

23 June 2016
Press Release

Make sure your oil works in extreme cold

Temperature extremes play havoc with normal operating systems which, therefore, require special treatment to ensure smooth and efficient running. Oil is a vital component of efficient equipment operation that performs differently in extremes.

Fluid management specialist Techenomics says oil and fluids are often taken for granted, but it is important to give special attention to conditions when choosing oil or fluid types.

Techenomics' CEO Chris Adsett says this is especially important where winter temperatures are commonly well below zero.



Chris Adsett, CEO of
Techenomics International

“Companies that generally operate in the warmer climates of Australia, South East Asia, Africa and much of Latin America would have little comprehension of the importance of special treatment of oils and fluids required in the freezing winters of Canada, Alaska, Mongolia, Central Asia and Russia.”



Lubricant purchasing decisions are better served first by defining the application and recognising that each situation is truly unique.

Techenomics' technology and product development manager Eka Karmila says, “Important components of this are the environmental and operational conditions that characterize the boundaries of the application. The data, especially with extreme low temperatures, will define the end-purchasing decision.”

She says in areas where winter temperatures are frequently well below zero, viscosity of oil and fluids can be a major concern.

“Most greases and base oils can withstand temperatures dipping below zero, and many down to minus 10°.

However, if temperatures drop into the critical zone when the lubricant begins to stiffen or become extremely viscous, the application will not be lubricated properly and some equipment may seize up.” The pour point of oil is dictated by base oil quality as well as the presence of certain additives. Eka Karmila says, “A good rule of thumb is to always select a lubricant with a pour point at least 10 degrees Centigrade lower than your lowest expected start-up temperature.”

Each base oil type offers different cold weather properties with mineral oil generally exhibiting poor low temperature behaviour, PAO and PAG good low temperature behaviour, and esters and silicon oils excellent low temperature behaviour while some types of PFPE can go as low as minus 70°.

Eka Karmila says lubricating greases that exhibit temperature stability also provide excellent low temperature performance.



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“In practice, greases that use base oil at temperatures lower than the pour point of the base oil can sometimes function as long as the grease doesn’t solidify. This is because friction at the point of tribological contact, which is the lubrication point, increases grease temperature sufficiently to maintain lubrication. As with lubricating oils, the choice of thickeners can impact cold weather performance.

“Typical grease thickeners are lithium soap, aluminium soap, calcium soap, barium soap and PTFE (polytetraflouroethylene). Commonly, grease that shows good low-temperature stability will often perform poorly in high-temperature applications thus requiring grease change out in warmer weather,” Eka Karmila adds.

Chris Adsett says Techenomics’ geographical spread of laboratories and its expertise ensures staff always provide the right advice regarding fluid management from the extreme cold of Mongolia, to the humid tropical heat of South East Asia and the hot, dry deserts of Australia.

For more information about Techenomics contact Chris Adsett, c.adsett@techenomics.com; in Australia Leo Valenz, leo.valenz@techenomics.com; or in Mongolia Sugraa, (sugraa@techenomics.com).