Start›Ing

Which technical data are necessary?

Part 1 — Which technical data are necessary to prepare an offer?

From experience we know the typcial start characteristics of the majority of the driven machines.
Please inform us only of
› motor rated voltage U [kV]
› motor rated power P [kW] (alternatively motor rated current In [A])
› which kind of machine will be driven
and we will prepare a the offer. Based on our experience the starting time will be estimated.

This is at least applicable for the following types of machines:
› centrifugal pump
› piston pump
› turbo compressor
› screw compressor
› piston compressor
› bow / stern thruster
› main electric drives of vessels
› rotating converter
› controlable couplings (f.ex. hydraulic) installed between motor and machine
› refiner
› hacker
› extruder
› shredder, if a controlable coupling is mounted between motor and mill

For fan drives it is necessary to know the moment of inertia J [kgm2] of the fan

Part 2 — to calculate the start current

If you send us in addition to part 1 the following information, we can exactly calculate the start current of your application.

Data of motor
› Start current of motor for direct on line start as I_a / I_n or in A
  start current of the motor with reduced voltage, if available but not absolutely necessary
› Torque speed curve of the motor, which is depicted mostly as follows:
 (we can also work with any other deviating shape):
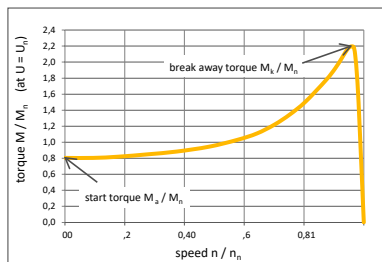
Alternatively, if no curve exists, you may state

› start torque M_a/M_n
› break away torque M_k/M_n
  If the start torque is not the lowest torque value:
  pull-up torque M_s/M_n = the lowest value of the torque

Torque speed curve of the motor at reduced voltage, if available but not absolutely necessary

Data of driven machine

› Torque speed curve of the driven machine (counter torque) which is depicted mostly as follows: (we can also work with any other deviating shape):
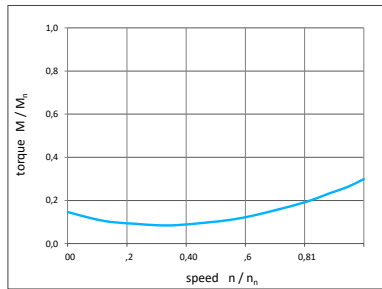
Alternatively, if no curve exists, you can describe the shape of the curve(f.ex. starts at $T/T_n = 0,17$, ends at $T/T_n = 0,3$, has the lowest point $T/T_n = 0,1$ at $n/n_n = 0,3$)

› The rated power of the driven machine (to which the diagram above refers) if it deviates from the rated power of the motor.

Remark: Within this context we would like to point out our interactive start current calculator. You can get a first impression of the possible start current of your application if you like.

Part 3 — to calculate the starting time

If you can submit the following data in addition to part 1 and 2 we can calculate the starting time of your application::

› Data of the Motor
  rated speed n [rpm]
  moment of inertia J [kgm^2]
› Data of the driven machine
  moment of inertia J [kgm^2]
  (including all rotating parts, as f.ex. couplings, gear boxes, etc., if existing)

Part 4 — for production of the starter

The technical data which have been listed in part 1, 2 and 3 sufficient to produce the starter.

Part 5 — to calculate the voltage drop

In addition to the technical data from part 1 and 2 the technical data from your MV grid arme necessary to calculate the voltage drop. These are:

› minimum mains short circuit power at the voltage level to which the motor is connected namely Sk" [kVA]

or

› minimum mains short circuit power of a higher voltage level Sk" [kVA] and the following data of the power transformer, which is located between both of the voltage levels:
  rated power S [kVA]
  short circuit power uk [%]

We are also able to calculate grids with multiple voltage levels / transformers.
Total rated power of motoric loads, which are operated parallely to your application on the same voltage level , if available but not absolutely necessary.
In many cases single line diagrams of MV grids are present. If you send us such a diagram, a description of the grid and the schedule of the different technical parameter is not required.