

# 2019 STLE Houston Section Lube School

## Speaker Biographies and Abstracts

### Track A

#### Lubrication Fundamentals - Marianne Duncanson

**Note:** Ray Thibault could not be present due to illness. Marianne Duncanson has co-presented with Ray in the past and will be using the same presentation.

Marianne Duncanson is a Senior Lubrication Engineer for ExxonMobil. She has over 40 years' experience as a lubrication engineer for ExxonMobil. She spent over 10 years on the lubricants technical hotline answering application questions from around the world. She currently supports the Southeast Texas area as a field Lubrication Engineer. Current areas of expertise include: Refinery and chemical plant lubrication, synthetic fluids for advanced equipment reliability, controlling foam and air entrainment in lubricating oils, oil analysis interpretation, electric motor re-greasing standards, hydrocarbon barrier fluids, and lubrication training. She has conducted industry presentations on Foam and Air Entrainment in Lubricating Oils, Oil/Water Demulsibility, Establishing an Electric Motor Greasing Program. Lubrication of Plain Bearings, and Lubrication Best Practices, and has served on expert panels at the Vibration Institute, as well as the Turbomachinery and Pump Symposium and other industry meetings. She was an original member of the Society of Tribologists and Lubrication Engineers (STLE) Oil Monitoring Analyst (OMA) committee, and was on the editorial board of the STLE magazine *Tribology and Lubrication Technology*. In her spare time she serves as a paramedic for Friendswood Volunteer Fire Department. She is Ooma to four awesome grandchildren and two dogs.

This course will provide an overview of lubricants and their use. Major topics are lubrication fundamentals (wear, functions of a lubricant, lubricant composition, lubricant properties, types of lubricants), lubricant applications (bearings, gears, hydraulics, compressors, turbines), contamination control (water, particulates, air, other lubricants, built-in, added, breathers) and reliability topics (proper oil sampling, condition monitoring, lubricant tests and their meaning, ferrography). Because of the nature of the class and the reference notes provided, this class is an all-day (morning + afternoon) class.

### Track B

#### Effective Contamination Control in Hydraulic and Lubrication Systems – Thomas Cook, Southwestern Controls

Tom Cook, STLE Member, Speaker and Certified OMA I, CLS, Member-IADC and Member-Produced Water Society, Sales Manager of Southwestern Controls including Fluid Solutions Division, has enjoyed career in Fluid Power and Fluid Solutions (Hydraulics, Pneumatics, Hydrostatic and Hydrodynamic Pumps, Filtration) since

Graduation from University of Missouri, St. Louis. Tom has held positions including Sales Engineer, Key Account Manager, Branch Manager, National Distributor Manager and Sales Manager at Moehlenpah Engineering, Hydraquip Corporation, PTI Technologies and Southwestern Controls. He has worked in the Americas in key industries including Oil and Gas Drilling and Exploration, Petrochemical Mfg., Lubricant and Fuel Blending and Distribution, and Power Generation, Aerospace, Construction Equipment, Forest Products, and Mining.

“Effective Contamination Control in Hydraulic and Lubrication Systems” will provide a comprehensive look at contamination development, measurement and control in hydraulic and lubrication systems. Session module includes Schematic and Circuit Information useful in both troubleshooting and remedying contaminant generation.

### **Optimizing Your Oil Analysis Test Package Across the Portfolio / Membrane Patch Colorimetry (MPC) & Varnish Mitigation – Ben Hartman, MRT Laboratories**

Ben Hartman is the owner of MRT Laboratories, an ISO 17025:2017 accredited machine fluid analysis laboratory in business since 2000. He holds a STLE CLS and an OMA I, and recommends predictive maintenance action based on analysis of thousands of machine fluid samples per year. Three times per year, MRT partakes in the ASTM Interlaboratory Testing for Used Oil Analysis and recently participated in Fluitec’s 2018 blind study of varnish potential and useful life of phosphate ester fluids using MPC and Ruler testing.

On an annual basis a Reliability Team Manager should review the oil analysis testing slate by trimming and enhancing test packages for all lubricants, greases, or coolants of critical equipment. For the next 12 months, does my testing package provide the best data to detect future issues at an early stage and ultimately minimize unexpected downtime for the year and future years? What have I missed in the past and could an updated test slate have prevented or foreseen an inevitable failure? We offer a strategy to put your team in its best position to get the highest ROI on oil analysis.

Varnish testing through membrane patch colorimetry, ASTM D7843, effectively detects the varnishing potential of an oil, sometimes producing definitive results of low potential or high potential, but often times the result lands in a large gray area when a Reliability Team struggles with when to spend time and money for varnish mitigation when it may, or may not be occurring. Our input on how and when to react takes more into account than the test result. We leave you with metrics that make the decision justifiable and more concrete.

### **Investigating Elevated Particle Counts and Wear Analysis – John Cummins, Hydrotex LLP**

John Cummins is currently Vice President of Product Technology and Investing Partner of Hydrotex LLP a Texas specialty lubricant and chemical company founded in 1936.

Responsible for Research and Development, Technical Services and Dean of Hydrotex Lubrication University.

