



Jim Fitch

CEO and Senior Technical Consultant

Jim Fitch is the CEO and a co-founder of Noria Corporation. He has a wealth of “in the trenches” experience in lubrication, oil analysis, tribology and machinery failure investigations. Over the past three decades, Jim has presented hundreds of courses on these subjects and has published more than 200 technical articles, papers and publications. He has served as a U.S. delegate to the ISO tribology and oil analysis working group and has been awarded numerous patents. Since 2002, Jim has also been director and board member of the International Council for Machinery Lubrication.

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Fields of Specialization

- Lubricant Analysis
- Gear Failure Analysis
- Lubrication Systems
- Contamination Analysis
- Tribology & Wear
- Filtration & Separation
- Hydraulic Fluids
- Oil Analysis
- Wear Particle Analysis
- Petroleum Analysis
- Compressor Lubrication
- Grease Analysis
- Particle Analysis
- Bearing Failure Analysis
- Motor Oils & Engine Lubrication

Education

- University of Tulsa, Master’s Degree, Business Administration
- Georgia Institute of Technology, Bachelor’s Degree, Industrial and Systems Engineering

Board Memberships & Professional Affiliations

- **ASTM** - Member of D02 SC96 committee for standards development relating to the analysis of in-service lubricants.

- **International Council for Machinery Lubrication (ICML)** - Director. Volunteer position. The ICML is a non-profit professional organization. Serves as ANSI (American National Standards Institute) TAG member to ISO (International Standards Organization) and is involved in international standards development, professional certifications in lubrication and oil analysis, curriculum development, annual achievement awards and scholarship. Visit www.lubecouncil.org for more information.
- **International Standards Organization (ISO)** - Serve as United States Delegate on Technical Committee TC108/SC5. Convenor (2001-2005) of Working Group 4 for Tribology and Lubricant Analysis Standards. Visit www.iso.org for more information. TC251. Member related to asset management and ISO 55000.
- **Journal of ASTM International (JAI)** - Member of the Editorial Board, joined 2004.
- **Electric Power Research Institute (EPRI)** - Member NMAC Predictive Maintenance Technical Advisory Group (TAG), 2003.
- **American Society for Testing and Materials (ASTM)** - Founding member of Inter-laboratory CrossCheck Program for In-Service Lubricants. Member of the In-Service Lubricant Testing and Condition-Monitoring, Subcommittee D02.96. Visit www.astm.org for more information.
- **Society for Tribologists and Lubrication Engineers (STLE)** - Oil Monitoring Analysis Certification Committee, Past Chairman Educational Programs, member of STLE since 1988. Visit www.stle.org for more information.



Jim Fitch

Board Memberships & Professional Affiliations (cont'd.)

- **Appointed “Expert Referee”** - 15th International Conference on Wear of Materials, April 24-28, 2005, San Diego, Calif.
- **Appointed “Technical Reviewer”** - for STLE Publications, Tribology Transactions and Tribology and Lubrication Technology, November 2004.
- **17th & 18th Annual Pulp & Paper Reliability and Maintenance Conference and Exhibition** - Member of the Board of Advisors.
- **Society of Automotive and Aerospace Engineers (SAE)** - Member since 1986. Member of the Filter Test Methods Subcommittee of the SAE Engine Committee (1986-1991). Past member of Committee on Diagnostics and Service Equipment (1992-1996). Past member of the Contamination and Filtration Panel, SAE A-6 Committee on Aerospace Fluid Power and Control Technologies (1986-1991). Visit www.sae.org for more information.
- **American Society of Mechanical Engineers (ASME)** - Member, 1999-2001. Visit www.asme.org for more information.
- **National Fluid Power Association** - Member, Contamination Technology Committee and the Hydraulic Filter and Separation Committee (1988-1990). Visit www.nfpa.com for more information.
- **National Society for Professional Engineers** - Member 1987 to 2000, Registered Professional Engineer, PE 13990. (Registration discontinued due to change in engineering/technical specialty). Visit www.nspe.org for more information.
- **Editorial Board BHRA** - The Condition Monitoring Journal, British Hydromechanics Research Association. 1989-1993. Visit www.bhrgroup.co.uk for more information.
- **Overseas Technical Advisory Committee** - Member, 3rd, 4th and 5th International Condition Monitoring Conferences, through 1996.

Awards

- American Society for Business Publication Editors Editorial Award, September, 2006.
- Outstanding Service Award, Korea Plant Service and Engineering Association, 1997.
- Outstanding Engineer Award for 1996, Oklahoma Society of Professional Engineers.
- Outstanding Engineering Achievement Award

for 1995, Oklahoma Society of Professional Engineers.

- Society of Automotive Engineers (SAE) Literary Award for Paper No. 861308. By Engineering Activity Board. SAE 1986 Transactions.
- Society of Automotive Engineers (SAE) Literary Award for Paper No. 860738. By Engineering Activity Board. SAE 1986 Transactions.

