The Basic Kappa System >>>

In the mid 2000's Vanair became fully aware of the Kappa system, which negated all of the complex parameters of the "classic" Lambda system. Again, all of the methods of evaluation used graphs and charts. There were no apparent mathematical formulas. There was no way to make a computer program. Vanair used Lambda method until the spring of 2010. At this time a concerted search was undertaken to find the Kappa formulas if they existed. The major bearing manufactures were contacted and again there were only the graphs. By chance, Vanair made contact with a Markus Raabe of MESYS in Switzerland (info@mesys.ch) which writes bearing design programs and other machine design programs. He supplied the **missing** SKF documentation on the Kappa System from 1980 – for which I am most grateful and wish to thank him. From the documentation, Vanair obtained the following formulas >>>

Λ^9/8 = v/v1 (1)

Kappa = v/v1 (2)

v1 = 4500 * (Dm * N) ^-0.5 * [1000 / N] ^1/3 Below 1000 N (3)

v1 = 4500 * (Dm * N) ^-0.5 Above 1000 N (4)

Where >>>

v1 = Viscosity in cSt or ISO Viscosity Index of the oil at operating temperature.
N = Revolutions per Minute (rpm)
Dm = Diameter Mean of the bearing where Dm = (Inside Diameter of the bearing + Outside Diameter of the Bearing) / 2 in mm.

The above formulas generate the "classic" graph, which appears in the ISO 281-2007(1) and in many bearing companies' catalogs. Again from MESYS in Switzerland, Vanair also learned that the above "classic" Kappa formulas were for **natural oil**.

Source via MESYS in Switzerland – TRIBOLIGIA e LUBRIFICAZIONE – Vol XV, Ehd lubrication in rolling bearings, by R. Heenskerk, from SKF Engineering and Research Center B. V. Netherlands, December 1980

(1) – This standard has not been adopted by the ANSI Committee as of early 2011. Also see STLE July and August 2010 issues of TLT (stle.org) or >>>
(**http://www.stle.org/assets/document/tlt_July_cover_story_article.pdf**)