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Any time you knock out friction around your operations, you're on your way to reducing energy consumption. Bearings are a good place to start.

Whenever rotating machinery is turning, friction can become a "spoiler"—potentially threatening the operation, reliability, productivity and service life of assets. For bearings, friction is problematic, as it can contribute to increased wear, generate unwanted heat and higher operating temperatures, limit speeds and power and reduce overall energy efficiency. The mission is to mitigate the negative effects.

Anti-friction rolling bearings (ball and roller types) provide a first step on the road to solutions. In contrast to plain (or sliding) bearings, with their sliding and frictionprone surfaces, ball and roller bearings inherently will minimize friction by removing almost all sliding between bearing surfaces and replacing the major internal contact areas with rolling interfaces. However, even with the benefits from one element rolling (not sliding) over another, some friction will occur with ball and roller bearings.

Specifically, multiple sources of friction can be pinpointed. Friction can be generated at the rolling contacts, in the contact areas between rolling elements and cage (as well as in the guiding surfaces for the rolling elements or the cage), in the lubricant and in contact seals where applicable.

Even though industry has devised calculations to determine "frictional moments" in advance, friction always can increase. The problem, though, can be managed by taking advantage of friction-reducing materials and designs for bearings and the proper selection and quantity of lubrication.

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