Patents

- **U.S. Patent No. 4,588,505**, awarded May 13, 1986, “Moisture-In-Oil Extraction Device.” Licensed in 1987 to Polysorb Corporation.
- **U.S. Patent No. 5,095,740**, awarded March 17, 1992, “System for Monitoring and Analyzing Solid Contaminants in Fluids.”
- **U.S. Patent No. 5,385,043**, awarded June 13, 1994, “In-line Contamination Measurement Device.”
- **U.S. Patent No. 5,388,447**, awarded August 30, 1994, “Viscosity Measurement Apparatus.”
- **U.S. Patent No. 5,708,198**, awarded January 13, 1998, “Ferrous Particle Counter.”
- **U.S. Patent No. 5,540,089**, awarded July 30, 1996, “Particle Collection Apparatus.”
- **U.S. Patent No. 5,563,337**, awarded October, 10, 1996, “Moisture Monitor Apparatus For A Fluid System.”
- **Patent Pending (serial number 10/835,723)**, “Automated Machinery Lubrication Service and Maintenance Planning System,” April, 2004
- **U.S. Patent No. 9,632,072**, awarded April 25, 2017, “Multimodal Condition Monitoring Inspection Pod.”
- **U.S. Patent No. 9,982,838**, awarded May 29, 2018, “Multimodal Condition Monitoring Inspection Pod in Pressurized Environments.”
- **Patent Pending (Serial No. 15/134,219)**, “Machine Fluid Condition Monitoring System.”
- **Patent Pending (Serial No. 14/689,743)**, “Lubricant Storage Headspace Environment Storage Production Sensor”
- **U.S. Patent No. 10,539,054**, Awarded 2019, “Condition Monitoring Sight Glass with Remote Sensing Ports”



Consultancy

(Partial list of failure investigations, forensic investigations, technical consulting, etc.)

3M - Hutchison Plant - Plant Lubrication Modernization and Transformation

A2 Technology - Oil Analysis Instrument Development

AAI Textron - Fluid Related Failure Investigation

AeroJet (Div. of GenCorp, Inc.) - Failure Investigation Relating to Titan IV Missile Lubrication

American Crystal Sugar - Bearing Failure Investigation and Lubricant Study

American Crystal Sugar - General Lubrication and Oil Analysis Consulting

Analytical Systems Laboratories - General Consulting Relating to Electrostatic Separators

Arch Coal - Consulting on Lubrication of Bearings

Asarco Mining Mine Site - Lubrication Modernization Consulting

Babcock and Wilcox - Pulverizer Gearbox, Failure Investigation

Bechtel - Rack and Pinion Gear Failure Investigation

Belvac Production Machinery - Lubrication Systems Consulting

BioBlend - Litigation

Bryon Nuclear/MPR Associates - Lubricant Oxidation Stability Study

Bunge North America - Development of a Corporate Oil Analysis Manual

C.C. Jensen - Testing Study for Separation of Carbon Insolubles from Lube Oils

California State University Long Beach - Expert Witness relating to an Elevator Hydraulic System Failure Case

Callaway Nuclear Generating - Turbine Bearing Failure Investigation

Calpine Energy - Failure Investigation, Gas Turbine Varnish

Calvert Nuclear - Grease Oxidation Study

Cargill, Inc. - General Lubrication and Oil Analysis Consulting

Carleton Life Support - Vacuum Pump Lubricant Study for Aerospace Applications

Carolina Power & Light - Harris Nuclear - Failure

Investigation Regarding Reactor Coolant Pump

Caterpillar, Inc. - Bulk Oil Handling and Storage Project

Caterpillar, Inc. - Technical Report and Consulting on Diesel Engine Lubrication and Contamination Control

Cerestar (Cargill Div.) - Compressor Failure Investigation - Lubrication Related

Champion International - Plant Lubrication Modernization Consulting

Chelan PUD Hydro Electric - Turbine Oil Varnish and Aeration Failure Investigation

Clarcor Corporation - Contamination Control and Filtration Project

Columbia Gulf Corporation - Failure Investigation on Main-Line Natural Gas Engine and Compressor Corrosion Problems Lubricant Selection Study

Colonna Shipyard - Hydraulic System Failure Investigation

Columbia Transmission Company - Oil Analysis Study For Gas Compressors Lubricant Selection Study

Coman-Chrysler - Rolling Element Bearing Failure Investigation

Country Flame Technologies, Inc. - Expert Witness - Gearbox and Bearing Failure

Crane Engineering - Lubricant Formulation Study Machine Tools

Cummins Engine Company - Failure Investigation Relating to Diesel Engines on a Fleet of Mobile Equipment

Cymer Inc. - Bearing Failure Investigation

CWL - Gear Coupling Failure Investigation

Detroit Edison: Fermi II Nuclear Station - Oil Analysis and Lubrication Procedure Manual Development

Delek - Compressor Thrust Bearing Failure Investigation

Dresser Rand - Compressor Radial Shaft Bearing Failure Investigation

Duke Energy - Turbine Oil Performance Study

Duke Energy - Wind Turbine lubricant study

DuPont Chemical Company - Development of Corporate Lubricant Interchange Guide

Duquesne Light & Power - Plant Lubrication Modernization Consulting

Eaton Corporation - Advisory Services



Jim Fitch

Consultancy (cont'd.)

and Testing of New Dielectric Oil Analysis Instrumentation for Motor Oils

Electric Power Research Institute - General Lubrication and Oil Analysis Consulting

Eli Lilly - Lubricant Selection Project

Entergy Corporation (Waterford 3 Nuclear Station) - Failure Investigation on Lubrication of a Reactor Coolant Pump

Equistar Chemical Company - Refrigeration Compressor Bearing and Turbine Oil Failure Investigation

Esco Corporation - Contamination Control Project for Hydraulic Systems

Exelon Corporation (Peachbottom Nuclear Generating Station) - Failure Investigation of a Radiologically Contaminated Turbine Lubricant

Exelon Corporation (Quad Cities Nuclear Station) - Onsite Lubrication Survey for Plant Modernization

Exelon Corporation: LaSalle Nuclear Power Station - Failure Analysis of Electro Hydraulic Control (EHC) Synthetic Fluids - Varnish Related

ExxonMobil Corporation - Expert Witness - Tractor-Trailer Wheel-End Bearings - FFE Case

