Course Contents

Advanced Lubrication 301: Advanced Lubrication Theory & Principles
STLE Annual Meeting 2012

Course Chairman: Scott Harold, BASF, Florham Park, NJ

Scott Harold is a Global Marketing Manager for BASF in Florham Park, NJ. Scott has worked at The Lubrizol Corporation, Infineum USA and Ciba Specialty Chemicals, and has been involved in the fuels, industrial, and lubricant sectors for almost 20 years. He obtained a BS degree in Mechanical Engineering from Case Western Reserve, an MS in Chemical Engineering, and is currently pursuing a Masters of Business Administration. Scott is an active member of STLE, SAE, ASTM, and NLGI.

This course is intended for people who have either previously taken the STLE’s Basic Lubrication course and want to move on to a more advanced level, or for individuals who are already knowledgeable about the lubricants business, and want a more in-depth course on lubricant technology. A major emphasis is placed in this course on the concepts of oil rheology with discussions on how VI Improvers function and the low and high temperature properties of lubricants. The course will discuss wear, wear mechanisms, and how to diagnose wear problems from equipment failure. There will be a detailed discussion on the types of additives used in lubricants, the mechanism of how they work, and how they are formulated into additive packages.

OIL RHEOLOGY and LOW TEMPERATURE PROPERTIES OF LUBRICANTS
presented by Dr. Michael J. Covitch, The Lubrizol Corporation, Wickliffe, OH

Michael J. Covitch is a Senior Fellow at the Lubrizol Corporation in Wickliffe, Ohio. He holds a PhD in Macromolecular Science from Case Western Reserve University, a MS in Materials Science from the University of Rochester, and a BS degree in Chemical Engineering from Lehigh University. The current focus of his research is the development and technical support of viscosity modifiers and pour point depressants, although his experience at Lubrizol also includes studies of lubricant contamination and degradation during service, bench test development and rheological properties of complex fluids. In addition to his technical expertise, Dr. Covitch spent two years on special assignment as a quality improvement specialist, helping to introduce quality management principles into the workplace. He is a member of SAE, and STLE and is secretary of the SAE Engine Oil Viscosity Classification Task Force.

The presentation provides an overview of the low temperature properties of lubricants, lubricant viscosity theory; Viscosity Index Improvers (VI); low and high shear rate properties of lubricants and how these properties are measured.

LUBRICANT ADDITIVES presented by Dr. Eugene Scanlon, BASF, Tarrytown, NY

Eugene Scanlon is a Scientist at BASF in Tarrytown, NY. He holds a PhD in Polymer Chemistry from Rensselaer Polytechnic Institute and a BS degree in Chemistry from the University of Rhode Island. His experience at BASF includes the development of new antioxidants, anti-wear hydraulic fluid packages, viscosity index improvers and pour point depressants. He is a member of ACS, STLE, SAE, and ASTM.

The presentation includes a discussion on lubricant additives’ chemistry and mechanism action; these additives include antioxidants, antiwear and extreme pressure agents, friction modifiers, viscosity index improvers, corrosion inhibitors, and metal deactivators.

WEAR AND WEAR MECHANISMS presented by Dr. Paul Sutor, Chevron Global Lubricants, Richmond, CA

Paul Sutor leads the Tribology and Fundamental Testing Team in Global Components at Chevron Oronite Company LLC. The Team is responsible for performance testing of lubricants and additives, innovations in test methods and equipment, and failure analyses of engine components. Dr. Sutor has been a tribologist and active STLE member for 30 years. He holds a Ph.D. in Chemistry from the University of Southern California.

The presentation includes discussions on the various kinds of wear, wear mechanisms, and equipment failure modes. There will be discussions on how to diagnose wear problems. The course will emphasize the use of visuals to help in the understanding of wear.