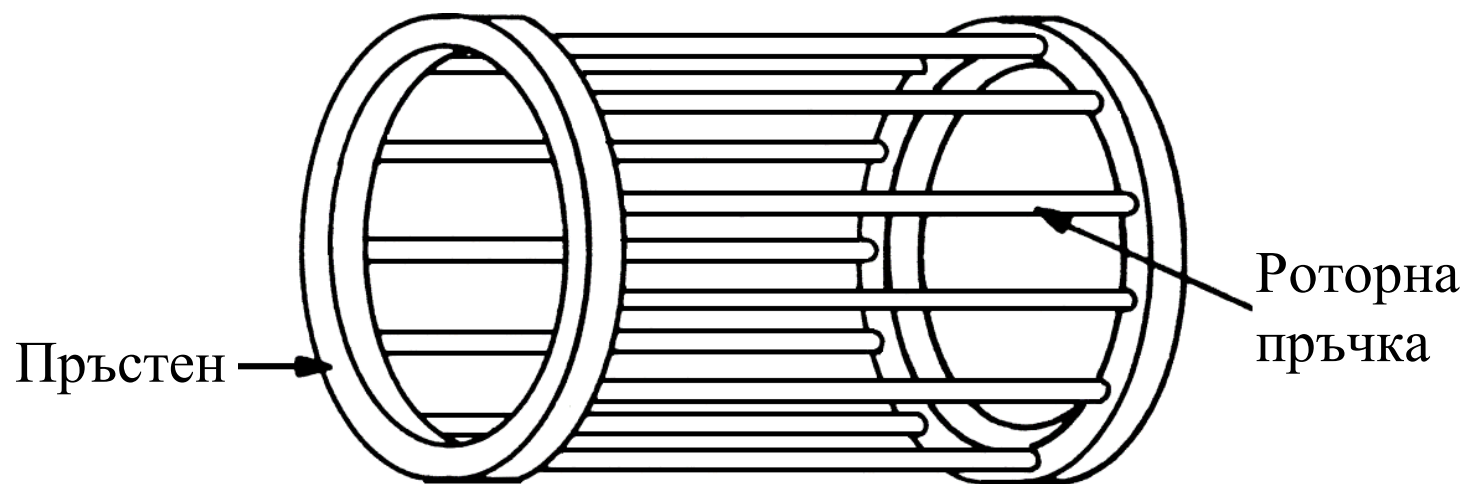
Статорен и роторен лист



Фиг. 7.3. Форми на статорни (а) и роторни (б) канали на асинхронни двигатели с накъсосоъединен ротор