ExxonMobil Corporation - Expert Witness - Tractor-Trailer Wheel-End Bearings - Comcar Case

ExxonMobil Corporation - Expert Witness - Tractor-Trailer Wheel-End Bearings - Lori Jones Case

ExxonMobil Corporation - Re-engineering of Oil Analysis Services Program and Laboratory Study

FA Technology Ventures - Technical Consulting Relating to Electrostatic Oil Reclamation

Fluid RX Corporation - Automotive Lubricants Service Interval Survey

GasTops - General Oil Analysis Consulting

General Dynamics/U.S. Marine Corps - Hydraulic Contamination Failure Investigation for the Expeditionary Fighting Vehicle

General Electric Co. - Gas Turbine Lubricant Varnish Project

Georgia-Pacific Corporation - Plant Lubrication Modernization Consulting

Goodyear Tire & Rubber (Americana) - Hydraulic System Condition Monitoring Program Design

Goodyear Tire & Rubber Co. - Lubrication Procedures Development Contract

Gulf Coast Filters - Expert Witness Relating to Filter Performance Testing

Hangsterfers, et al - Expert Witness Relating to a Slideway Lubrication

Hellman & Friedman - Market Research of Lubrication Industry

Honeywell - Consulting Relating to Lubricant/Metallurgy Compatibility

Houston Lighting & Power (Reliant Energy) - Oil Analysis Laboratory Procedures Study

Hurricane Rita Bus Case - Court Case Related to Bus Wheel Bearing Failure

Idemitsu Chemical - Lubricant Testing Study

Ingram Barge - Failure Investigation on Marine Propulsion Engines and General Consulting

International Paper - Failure Investigation - Hydraulic Servo Valves

International Paper - General Lubrication and Oil Analysis Consulting - Site Visits to 11 Mills

ISOPur Corporation - Turbine Oil Degradation Laboratory Study

Jacobs Vehicle Systems - Forensic Investigation on Diesel Engine Lubrication

John Deere - Hydraulic Fluid Contamination Control Consulting

Kimberly Clark - Bearing Corrosion Root Cause Failure Analysis

Koch Industries: Corpus Plant - Failure Investigation Regarding Lubrication on Compressors

Koch Industries: Pine Bend Plant - Failure Investigation Regarding Sludge and Varnish Problems in Compressors

Koch Petroleum - Compressor Lubricant Failure Investigation - Sludge and Varnish Related

Kongsberg - Wormgear Reliability Study

Lehigh Cement Company - Gear Coupling Failure Investigation - Lubrication Related

Lockheed Martin - Aircraft Hydraulic Contamination Control Study

Lone Star Industries - Gearbox Failure Investigation - Lubrication Related

Louisiana Hydro Electric Co. - Failure Investigation of a Step-Up Gearbox and Laboratory Testing of Candidate New Lubricants

Louisiana Hydro Electric Co. - Lubricant Testing and Analysis Project Gear Oils



Jim Fitch

Consultancy (cont'd.)

Lubrizol Corporation - Technical Consulting Relating to Sensor Development

MAC Steel USA (Cargill Div.) - Design and Development of Bearing Lube Oil System

Mars Petcare - High Temperature Oven Lubrication

Measurement Analysis Corporation - Technical Consulting - Synthetic Lubricant Selection

Medtronic - High-Temperature Lubricant Study

Medtronic, Inc. - Failure Investigation Relating to Bearing Lubrication of Surgical Drills

Meridian - Linear Bearing Failure Investigation

Metropolitan Washington Airport Authority - Forensic Gearbox Failure Investigation

Michelin Tire Company - Lubricant Compatibility Lab Study

Michelin Tire Company - Technical Consulting - Modernization of Plant Lubrication

Ministry of Defense, Netherlands - General Lubrication and Oil Analysis Consulting

Mitsui & Co. - Market Research Consulting

Model T Ford - Litigation on Diesel Engine Failures

Monsanto Chemical Company - Aircraft Lubricant Contamination Control Project

NASA/Lockheed Martin - Failure Investigation Relating to Space Shuttle Hydraulics

Nautor Swan Yachts - Litigation Hydraulic System Failure

New York Power Authority - Power Plant Lubrication Study

Northwood Pulp & Paper - Plant Lubrication Modernization Consulting

Oceaneering - Hydraulic Fluid Selection Study

Ontario Power Generation (Pickering Nuclear Station) - Failure Investigation Relation to Nuclear Plant Refueling Hydraulic Systems

Owens Corning - High Temperature Chain Lubricant Failure Investigation

Pacific Gas & Electric - Turbine Lubricant Failure Investigation

PacificCorp - Wind Turbine Gearbox Failure Investigation

Pall Corporation - General Consulting Services

PANalytical, Inc. - Application Consulting on XRF Spectroscopy

PEMEX Petroquimica (Mexico) - Gas Plant Lubrication Modernization

Phillips Petroleum - Lubrication Selection and Technical Advisory Services

Piedmont Group - General Consulting on the Lubrication Industry

Portugen Energia, S.A. - Gas Turbine Failure Investigation Relating to Aeration of Turbine Oil

Progress Energy, Inc. - Combustion Turbine Failure Investigation - Varnish and Sludge Related

Progress Energy, Inc. - Lubrication Management Consulting for Fossil Fuel Plants

Public Service of Indiana - Plant Lubrication Modernization Consulting

Gafco Fertilizer - Lubricant Compatibility Study

Reviva Corporation - Contamination Control of Diesel Engine Remanufacturing

Reynolds Brand - High-Temperature Grease Failure Study

Rockwell Automation - General Lubrication and Oil Analysis Consulting

Royal Purple Lubricants - Expert Witness, Failure Investigation Relating to Marine Lubricants

