**Q & A: Puzzling Oil Analysis Results**  
*by Jason Kopschinsky, Noria Corporation*

"Sometimes our oil analysis reports show high particle counts on a hydraulic system - as high as ISO 21/18. If wear metals and silicon are low, less than 4 ppm, what are these particles?"

To fully understand the composition of the particles, a spectrographic analysis and a metallurgy assessment of your system components will tell you what the particles are and where they are coming from. At 4 ppm, the amount of wear metals is insignificant.

Retest the system on a proper frequency and trend the rate of change. Significant change in the overall amount of wear metals is cause for concern. If the value of wear metals hovers around the same ppm over each test, then you are probably looking at a product of normal operation. Keep in mind that spectroanalysis can pick up particles only 7 microns and smaller at absolute best. The accuracy can also be off by significant values on some metals.

I suggest you approach your concern with ferrous density and a patch test after a particle count. Set your target cleanliness for particle count. If the tested value is greater than the target value, proceed to a ferrous density test. Set a target for this value as well, maybe 15 percent ferrous. If the value of the ferrous density exceeds 15 percent, proceed to an analytical ferrography. If the value of the ferrous density is less than 15 percent, proceed to a patch test (filtergram). Keep an eye out for high rate of change in any of the tested values and you will be able catch problems before they occur.

It is also a good idea to assess the condition and effectiveness of your breathers and filters to make sure you are keeping contamination out and removing it effectively when it gets in.