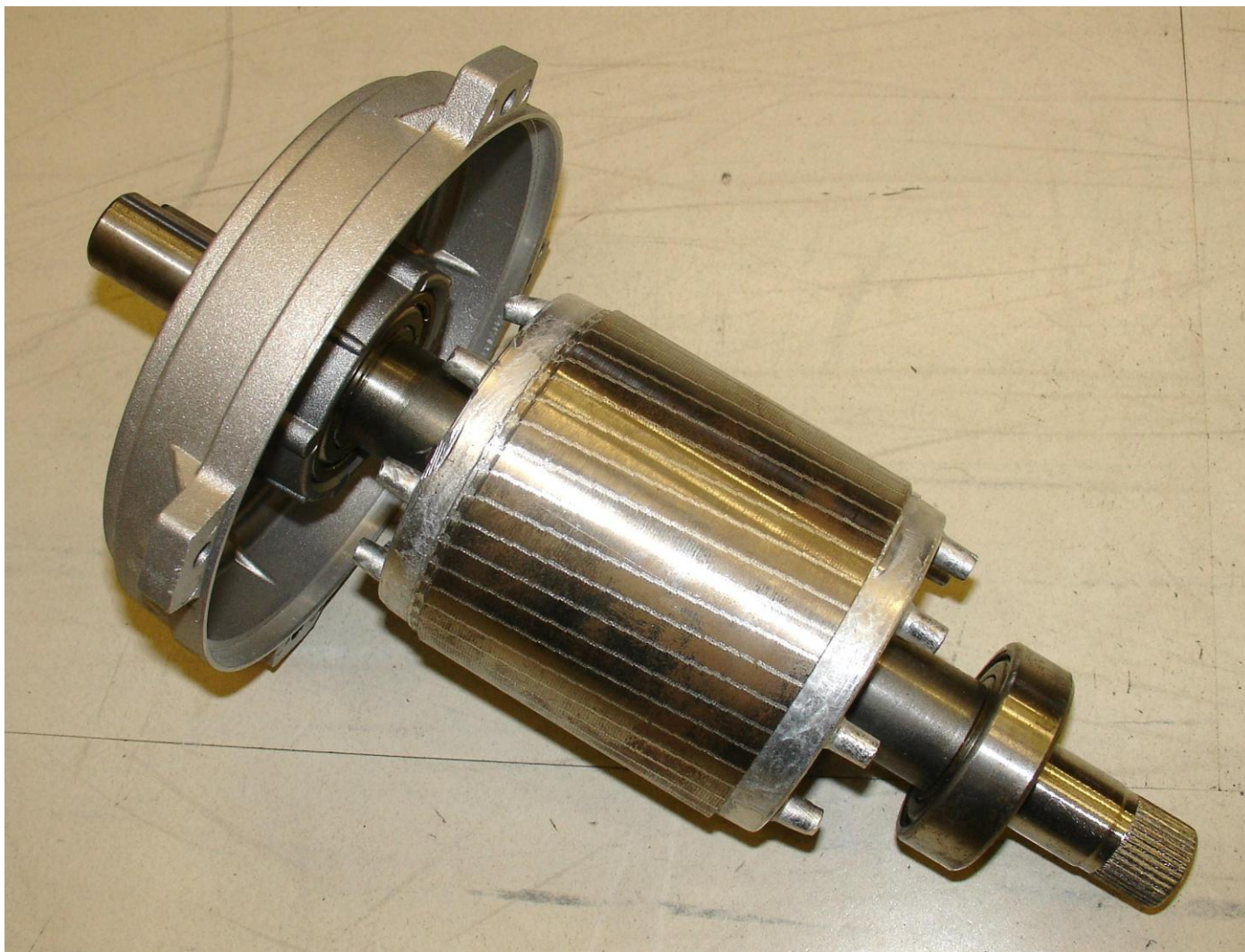


АСИНХРОННИ МАШИНИ



кафез

АСИНХРОННИ МАШИНИ



АСИНХРОННИ МАШИНИ



АСИНХРОННИ МАШИНИ

$$n_1 = \frac{60f_1}{p} \quad n_2 = n_1 - n$$

$$s = \frac{n_2}{n_1} = \frac{n_1 - n}{n_1} \quad s = \frac{n_1 - n}{n_1} 100, \%$$

АСИНХРОННИ МАШИНИ

Motor & Co GmbH	
Typ 160 l	
3 - Mot.	Nr. 12345-88
Δ Y 400/690 V	29/17 A
S1 15 kW	cos φ 0,85
1430 U/min	50 Hz
iso.-Kl. F	IP 54
IEC34-1/VDE 0530	

SIEMENS			
PE*21 PLUS™ PREMIUM EFFICIENCY			
ORD.NO.	1LA02864SE41	No.	
TYPE	RGZESD	FRAME	286T
H. P.	30.00	EFFICIENCY FACTOR	1.15
AMPS	34.9	VOLTS	460
R.P.M.	1765	HERTZ	60
DUTY	CONT	40°C AMB.	DATE CODE
CLASS INSUL.	F	NEMA DESIGN B	K.V.A. CODE G
			NEMA NOM. EFF. 93.6
SH. END BRG.	50BC03JPP3	OPP. END BRG.	50BC03JPP3
MILL AND CHEMICAL DUTY QUALITY INDUCTION MOTOR		MADE IN U.S.A.	
Siemens Energy & Automation, Inc. Little Rock, AR		SA	

MALMBERGS					
THREE - PHASE INDUCTION MOTOR					
FRAME MS 711-2			INS.CL F		
kW	0.37	HP	0.5	IP	55
RPM	2730	Hz	50	CONN.	Δ / Y
V	230/400	A	1.67/0.97	NO.	1212073091