SC Johnson - Bearing Lubrication and Auto Lube Systems

Seaspan International - Hydraulic Pump Failure Investigation

Sentinel Capital Partners - Expert Advisor for the Acquisition of a Lubrication Supply Company

SFW Capital - Oil Analysis Market Research

Shikoku Electric - Oil Analysis Performance Study

Sikorsky Aircraft - Expert Witness - Gearbox Failure on Helicopters

SPX Service Solutions - Contamination Control Product Development

Staley Corporation - Plant Lubrication Audit for Modernization

Stolle Machinery - Lubricant Selection for Production OEM Machinery

Symyx Technologies, Inc. - General Consulting relating to Online Lubricant Sensors

TECH Appraiser, Inc. - Diesel Engine Lubricant Failure Investigation

Texas Utilities - Bowl Mill Gearbox Lubrication Study

Texas Utilities - Turbine Oil Technical Consulting -



Jim Fitch

Consultancy (cont'd.)

Several Power Plants

ThermoFisher - Consulting for Lubricant Analysis Instrumentation

TigerCat Equipment Co. - Failure Investigation Relating to a Corrosion Problem on Tractor Hydraulics

Timken Bearing Company - Technical Consulting - Wear Debris Sensor Technology

Translume, Inc. - Consulting Relating to Optical Oil Sensor Development

Trico Manufacturing - Lubrication Formulation Testing

U.S. Airforce/Spectro - General Oil Analysis Consulting

U.S. Enrichment Corporation - Turbine Oil Failure Investigation for Gas Compressors

U.S. Steel Corporation - Failure Investigation Relating to Steel Straddle Carrier Hydraulics

Union Pacific Railroad - Development of New Contamination Control and Oil Analysis Programs

Valero - Varnish and Sludge Study on Compressor Lubricant

Warren Distribution - Expert Witness relating to Turbine Oil Failure

Westar Energy - Failure Investigation, Turbine-Generator Varnish

Westar Energy Inc. - Failure Investigation of Turbine Oil Sludge

Westlake Chemical - Lubricant Contamination Investigation

Weyerhaeuser Company - Plant Lubrication Modernization Consulting

Weyerhaeuser Company (Cedar River Paper) - Failure Investigation - Lubricant Sludge and Varnish

Whisper Gen - Rolling Element Bearing Study

Windward Petroleum - Expert Witness for Lubricant Cross-Contamination Case

Zeigler Coal - General Lubrication and Oil Analysis Consulting

Zellstoff Celgar Pulp - Turbine Oil Foam and Aeration Investigation

Publications

Books, Book Chapters, Training Books, etc.:

- Wilford, Fred with Jim Fitch, Engine Oils and the Filters; Understanding Oil Lubrication and

Contamination Control [Book], Published by Purdue University, 2019.

- Fitch, J.C., Inspection 2.0: Condition Monitoring of Lubricated Mechanical Machinery [Book], Publication Pending, Noria Publications, 2019.
- Fitch, J.C. with George Totten as Editor, Chapter: "Analysis of In-Service Automotive Engine Oils," ASTM Handbook on Automotive Lubricants, Publication Pending.
- Fitch, J.C. with George Totten as Editor, Chapter 5: "Control and Management of Particle Contamination in Hydraulic Fluids,"
- Handbook of Hydraulic Fluid Technology, CRC Press, 2012.
- Fitch, J.C. and D. Troyer, Oil Analysis Basics, Noria Publishing, 2nd Edition, 2010.
- Fitch, J.C. and Drew D. Troyer, with John McKetta, et al Editors, Encyclopedia of Chemical Processing, Chapter: "Lubrication Performance Factors for Chemical Process Plant Machinery," Marcel Dekker Encyclopedias, 2005.
- Fitch, J.C. and Sabrin Gebarin, Martin Williamson and George Arbocus, with George Totten, Editor, Chapter 21: "Foodgrade and the Food Processing Industry", STLE/ CRC Handbook of Lubrication and Tribology, 2005.
- Fitch, J.C. with George Totten, Editor, Chapter 32: "Conservation of Lubricants, Materials and Energy," STLE/ CRC Handbook of Lubrication and Tribology, 2005.
- Fitch, J.C., Seminar Coursebook, Effective Contamination Control, Noria Publishing, 2005-2006.
- Fitch, J.C. and Sabrin Gebarin, Best Practices in Bulk Lubricant Storage and Handling, Noria Publishing, 2004. Fitch, J. C., How to Select a Motor Oil and Filter for Your Car or Truck, Noria Publishing, 2nd Edition, 2004.
- Fitch, J. C. and M. Barnes, et al, with George Totten as Editor, Chapter 24: "Hydrocarbon Analysis," ASTM Fuels and Lubricants Manual, ASTM Press, June, 2003.
- Fitch, J. C. & D. Troyer, Editors, Lubrication Excellence Conference Proceedings, Noria Publishing, 2003-2006 Annual Conferences.
- Fitch, J.C. with Robert Bolt, Editor, Chapter: "Particle Counting," Lubrication Guide, Published by the Electric Power Research Institute (EPRI), October 2001.
- Fitch, J.C. with George Totten as Editor, Chapter:



Jim Fitch

Books, Book Chapters, Training Books, etc. (cont'd.)

