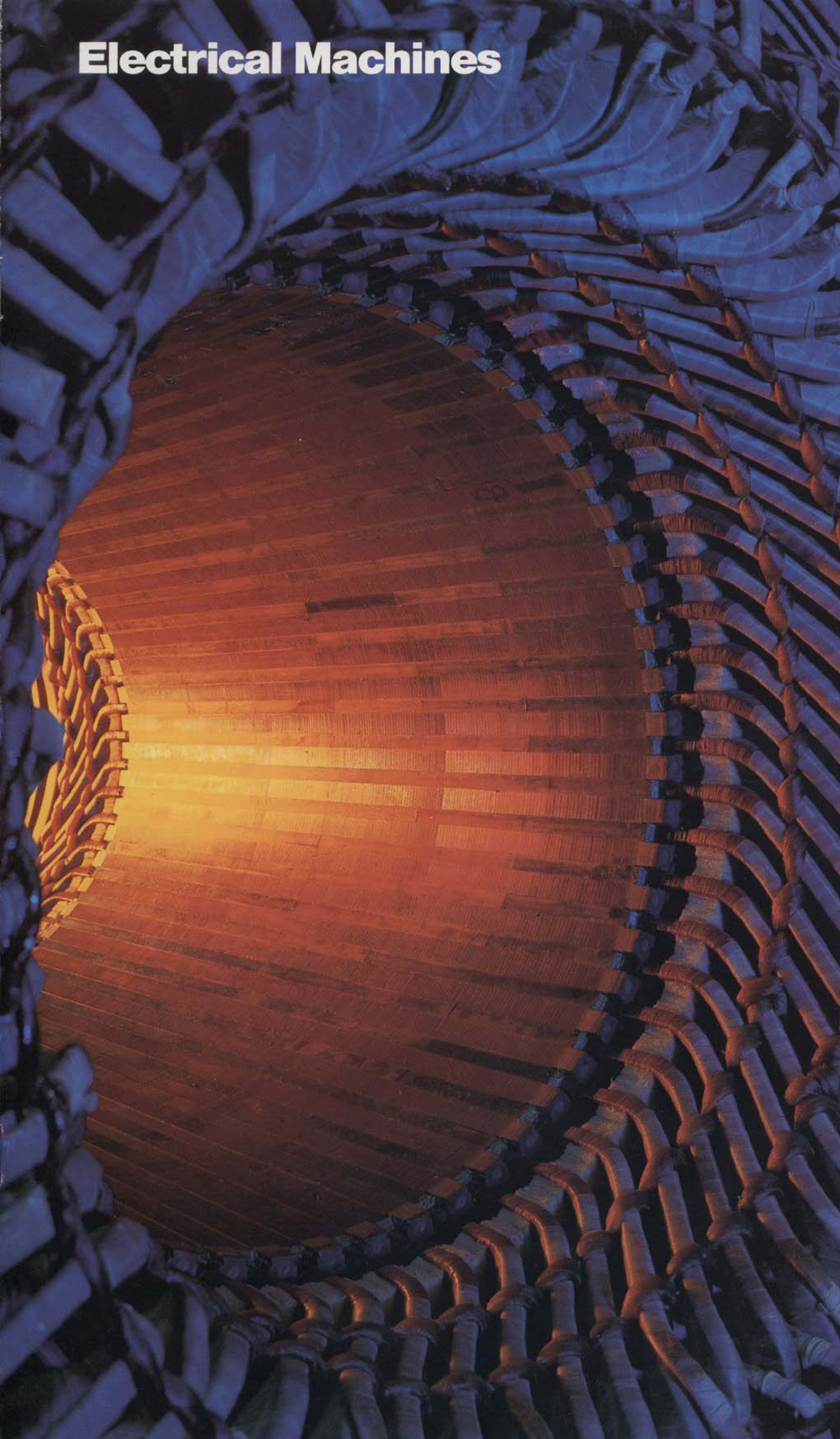


Electrical Machines

AEG



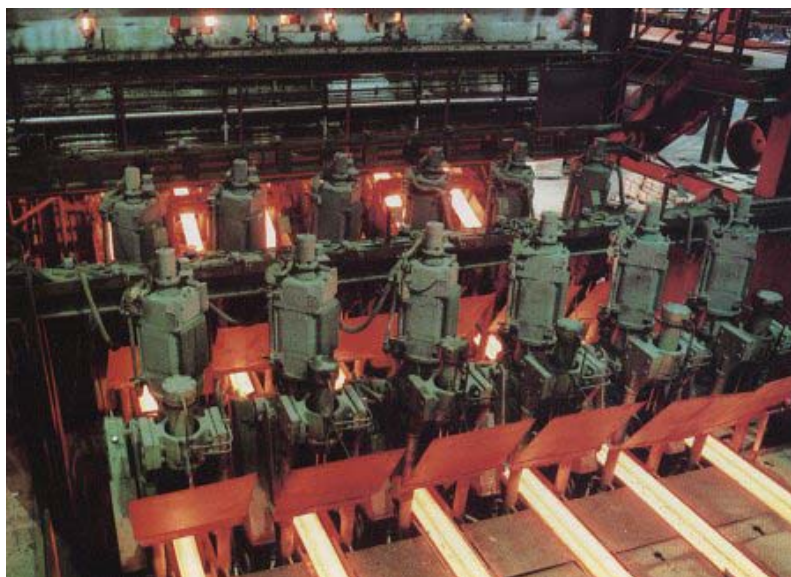
For every propulsion task the right electrical machine.

Your investment is only as secure as the product you invest in. The quality of your decision will be reflected in the System YOU build or have built.

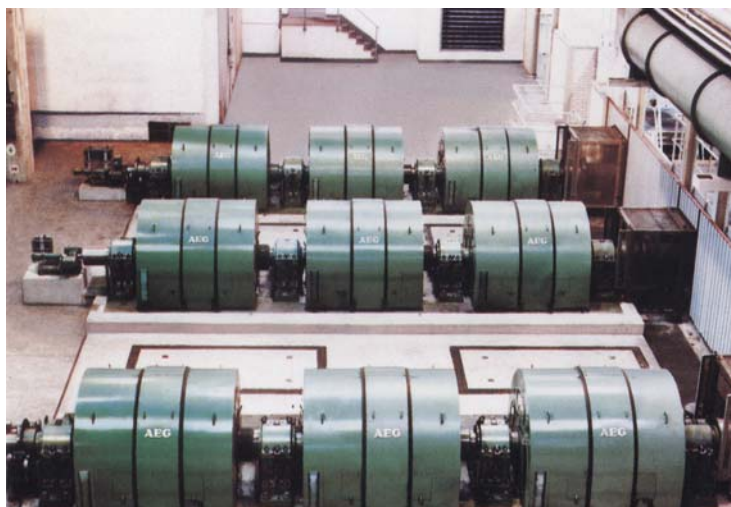
The AEG factories for electrical machines work on high quality standards and delivers the machines according state-of-the-art.

There is no problem that can't be overcome with our machines. They're compatible with all types of static converters and meet all technical and economic standards and specifications, nationally and internationally. Research and development and quality improvement are a continuous practical task.

On the following pages we describe our program that covers all areas of application. The program range includes - d.c. machines ranging from 0.5 kW to the highest of outputs - synchronous motors and alternators (35 kVA - 50000 kVA) - asynchronous machines with outputs from 37 kW to 500 kW for low voltage application and from 160 kW to 22000 kW for high-voltage. Higher nominal output on request. Rated voltage is max 15kV.



With our wide selection of d.c. machines, there's never a need to compromise.



D. C. machines compatible to all types of static converters as drives for: extruders, pumps, compressors (reciprocating/turbo), fans, cranes, tool machines, textile machines, paper machines, conveyor systems (above and below ground), storage systems, centrifuges, converters, printing machines, mills, charging systems, purification plants, seawater desalination and water preparation systems, winder, roller tables, rolling mills, marine traction motors, auxiliary drives for railways, test stands.

AEG manufactures the d. c. machines best suited to your drive requirements. Our diction is simple: modular design and construction. We design also specially customer build machines. We have a large standard selection of d. c. machines from 0.5 to 800kW. High powers and a wide variety of output gradations, construction forms and types of cooling on request. The right machine is always the best economic investment.

Dynamically unsurpassed. The drive technology really needs dynamic d.c. machines: like all of our series 4 machines and the large d.c. drives. A fully laminated yoke and reliable commutation combine to produce the highest dynamics. D.C. machines from AEG can therefore easily handle all current increase rates. Values of 400 times the rated current per second are quite routine.

Also important for rapid acceleration and braking is the moment of inertia of the motor. And here the small armature diameter is an added advantage for the compact machine. You'll have to look far and wide to find values like these.

