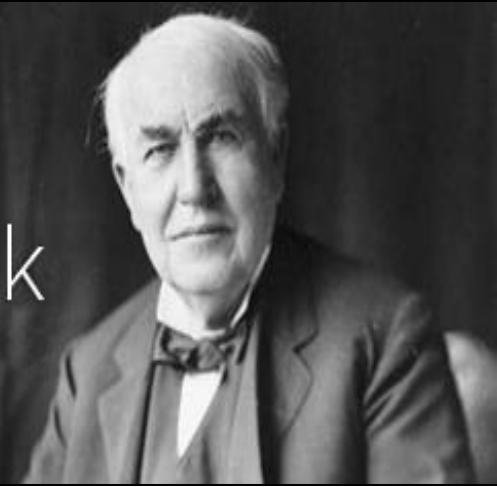




Edison's Desk



Making Machines Tick Longer with Nanolubrication

Nanotechnology is changing the entire thought process when it comes to systems design. With some of the very exciting research work that is taking place here at GE, it is evident that nanotechnology has arrived, and, it is here to stay!

I find it incredibly cool to have the chance to explore this enabling technology for enhancing the functioning of some of our equipment. As you may imagine, many of GE's products need to be able to perform under the most challenging of operating conditions. Turbines, engines, and medical equipment have lots of moving parts, are exposed to sometimes severe elements and in general, need to be developed in a way that allows them to withstand regular wear and tear. Lubrication is something that's as ancient as the pyramids of Egypt yet as relevant and important today as ever. I am working with a team at GE in the realm of lubrication, and how lubrications can improve GE products.

Recently, we've really been stretching our boundaries. Traditionally lubricants have been used to enhance machine life by reducing wear and tear. During operation a lubricant fluid film is formed at the solid-solid interface that takes up the component load and prevents the metal contact which can lead to high friction and early wear.

Over the years, however, the complexities of machinery and operating environments have demanded lubricants to perform multiple operations. The next frontier in this technology domain is nanolubricants, or nanoengineered additives that will blend in with commercial off the shelf lubricants. **We have been experimenting with NanoGlide™ multicomponent nanometer size particles blended in requisite quantities in lubricants to take up a tailored role and extend component wear life.** Nanolubricants can entrain into submicron size voids and the valleys created by surface roughness of even the most smooth of gears and bearings to provide a protective line of defense.

We are collaborating with a world-class group of technologists from NanoMech, Inc. based out of Arkansas, who are inventors of NanoGlide™. We are working as part of a consortium, on a US Department Of Energy funded effort that is focused on engineering design and scale-up of advanced nanolubricants. Advancement in nanoengineered lubricant technology will improve overall system performance and energy efficiency.

Energy efficiency is very critical not just to our business interests at GE but also to the current international priority on reducing overall energy consumption and sustainability.

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