- “Advancements in Fluid Analysis Technologies and Strategies for Hydraulic System Condition-Based Maintenance,” Hydraulic Failure Analysis: Fluids, Components, and System Effects, ASTM Press, 2001.
- Fitch, J.C. and G. Trujillo, D. D. Troyer, Machinery Lubrication Coursebook, Noria Publishing, 2001-2006, Multiple Editions.
- Fitch, J.C. with Heinz P. Bloch, Editor/Author, Chapter 19, “Lubrication Analysis for Condition Monitoring,” Practical Lubrication for Industrial Facilities, Marcel Dekker, 2000
- Troyer, D. D. & J. C Fitch, Oil Analysis Basics, Noria Publishing, 2000-2006, Multiple Editions.
- Fitch, J. C. with John Mitchell as Editor, Chapter 11: “Strategies for Machinery Oil Analysis,” Operating Equipment Asset Management Handbook, Penn State Publishing, 2000 & 2006. First and Second Editions.
- Fitch, J. C., The Lubrication Field Test and Inspection Guide, Noria Publishing, Booklet, 2000.
- Fitch, J. C. and Robert Scott, Daily One-Minute Lubrication Inspections and Field Tests, Noria Publishing, 2013 Fitch, J. C., Sourcebook for Used Oil Elements, Noria Publishing, Booklet. 2000.
- Fitch, J. C. & D. Troyer, Editors, Practicing Oil Analysis Conference Proceedings, Noria Publishing, 1999-2002 Annual Conferences.
- Fitch, J. C., Oil Analysis I & II Coursebook, Noria Publishing, 1998-2006, Multiple Editions.
- Fitch, J.C., How to Develop a “Win-Win” Relationship with Your Oil Analysis Lab, Learning Resource Booklet, LRB.9801.1, Noria Publishing, 1998.
- Fitch, J. C. with E. Richard Booser as Editor, Chapter 75: “Elements of an Oil Analysis Program,” STLE/CRC Tribology Data Handbook, CRC Press, 1996.
- Fitch, J. C., Oil Analysis and Proactive Maintenance, Seminar Course Book, Diagnostics, 1996.
- Fitch, J. C., with A.K. Mehta as Editor, Chapter 32: “A New Approach to Maintaining Industrial Equipment,” Current Trends in Industrial Tribology, McGraw-Hill Publishing Company, 1995.
- Fitch, J. C., The Ten Reasons Why Oil Analysis Programs Fail and the Strategies That Effectively Overcome Them, Diagnostics, Inc., 1995 (Booklet).
- Fitch, J. C. and H. Borden, “Comparison of Particle Counts Between Eight Commercial Oil Analysis Laboratories.” Technical Application Article No.8, Diagnostics, Inc., August, 1992 (Technical Bulletin).
- Fitch, J. C., Handbook of Case Studies on Fluid Contamination Control, Published by Diagnostics, Inc., 1991, Booklet.

Published Interviews

- Motor Equipment News, Interview, March, 2015.
- Interviewed by Miguel Guzman, Predictiva 21 Magazine, published Sept 2014.
- Interview with Prof. Peter Jost, “Interview with Luminary Professor H. Peter Jost,” Machinery Lubrication magazine, January- February issue, 2006
- Interviewed by Mr. Krokawa, Editor of Journal of Economic Maintenance Tribology (Japan), “Progress of Lubrication Education and Certification,” Published in Vol. No. 475, September 2005.
- Interview with Mario Andretti, “The Greatest Racecar Driver of All Times,” Practicing Oil Analysis magazine, March-April 2003.
- Interviewed by Marian Hookham (Editor), “The Good Oil - Trends in Lubrication in the Mining Industry,” Australia’s Mining Monthly, October 2002.
- Interviewed by Kathryn Carnes (Editor), “Measure by Measure,” Published in Lubricants World magazine, June 2001.
- Interviewed by Curt Bennink, (Staff Editor), “Maximize Oil Analysis ROI,” Published in Equipment Today magazine, August 2000.
- Interviewed by Jeff Hawk (Staff Editor), “Online Oil Analysis Speeds Equipment Managers’ Response Time,” Construction Magazine, October 2000.

Trade Magazine Editorial Columns

- Practicing Oil Analysis Magazine, Editor’s Page, 1998-2008**
- Five Essential Lube Oil Properties Not Routinely Reported by Your Oil Lab
- Tactics for Identifying Wear Metal and Solid-particle Suspensions
- The Five Cardinal Signs of a Healthy Machine



Jim Fitch

Trade Magazine Editorial Columns (cont'd.)