Education:

- 1971 - BS, Illinois Institute of Technology, Chicago, IL
- 1980 - MS, George Washington University, Washington, DC
- 1981 – Organic Chemistry, Duke University, Durham, NC
- 1982 – Organic Chemistry, London Polytechnic, London, UK

Experience

- Captain, Supply Corps, USNR-Retired
  - Active and reserve Navy military career spans Vietnam and Desert Storm
    - Last active duty assignment: Navy White House Liaison Officer for the Secretary of the Navy for the Carter Administration
    - Last reserve duty assignment: Chief of Staff, Naval Expeditionary Logistics Support Force
- 1980 - 1997 The Lubrizol Corporation – various operational, technical and sales positions
- 1997 to Present, Hydrotex LLP
- Member of Society of Tribologists and Lubrication Engineers (STLE) since December 1984
- Certified Lubrication Specialist (CLS™) since October 1997
- A member of the Society of Automotive Engineers (SAE) and the National Lubricating Grease Institute (NLGI)
- Contributing Writer for: Tribology & Lubrication Technology Magazine; Compoundings (Magazine of the Independent Lubrication Manufacturers Association); Lube & Greases Magazine; and Reliability Magazine
- Married to Sherry Ann Sullivan with 4 children: Jack, Hunter, Dan and Lisa
- Hobbies: Golf, Spoiling the Grand Kids, Single Malt Scotch and Red Wine

This presentation will allow you to understand different analytical test methods of measuring particulate contamination in lubricants. What are the wear metals, and how to measure oil cleanliness, determine machine operability and how to find the source of machine wear. This information is critical for Condition Based Maintenance and improved machine reliability.

**Fundamentals of Environmentally Acceptable Lubricants (EALs) – A Real World Perspective – Mark Miller, Biosynthetic Technologies\**

Mark Miller is the CEO of Biosynthetic Technologies, an Indianapolis-based company that provides high performance, renewable, non-toxic, biodegradable base fluids. Mr. Miller has a B.S. in Chemical Engineering from Tufts University and an M.B.A. from Manhattan College. He has engineered, sold and marketed environmentally acceptable lubricants and base oils for over 30 years. Biosynthetic Technologies (BT) manufactures a revolutionary new class of biobased synthetic molecules that are made from organic fatty acids found in plant oils. These highly-functional “biosynthetic” oils have numerous uses in the lubricant, chemical, and cosmetics industries, often outperforming their petroleum

counterparts in similar applications. In addition to their high-performance properties, these renewable oils are biodegradable and nontoxic.

One has only to look around to see green initiatives. Bio-fuels, wind energy, renewable fibers are just a few of the environmental initiatives that have recently made headlines. Meanwhile, for the past several years, industry has been quietly considering and utilizing environmentally safer, readily biodegradable and non-toxic fluids.

The benefits of Environmentally Acceptable Lubricants (EALs) are well known. Their biodegradable properties allow them to break down in the environment reducing the negative impact from leaks and spills. They can be non-toxic, meaning they won't hurt operators, animals or plants that come in contact with the fluid. Furthermore, they are renewable and reduce dependence on petroleum oil.

Conventional knowledge has focused on the limitations of vegetable oils as base stocks for lubricants. The weaknesses of the oxidative stability, the cold temperature performance and incompatibility with elastomers are well documented. Early generation biobased lubricant formulators utilized performance chemistry similar to those used in petroleum-based fluids, creating lubricant products that did not meet industrial performance requirements. Over the past decades, however, improvements in vegetable oils, modified vegetable oils and other base stocks, improvements in performance chemistry, and improvements in formulation expertise have allowed the development of biodegradable products with performance similar to or better than conventional petroleum fluids.

This section will focus on the features, benefits, strengths and limitation of the different types of EALs. We will explore different types and classification of base fluids and additives as well as the requirements of finished lubricants. We will define the different types and measurements of biodegradability, ecotoxicity and bioaccumulation and why that is important. The regulatory driving forces will be explored and identified as well as the requirements for each. The considerations and selection process for choosing the type of EAL that is most applicable to specific applications will be studied. Finally, the best maintenance practices to ensure long fluid and equipment life will be discussed.

At the end of the section the attendees 1). will understand the difference among various classes of EALs, 2). Know how to choose the EAL most suitable for their application and 3). Know how to maintain the fluid properly.

## **Keynote Address (Lunch)**

### **Lubricants for Electric Vehicles – Requirements and Challenges – Peter Lee, Southwest Research Institute**

After leaving school Peter became a qualified motor vehicle technician before becoming self-employed and specializing in classic cars. He later sold the business to help fund his Undergraduate studies in Automotive Engineering at the University of Leeds in the UK. He was invited by Shell and Infineum to undertake funded postdoctoral studies at the University investigating lubricant degradation in the ring pack of a fired engine. He received his Ph.D. in 2006 and was awarded a 5 year Royal Academy of Engineering Research Fellowship to continue his work. In 2011 Peter moved from the UK to San

Antonio, Texas, to take the position of Principal Engineer and Tribologist at Southwest Research Institute where he has established the Tribology Research and Evaluations group and the test laboratories.

Peter continues to manage this group as Staff Engineer and Chief Tribologist. In 2018 he was awarded International Professional Engineering status and elected Fellow of the Institute of Mechanical Engineers.

Electric Vehicles pose a different set of tribological challenges and requirements than convention Internal Combustion engines. However, there are currently no specialist lubricants formulated for use in Electric Vehicles. Only recently has the need for these new lubricants been fully realized and there is significant activity in the Industry and Academia to investigate and define the requirements. Until defined, standardized tests cannot be developed to qualify lubricants for use in Electric Vehicles.

This presentation will briefly put the Electric Vehicle market in context before discussing the different lubricant requirements and potential paths forward.