Tech Talk —-Bearing Temperatures——August 2013

A simple rule for troubleshooting bearing temperatures(SKF):

No more than 180 degrees Fahrenheit (82 degrees Celsius) on the housing.

The bearing outer ring can be up to 20°F (11°C) hotter than the housing.
A temperature increase of 50°F (28°C) may cause oil viscosity to drop by 50% or more.
Eventually, it doesn't matter how much lubricant you add to the application: the oil film is too thin inside the bearing to prevent metal-to-metal contact.
Friction and heat build up, which could lead to catastrophic machinery seizure.

Touch

I would offer that the "rule-of-hand" says that if you can hold your hand on the housing for about three seconds, it is at roughly 140-deg F.
At higher temperatures, your hand will burn.

EASA

EASA offers the following table as a guideline:

Monitoring Condition	Temperature
Normal	170° F (80° C)
Alarm	190° F (90° C)
Shutdown	210° F (100° C)

Add 30° C when synthetic lubricants are used,however,synthetic grease is often not suitable for high speed applications.

Conclusions:

Use your judgement and set your own limits based on the advice above. Live by the limits you set.
Trend bearing temperatures over time so you are aware of what could turn into a problem later.

In belt drive applications, especially after motor removal and insertion, be sure not to over tension belts, which will cause overheating of motor and/or driven bearings very quickly. Watch bearing temperatures very closely for the next 4 hours of running as problems will quickly manifest if belt tension becomes a problem.

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