- The Benefits of Utilizing Wear Debris Analysis in Industrial Machinery
- The Richness of Machine Failure
- The Value of Muck Sampling in a Condition Monitoring Program
- Why Onsite Particle Counting Makes Sense
- Decade in Review: Education and User Empowerment
- Ten Amazing Years
- Diagnosing a Cloudy Oil
- The Truths About Data Trending
- Planned Cleanliness
- The Meaning of a Low Viscosity Reading
- Oil is Like an Egg
- No Contamination, No Wear, No Kidding
- The Hot Stove Effect
- Recognizing the Symptoms of Lubricant Incompatibility
- What is Your Oil's Impurity-holding Capacity (IHC)?
- What Do You Do with a High Particle Count?
- Oil Analysis for the New Millennium, (Republished in ML-Spanish, December 2006)
- The Importance of Provenance
- Tweaking the Eyes and Ears of Oil Analysis
- Beware of What You Measure
- A Much Closer Look at Particle Contamination
- Standby Equipment - Dealing with Oil Without Legs
- What do Canaries and Ferrous Density Meters Have in Common?
- The Agony of Diesel Engine Oil Particle Counts
- The Perils of Aerated Oils
- The Hazards of Water Handles
- Copper and Your Diesel Engine Oils
- Oil Analysis Reports - What's Missing in the Comments?
- Sight Glass Oil Analysis
- Lubrication as a Professional
- Reliability's Dirty Little Secret
- Dipstick Oil Analysis
- What is the No. 1 Cause and the No. 1 Consequence of Wear?
- Silent Assumptions of Bearing Reliability
- Which Questions Does Your Oil Analysis Program Answer?
- How to Convince Your Boss to Let you Attend Lubrication Excellence 2003
- Managing Reliability in Real Time — the Risk Management Grid (RMG)
- Clean Oil Reduces Engine Fuel Consumption
- The Surface Tension Test—Is it Worth Resurrecting?
- Spot Check Your Car's Oil
- Today's Oil Detectives Have a New Bag of Tricks
- The Hidden Cost of an Untrained Workforce
- Fallacies of Sampling Consistently
- How Telephone Poles are Like Filters
- You Can't Fix a Problem You Don't Know Exists
- World Class is What This Year's Conference is About — What it is and How to Get it.
- Oil Analysis Economics — Saving and Making Money
- The Six Most Expensive Oil Analysis Tests
- Top Ten Ways to Not be World Class at Machinery Lubrication
- The Augustus H. Gill Award for Oil Analysis Excellence
- Three Important Words for Success in Lubrication and Oil Analysis
- Ten Compelling Reasons to Attend Practicing Oil Analysis 2000
- In Search of a Definition — What is Oil Analysis?
- Why Should Managers Care About Oil?
- Oil Analysis Standards — What Are We Waiting For?
- Oil Analysis and the Lean Organization
- Is Your Oil Analysis Program a Quart Low?
- Oil is Not a Fine Wine
- Adopt a New Philosophy
- Choose Your Weapon
- First an Idea — Now a Reality
- Deploying the Invisible Filter
- Surviving the Data Jungle
- Your Oil Is Talking ... But Are You Listening?



Jim Fitch

Trade Magazine Editorial Columns (cont'd.)

- **Machinery Lubrication Magazine, 2001 - 2020**
- Detection Zone Coding for More Efficient Condition Monitoring
- 5 Ways to Monetize Lubrication Excellence Now
- The Power of Truthful Assessments in Jumpstarting a Reliability Transformation
- Philosophies of Transformational Change and ICML 55
- How the IIoT Is Changing Condition Monitoring
- Blotter Spot Testing for Metallic and Other Solid Particles
- Be Alert to Heat as Both a Contaminant and a Symptom
- Who Should Inspect Your Lubricated Machines?
- Ghost Riders That Haunt Your Oil
- The Importance of Sustainability for Transformational Change
- Guidelines for Developing a World-class Inspection Plan
- How to Make Your Oil Analysis Program Produce More Alerts
- Managing the Perils of Short-volume Oil Changes
- Make the Lube Room Your Lubrication Command Center
- How to Measure the Effectiveness of Condition Monitoring
- Be Proactive to Avoid Root Cause Fault Bubbles
- The 5 States of Machine Inspection 2.0
- How to Visually Inspect the Health and State of Oil
- Inspection 2.0: The Cornerstone of World-class TPM
- Getting Machines to the Proper State of Inspection Readiness
- Why Inspection 2.0 Is Your Best Strategy for Early Fault Detection
- Will ISO 55000 Change the Definition of Lubrication Excellence?
- The Power of Root Cause Pre-failure Analysis
- Understanding How Engines Consume Oil
- Avoiding the Pitfalls of Viscosity-starved Machines
- Remedies for a Bad Maintenance Culture
- How to Select Machines for Oil Analysis
- How to Build a Killer Lube Analyst Résumé
- Take Particle Settling and Oil Sample Agitation Seriously
- Recognizing the Causes and Hazards of Silt Lock
- 5 Ways to Reduce Lubricant Spending
- Develop a Corporate Education Master Plan
- The Wrath of Unscheduled Downtime: Why Oil Analysis is a Wise and Effective Defense
- Advantages of a Unified Condition Monitoring Strategy
- Don't Forget Lubricant Criticality When Designing Oil Analysis Programs
- Use Zone Inspections for Early Problem Detection
- Demand Reliability Readiness from Equipment Builders
- Add Oil Circulation to Gear and Bearing Sumps for Greater Reliability
- Using 'Unscheduled' Oil Analysis for Early Predictive Maintenance
- A New Look at Criticality Analysis for Machinery Lubrication
- How to Optimize the State of Lubrication
- Hazards of Changing Lubricant Brands
- Why You Should Inspect Bearing Grease Discharge
- The Hidden Dangers of Lubricant Starvation
- Don't Ignore Viscosity Index when Selecting a Lubricant
- Linking Enhanced Reliability to the State of Lubrication
- The Business Case for Lubrication Excellence
- The Optimum Reference State
- Justifying the Cost of Excluding a Gram of Dirt
- Grease Dry-out
- Setting Limits and Targets for Effective Oil Analysis
- Lubricant Consolidation
- The Power of the Patch
- A Well-Constructed Oil Analysis Report
- Increasing Demands Bring Advancements in Oil Filtration
- Noria is Recharged and Ready for Growth



Jim Fitch

Trade Magazine Editorial Columns (cont'd.)