Better insulation, longer service life.

AEG relies on top quality insulation materials such as Nomex and Kapton for machine insulation systems. In smaller and medium-sized machines we use conductor insulation with extremely high mechanical strength and heat resistance. In our large d.c. machines Kapton insulated conductors are standard. H and C class insulation material is used in all thermally critical places - even where only class F insulation is required. The advantage is yours: the windings enjoy a service life much longer than average.

Robust means greater reliability.

Many of the delivered drives of AEG manufactures must operate dependably in the roughest of surroundings (rolling mills, the mining and shipbuilding industries). And our machines carries the loud and the vibration stresses. Robust endshields and large shaft diameters ensure reliable operation under even the most conditions.

Economical material use, is better investment.

Due to our simulation program we have improved the cooling and to keep the machines size small. We have developed our own programs to optimise material, design and operational characteristics of the machine.

All the right accessories for your machines.

Many variations can be added on to both our series 4 and the large d.c. machines. We will be glad to discuss your requirements and choice of accessories with you personally. Please write aeg@aeg-ibo.com or call us Berlin (030) 820 99 491

To build quality asynchronous machines, you must use vacuum pressure impregnation.



Asynchronous machines as drives for: conveyer systems, pumps, compressors (reciprocating/turbo), fans, cranes, mills, purification plants, seawater desalination and water preparation systems, roller tables, rolling mills, auxiliary marine propulsion. Plus: Emphasis on the chemical/petrochemical industry with special explosion protection requirements: a power generation (conventional/nuclear), e. g. pumps and fans; and an environmental protection technology, e. g. dedusting and desulphurization systems.

All high-voltage asynchronous motors are insulated by Vacuum Pressure Impregnation – a procedure AEG had patented in 1971. The Vacuum Pressure Impregnation of the stator core and inlaid winding provide the basis for the best possible dielectric and mechanical qualities of the winding. All this means you get the best reproducible quality available. The materials we use insulating the stator winding carry a class F insulation rating at the very least. And for the conductor/winding insulation we even use insulation of class H quality. Compare! You don't have to settle for less.

Modular/compact system: few parts, many advantages.

Our modular/compact System makes a host of enclosures and types of cooling possible. Also, standardized modular construction holds many benefits for production technology. And that makes economic sense: all these advantages are as good as money in your pocket. By the way, you'll be amazed at how quietly our machines run. This is partly due to a new design utilizing concentrically arranged tube cooling.

Flameproof EExd enclosures that meet European standard.

Since 1980 we have been offering in series production a type-tested line of high-voltage asynchronous machines with flameproof EExd enclosures in accordance with the standards. Even for the highest feasible temperature class, T 4. Still another reason to use our asynchronous machines.

Only the finest: class C insulation.

The insulation of the rotor winding is the absolute best. It's made of Kapton polyamide film, insulation class C/220°C, and Nomex, insulation class H/200°C. What material other than Kapton has such a high heat resistance and disruption field strength of over 100 kV/mm? Class B and F insulation materials just won't do here.

And there's software, too.

We make good use of a variety of computer programs to ensure that you get exactly the asynchronous machine you need for your particular drive problem. For example, in calculating complex dynamic processes, this software cannot be overestimated: the findings determine the dimensions of the machine and system.

When you purchase our synchronous machines, you're buying safety.



Synchronous generators driven by Diesel-motors, steam- or gas turbines, hydro turbines, for continuous duty in power stations, as emergency- or no-break power systems.

Synchronous machines from AEG are extremely economical and reliable. The machines meet all international standards and specifications established by the classification associations. Their ease of maintenance is almost legendary – should they ever require any at all. This has a lot to do with the quality which we describe in detail.

On alternators (generators), motors and BL motors.

The outputs range from 35 kVA to 50000 kVA, with all common voltages up to 15 kV available. All synchronous machines are normally equipped with a brush less exciter, and the rotating diodes are provided with a protection circuit.

We manufacture:

- low-voltage and high-voltage alternators/generators for industrial power plants,
- ships, offshore installations and
- emergency power systems for public buildings, hospitals, broadcasting stations and nuclear power plants.

- motors as converter drives for fans, compressors (reciprocating/turbo) and pumps (civil and military applications).
- BL motor (brush less) is a static converter-fed, variable-speed synchronous motor. The BL motor is used to drive coolant pumps in nuclear power plants and mixers and extruders in the chemical industry.

