FastLUBE Technical Bulletin

Subject: **Lubrication Theory - Fastorq Lubricants**

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Most fundamentally, the purpose of any lubricant is to reduce friction between moving surfaces which come in contact with each other. How this reduction of friction is to be accomplished depends largely on two factors: (1) the speed at which the surfaces are moving relative to one another and (2) how much pressure is being exerted between surfaces at the point of contact. Ambient conditions such as extreme heat or salt water may also be determining factors.

Lubrication of threaded connections (nuts and bolts, pipe and fittings, etc.) is a good example of a low speed/extreme pressure application. This is what "thread compounds" like FastLUBE AG , FastLUBE 72 and FastLUBE A70+ are designed to do. FastLUBE 444 can also be used as a thread compound but it was formulated primarily for open gears, another heavily loaded, low speed mechanism.

Of course, the question is: HOW FASTORQ LUBRICANTS DO THEIR JOB and WHY THEY DO IT BETTER THAN OTHERS.

To maintain a smooth bearing surface for flanks of threads or heavily loaded gears to slide against, solid lubricants are required. Oil or grease alone will squeeze out under pressure leaving the contact area essentially dry.

Fastorq's three thread compounds each contain a between 50-72% lubricating solids. This heavier concentration of solids means that the "mechanical barrier" which our lubricants provide remains in place more effectively and that our required torque values are lower and more consistent.

Another factor considered in the formulation of our solids packages is that the specific combinations of materials will be very smooth and slippery under pressure. With the exception of the nickel particles in FastLUBE A72, all of these solids are very soft compared to the metal surfaces they lubricate. As the pressure between these surfaces increases the mechanical barrier finally wears away. At this point, while some of the lubricant particles have been literally ground into the metal, there is little left to prevent a sharp increase in direct "rubbing together" of the metal causing wear, tearing and galling. Heat from this friction activates what we call a "chemical barrier." Additives included in the lubricant, react chemically with the metal surfaces. Very small wear particles resulting from this reaction themselves contribute to the lubricating barrier between contact surfaces. In this way, the wear process is controlled so that welding cannot occur.

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The Speed of Innovation.