- Strategies to Extend Drain Intervals and Reduce Lubricant Consumption
- What's Hot? Current Trends in Lubrication and Oil Analysis
- Ban the Can: Sealable, Reusable Oil Containers are Smarter Options
- Looking Through the Eyes of Onsite Contaminant Monitor
- The Rationale for Using Magnetic Particle Collectors
- Virgin Particles and Weak Signals: Finding Meaning in Wear Debris
- Oil Flushing Tips to Address the Fish Bowl Effect
- Strategies to Achieve and Sustain Dry Oil
- When a Filter is Not a Filter
- These Additives Don't Exist
- Performing Lubrication in a Recessionary Environment
- Oil Clotting and the Adrenaline Effect
- How Water Causes Bearing Failure
- Intervention is Key to Machine Life Extension
- Performing a Failure Scene Investigation
- Ten Hot Lubrication Trends
- Six Questions Every Lube Tech Should Be Able to Answer Correctly
- Ten Things You Probably Didn't Know About Air Contamination
- The Consequences of Periodically Forgetting
- Four Lethal Diesel Engine Oil Contaminants
- Filter Flow Rate — the Silent Opportunity
- The Daily One-minute Inspection
- Tribology is a Behavioral Science
- The Enduring Grease vs. Oil Debate
- A Call for Innovators and Entrepreneurs, (Republished in ML-Japan, January 2007)
- A Conversation with Dad — Pioneer, Educator and Mentor in Fluid Contamination Control, (Republished in ML-Japan, November 2006)
- In Search of a Root Cause
- 12-Step Program for Recovering Addicts of Lubrication Neglect
- Evolution of Maintenance Man
- How to Give Your Machine a Physical
- Filter Economy — Insider Tips on Managing the Costs of Lubrication Filtration
- Receive a Contamination Control Transfusion in Three Days
- Lubricant Quality and the Chain of Custody
- Flushing and the Voice Within Your Oil
- Flushing Strategy Rationalization
- Navigating the Maze of Flushing Tactics
- When to Perform a Flush
- Lubrication Genesis
- Lubrication Excellence 2004 — It's All About Learning
- How Grease Kills
- How Your Motives Influence Motor Oil Selection — Have You Heard About the New GF-4 Motor Oils?
- Headspace Management — Are You in On This Best-Kept Secret?
- The Difference Between Good Lubrication and Good Lubricants
- Should New Lubricant Deliveries be Tested
- Ask Your OEM to Accessorize New Equipment for Lubrication Excellence
- Wanted: Lubrication Management Professionals
- Aren't Machines Supposed to Wear Out?
- New Lubrication Commandments: Conserve Energy, Protect the Environment
- Proactive Maintenance's Unruly Cousin
- Lubrication UFOs
- Demystifying Sludge and Varnish
- From Whence Dirt Comes
- The Perfect Storm . . . Are You Secretly Waiting?
- At Last, A Lubrication Magazine for Maintenance Professionals

Trade Magazine Technical Articles

- Fitch, J.C., "Does your Company Need a Maintenance Culture Intervention?" UPTIME Magazine, Apr-May 2016,
- Fitch, J.C., "Rationalized and Unified Machine Condition Monitoring", Uptime Magazine, Oct-Nov, 2014
- Dinslage, M., J.C. Fitch, and Sabrin Gebarin, "Bulk Lubricant Storage," Machinery Lubrication magazine, July/August 2006.



Jim Fitch

Trade Magazine Technical Articles (cont'd.)

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- Fitch, J.C. "How Grease Kills," Reliable Plant magazine, Jan.-Feb. 2006.
- Fitch, J.C., "The Difference Between Good Lubrication and Good Lubricants," LUBE 2005, Issue No. 70, Dec. 2005.
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- Gebarin, S and J. C. Fitch, "Origin of Spherical Particles in Lubricants," Practicing Oil Analysis, March-April 2005.
- Troyer, D.D. and J. C. Fitch, "Lubrication Training in the Reliability Era," ILMA Compoundings, February 2005.
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- Gebarin, S. and J. C. Fitch, "Determining Proper Oil and Filter Change Intervals: Can Onboard Automotive Sensors Help?" Practicing Oil Analysis magazine, November-December 2003.
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- Fitch, J. C. "Effective Lube Oil Management," Pages 20-25, Power Magazine (Platts), October 2003.
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- Fitch, J. C., "Oil and Glycol Don't Mix," Practicing Oil Analysis magazine, July-August 2001.
- Fitch, J. C., "Troubleshooting Viscosity Excursions," Practicing Oil Analysis magazine, May-June 2001.
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- Fitch, J. C., "Tricks to Classifying Wear Metals and Other Used Oil Suspensions," Practicing Oil Analysis magazine, Sept.-Nov. 2000.
- Fitch, J. C. "The Enduring Flash Point Test," Practicing Oil Analysis magazine, March-April 2000.
- Fitch, J. C., "Particle Counting: The Invisible Filter," Maintenance Technology, March 2000.
- Fitch, J. C., "Defining and Executing Excellence in Lubrication," Practicing Oil Analysis magazine, Jan.-Feb. 2000.
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- Fitch, J.C., "Using Oil Analysis to Control Varnish and Sludge," Practicing Oil Analysis magazine, May-June 1999.
- Fitch, J.C., "Maximizing Fault Detection in Rotating Equipment Using Wear Debris Analysis," Practicing Oil Analysis magazine, March-April 1999.
- Fitch, J.C., "The Influence of Bottle Cleanliness and Sample Agitation on Particle Count Trends," Practicing Oil Analysis magazine, March-April 1999.
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- Fitch, J.C., "Using Oil Analysis to Monitor the Depletion of Defoamant Additives," Practicing Oil Analysis magazine, July-August 1998.
- Fitch, J.C., "What Particles Mean and Why They Need To Be Monitored and Controlled," Practicing Oil Analysis magazine, Sept.- Oct. 1998.