Insulation: no less than class F.

When it comes to selecting insulation materials, we are very demanding. There's no room in our machines for anything that doesn't measure up to at least insulation class F.

No trouble-prone fuses, no troublesome breakdowns.

We avoid everything that can cause unnecessary breakdowns. That's why you won't find trouble-prone fuses in our machines. Because we use exclusively reliable oversized rotating diodes. And this wherever current and voltage stresses and strains can occur.

Electronics for one...

All exciter and regulator systems are equipped with high-quality electro technical components. They perform such various tasks as the regulation of voltage, reactive current and power factors. Sudden voltage drops remain minimal and are quickly compensated for. Such drops occur whenever a main user is switched onto a generator/alternator. But as we mentioned, our synchronous machines can never break down.

...and computer software for another.

New synchronous machine can be electrically and mechanically equipped. Software can draw up the technical sheets with the various graphical curves, complex synchronization figures and simulates operational behaviour.

Our most difficult test of quality is you.

Peak technical performance doesn't first occur during quality control. It is a long process of demanding controls to maintain quality at a consistently high level. Our elaborate system of quality controls and assurances can of course only be summarized here. The result of all our efforts at AEG can, however, be formulated as follows: Through our extensive know-how and experience with electrical machines we have attained such a level of expertise that we shun no international comparisons of quality.

Our goal: quality assurance. We would like to quote here from our concept of quality assurance: "Our goal is to ensure that the material used and machines produced meet all requirements of optimal economical quality. Our goal is to ensure that the quality of the electrical machines fulfils all legal regulations as well as the various national and international standards. Our goal is to ensure recognition of the cause of problems through analysis of test results and defects and, finally, to ensure that testing procedures are improved". End quote.

For us, the highest quality standards are the ones we set for ourselves. Our own quality standards are even higher than established national and international standards. It should therefore hardly surprise you that we supply nuclear power plants, the German railway system, the German military, airports, the mining and shipbuilding industries, hospitals and thousands of other customers at home and abroad.

**Incoming goods:
or control no. 1 before the control.**

No raw materials are processed before we have thoroughly checked all the factors that influence their service life. This includes tensile tests, ultrasonic tests, insulation tests (we're especially critical here), heat tests and conductor wire tests. And we meticulously record all test results so that we are continually on top of the quality of the materials received from our suppliers.

**Control no. 2 before the control:
the test equipment itself.**

In air-conditioned precision measurement facilities equipped with top quality test instruments, we keep a constant check on our own test equipment and measuring instruments. The computer takes complete notes on everything.

Manufacturing protocol on manufacturing control.

Reproducible, consistently high quality has always been our primary goal. And it always will be. We check, for example, all welding and mechanical workmanship, lamination, winding, impregnation and assembling. Then comes the electrical control on the test stand and the final mechanical check. Again, the computer takes complete notes.

Our service begins with your inquiry.

An electrical machine is only as good as the service that stands behind it. Therefore, our standards for customer service are as rigid as those we set for quality. Before you make your investment decision, we provide you with all the information and assistance you need.

Service before the purchase: as if you were our best customer.

First, you receive all the information you need to get a complete and objective picture. We analyze with you the project you are planning. This includes the interaction between the electrical machines that you need and the system that you now have or want to build. We advise you completely on your investment, including expert training for your personnel – and we'll even take care of this for you.

We may even refuse your individual order if we believe that it's not in your best interest. After all, our goal is your complete satisfaction. At the same time our consultation continues: We'll give you a clear-cut recommendation, thereby aiding you with this phase of your projection.

Service after the purchase: as if you were a prospective customer.

Nothing motivates us more than your choice of our machines. Service after the purchase begins with tasks that we gladly and carefully perform: we set up your new electrical machines and put them into operation. Parallel to this, we expand the knowledge of your employees while providing them with information and training. And should you ever need one of our specialists again: our worldwide, around-the-clock service is on call to solve your problem. We never keep you waiting and supply every spare part.

We provide maintenance for and repair of all your electrical machines both on the spot and in our special workshops. The quality of our repairs is identical with that of our new production – also with complete test stand control. When would you like to make an appointment with us?

Your Partner

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AEG Industries at Hohenzollerndamm area is the communication centre
for current and former AEG factories world wide and is responsible for plant engineering



We take care of your Power Quality