

Some of the Tricks other manufacturers use

At Dunkermotoren, a brand of AMETEK, they know that customers appreciate the robustness and reliability of the products. This is confirmed with direct feedback, surveys, and low number of complaints.

The main basis for this positive perception is the precise manufacturing and specification of the products of the drive technology manufacturer. In fact, there are major differences between manufacturers in the way products are specified. A direct "catalog data comparison" often leads to misperceptions. It is therefore worthwhile to analyze the specified data more closely:

Methods for specifying motors

The measurement methods for specifying motors are not uniform and sometimes differ greatly between different suppliers. This makes it difficult to compare specifications even for comparable motor designs. For example, Dunkermotoren always measures motors according to EN60034 in a thermally insulated state, which means that no heat is dissipated to the outside. Competitors, on the other hand, mount heat sinks on the motor or even specify values with application-typical active cooling. Many manufacturers do not provide any information regarding their measurement methodology at all.

For better comparison, motors from market competitors were measured at Dunkermotoren labs and the values were compared with the respective catalog specifications. For example, a BLDC motor from a German manufacturer specified with 178 W (0.425 Nm at 4000 rpm, 24 V) would only achieve 113 W (0.22 Nm at 4900 rpm, 24 V) according to Dunkermotoren's specification methodology. Other compared products also showed deviations in measured output power of up to 50 percent.

High rated speeds

In DC motors, the winding design, such as the number of turns and the wire thickness, is crucial for the motor speed at a given voltage. This makes it possible to design the motors for a high



speed with only a slightly lower continuous torque. This results in optimized power density. Some manufacturers specify their brushless motors for very high speeds and can thus also specify a very high rated power, although the high speeds are not practical for many industrial applications or would overload the gearboxes.

In one example, specialists at Dunkermotoren compared BLDC motors with a diameter of 32 mm. The motors have a similar continuous torque of approx. 45 mNm, but the rated power of 80 W at the competitor differs significantly from the 20 W specified at Dunkermotoren. This is due to the different rated speeds of 15000 vs. 3800 1/min.

Restrictions in the footers

In many cases, the catalog data given is not to be understood as a binding specification, but is devalued, sometimes massively, in the footer.

In one example from a German gear manufacturer, the footer of the data sheets states "All data in this brochure are approximate values. Deviations are possible (...)". Thus, the information is practically meaningless. With other manufacturers, reference is made in the footers to the application-specific design with tools. The tools themselves are very good and helpful, but the totality of the nominal data from the product table is rarely achievable, which means that the permissible torque or the service life are usually lower after entering the application parameters.

Efficiency data for gear units

At Dunkermotoren, gearbox efficiency is given for the complete gearbox, in cold and not run-in condition, with tolerance considered at worst case. Almost all competitors indicate a much better efficiency (dynamic, under full load or even only the pure gear efficiency). This is the reason why Dunkermotoren specifies three-stage planetary gearheads at 73 percent efficiency, while most competitors specify an unrealistic value of 92 to 98 percent. In fact, the

planetary gearboxes from various manufacturers hardly differ in efficiency with the same number of stages.

Different motor concepts

When comparing different motor concepts, not only the rated power but also the high overload capacity of DC motors should be considered. In many applications with cyclic operating modes, it is not the continuous output power that is relevant, but the power that can be achieved for a short time. Both the brushed and brushless DC motors from Dunkermotoren can be loaded with several times the rated torque. This is a feature that is not available with many other motor designs (e.g. asynchronous motors, stepper motors).

The Dunkermotoren sales department will be happy to answer any questions you may have about the ideal design. Depending on the project, it is also possible to have alternative products measured at Dunkermotoren's laboratory for better comparison of specifications.

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