



BEARINX-online Easy EMachine

Online calculation of electric motors and generators



SCHAEFFLER

High-performance calculation software ...



petitive edge by supplying you with perfectly designed products. We have already been using calculation programs successfully for 50 years to meet these requirements.

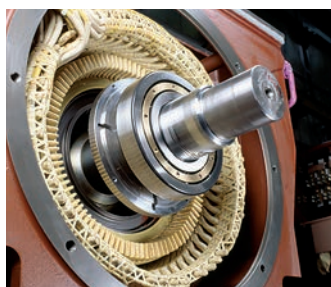
BEARINX – a leading program

BEARINX enables users to calculate, display, and document specific bearing loads in detail while taking operating and environmental conditions into consideration – even for complex machine systems. The contact pressure on every single rolling element is considered in the calculation.

The Easy series for online customers

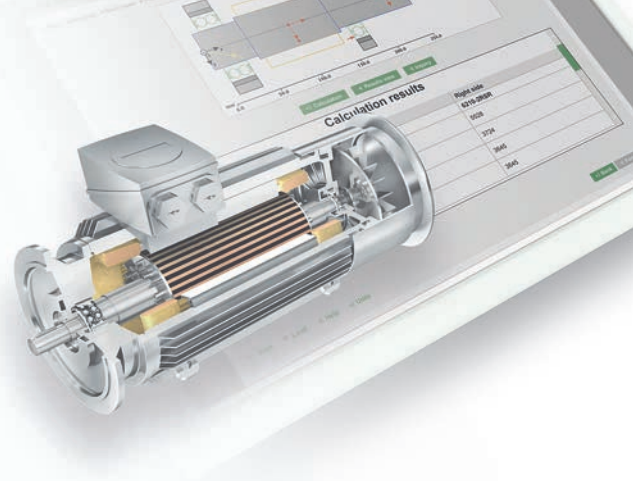
The BEARINX-online “Easy EMachine” module allows electric motors and generators to be calculated based on their typical mechanical and electromagnetic field loads, and a suitable and reliable bearing support to be selected.

Along with developing and manufacturing top-quality precision parts, great service is an important tradition at Schaeffler. Rolling bearing design is one of the focal points of our design support. We want to give you a com-



Typical applications for calculation with BEARINX-online Easy EMachine

Table Explanations:	
Designation	Designation
6010-2RSR left	6010-2RSR right
1.3. Bearing behavior	
1.4. Bearing behavior	
Bearing	PO_max
6010-2RSR left	3041
6010-2RSR right	40
PO_max	3041
SD_min	40



...with self-explanatory menu navigation

User-friendly interface

You can use “Easy EMachine” to calculate electric motors and generators with horizontal, vertical, and freely-selected orientation. The weight of the shaft, laminated cores, and windings as well as the magnetic pull and other freely configurable loads can be selected. This means that belt pulleys, gears, and imbalances can be modeled at various speeds and in different load cases. Even aluminum housings with steel inserts as bearing seats can be taken into consideration.

The program’s user-friendly menu guides you through each step of the calculation process, and the data you have entered are shown as visualizations for checking.

Lastly, the bearings – the core of the machine – can be calculated in a wide range of variations, and the data for the INA and FAG rolling bearings are conveniently loaded from an integrated database.

Data exchange

All input data can be saved locally. This enables any relevant changes to an existing design – such as load variants, adjustments to the size, or comparative calculations – to be made quickly without having to enter the data twice. In addition, users can send their saved files to the Schaeffler Engineering Service so that results can be verified and examined in more detail using the full version of BEARINX.

Calculation and documentation

Calculations are carried out on Schaeffler’s powerful calculation servers. The adjusted reference life and the minimum static load safety factor are among the data displayed for all bearing arrangements. In addition, the detailed results and all of the input data are documented in a PDF file. Specifically, the documentation also provides recommendations regarding lubrication, lubricating grease operating life, and relubrication.

A commercial inquiry can be sent at the end of the process.

Segment	Outer diameter	Inner diameter	Length of segment
Segment 1	50.0	0.0	50.0
Segment 2	60.0	0.0	100.0
Segment 3	60.0	0.0	100.0

Shaft material: Steel
Housing material: Steel

Shaft geometry data entry

Left side	Right side
Type of installation: Fixed	Type of installation: Fixed
Position: 20.0 [mm]	Position: 170.0 [mm]
Bearing type: 1* Deep ACBB O-Argument	Bearing type: OGBB
Selection from database: 1010-201	Selection from database: 6210-2RSR
Clearance group: CH	Input spring preload: 1% of C
	Direction of spring preload: Axial position
	Clearance group: CH

Bearing selection

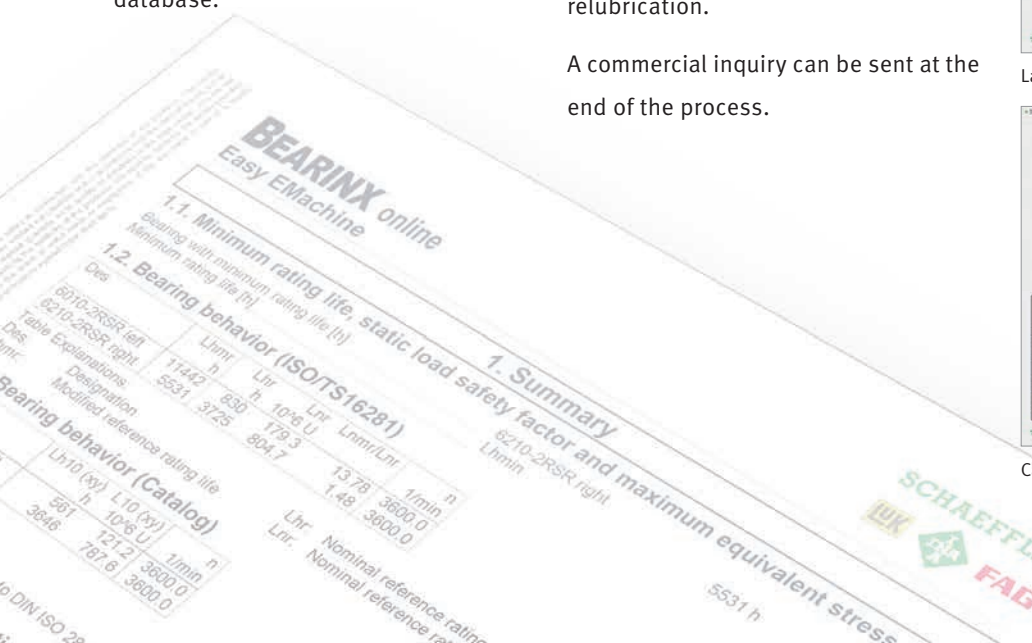
Weight of shaft is calculated from shaft geometry

Laminated core weight	200.0	[kg]
Laminated core length	50.0	[mm]
Laminated core center in x direction	100.0	[mm]
Radial magnetic pull	5000.0	[N]
Axial magnetic pull	10000.0	[N]
Out of balance	0.0000	[g mm]

Laminated core data

Calculation results	
Modified reference rating life	3210-BD
Life [h]	4814
Normal reference rating life	330
Life [h]	2779
Catalog rating life to DIN ISO 281	143
Life [h]	2728
Static load safety factor	4.109
SD _{max}	5.000

Calculation results



Registration: BEARINX-online Easy EMachine



The BEARINX-online Easy EMachine calculation program is available online only and can be used free of charge. After initial registration, which takes very little time, you can start your calculation immediately.

<http://bearinx-online-easy-emachine.schaeffler.com>

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