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- Fitch, E. C., "Establishing and Maintaining Levels of Cleanliness," Plant Services magazine, October 1994.
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- Fitch, J. C., "Contaminant Monitoring: The Overlooked Predictive Technique," Maintenance Technology magazine, January 1992.
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- Fitch, J. C. and J. Allred, "Hydraulic Fluid Analysis: Avoiding the Pitfalls; Part 1: Careful Sampling and Correct Procedures Are Essential to Exploit This Valuable Maintenance Tool," Hydraulics & Pneumatics magazine, January 1988.
- Fitch, J. C. and J. Allred, "Hydraulic Fluid Analysis: Avoiding the Pitfalls; Part 2: Interpreting Test Results," Hydraulics & Pneumatics magazine, December 1987.
- Fitch, J. C., "Crucial and Healthy (Real-Time Machine Health Monitoring)," Production Engineering magazine, February 1984.
- Fitch, J. C., "Developing Automation Applications: How to Identify and Implement High Yield Projects," Industrial Engineering magazine, November 1981.
- Technical Journals, Symposia & Conference Papers
- Fitch, J.C. and Sabrin Gebarin, "Review of Degradation Mechanisms Leading to Sludge and Varnish in Modern Turbine Oil Formulations," ASTM International Journal, Vol. 3, No. 8, Paper ID JA113504, 2006.
- Fitch, J.C. and S. Gebarin, "Review of Degradation Mechanisms Leading to Sludge and Varnish in Modern Turbine Oil Formulations," Oxidation and Testing of Turbine Oils Symposium, Norfolk, VA, Dec. 2005.
- Fitch, J.C., "Optimizing Oil Change Intervals to Reduce Oil Consumption," 2005 Lubrication Excellence Conference Proceedings, March 2005.
- Fitch, J.C., "Doubling Diesel Engine Rebuild Intervals," Lubrication Excellence 2004 Conference Proceedings, March 2004, Nashville, Tenn.
- Fitch, J. C. and Sabrin Khaled Gebarin, "Advances in Automotive Oil Change Sensors," Lubrication Excellence 2004 Conference Proceedings, March 2004, Nashville, Tenn.
- Fitch, J. C., "Lubrication Strategies for Doubling Diesel Engine Rebuild Intervals," Lubrication Excellence 2003 Conference Proceedings, April 2003, Houston, Texas.
- Fitch, J. C., "Optimizing Oil Change Intervals to Reduce Lubricant Consumption," Lubrication Excellence 2003 Conference Proceedings, April 2003, Houston, Texas.
- Fitch, J. C., "Optimizing Oil Change Intervals to Reduce Lubricant Consumption," Practicing Oil Analysis Conference Proceedings, 2001/2002, Tulsa, Okla.
- Fitch, J. C., "How to Select an Oil Analysis Lab to Meet Your Needs," Practicing Oil Analysis Conference Proceedings, 2001/2002, Tulsa, Okla.
- Fitch, J. C., "The Usefulness of Particle Counting in Oil Analysis," EPRI/NMAC Lube Notes, November 2002.
- Troyer, Drew & J. C. Fitch, "Skills Standards Development and Competency Assurance for Machinery Lubrication Technicians," 2nd World Tribology Congress, Vienna, Austria, September 2001.
- Troyer, Drew, & J. C. Fitch, "Precision Lubrication for the Power Generation Industry," Electric



Jim Fitch

Trade Magazine Technical Articles (cont'd.)

- Power Research Institute, Maintenance and Reliability Conference, August 2001.
- Fitch, J. C., "Sampling Methods for Used Oil Analysis," *Lubrication Engineering*, March 2000.
 - Fitch, J. C., "Best Practices in Maximizing Fault Detection in Rotating Equipment Using Wear Debris Analysis," Proceedings of the International Conference on Condition Monitoring, Swansea, Wales, April 1999.
 - Fitch, J. C., "Simplify Oil Analysis with Easy Tests and Inspections," *Practicing Oil Analysis Conference Proceedings*, Tulsa, Okla., Oct. 1999.
 - Fitch, J. C., "Elements of a Successful Oil Analysis Program-Part II Selection of Tests," *Lubrication Engineering*, September 1998.
 - Fitch, J.C., "Elements of a Successful Oil Analysis Program-Part I Oil Sampling," *Lubrication Engineering*, August 1998.
 - Fitch, J.C., "Proactive and Predictive Strategies for Setting Oil Analysis Alarms and Limits," *Joint Oil Analysis Program Conference Proceedings*, U.S. Dept. of Defense, May 1998.
 - Fitch, J.C., "Proactive Maintenance and Oil Analysis in Mining Industry," *Maintenance 2000 Conference Proceedings*, May 1998.
 - Fitch, J.C., "Strategies for Setting Oil Analysis Limits," *Enteract Conference Proceedings*, April 1998.
 - Fitch, J.C., "What Particles Mean," *Reliability Week Conference Proceedings*, Sept. 1998.
 - Fitch, J. C. and Holly Borden, "Lubricant-Based Techniques For Condition Monitoring," *Maintenance Journal*, July 1996.
 - Fitch, J. C., "Applying Satellite Communications Technology to On-Line Oil Analysis of Crankcase Diesel Engine Lubricants," Proceedings, Locomotive Maintenance Officers Association, Winter Meeting, Orlando, Fla., February 1995.
 - Troyer, D. and J. C. Fitch, "An Introduction to Fluid Contamination Analysis," *P/PM Technology magazine*, June 1995.
 - Fitch, J. C., "A New Approach To Maintaining Industrial Machinery," *Current Trends in Industrial Tribology*, TATA McGraw Hill, 1995.
 - Fitch, E. C. and Simeon Jaggernauth, "Moisture — The Second Most Destructive Lubricant Contaminant, Part One — Its Effects On Bearing Life," Proceedings of the JOAP Condition Monitoring International Conference, November 1994.
 - Fitch, J. C. and Simeon Jaggemauth, "Moisture — The Second Most Destructive Lubricant Contaminant and Its Effects On Bearing Life," Proceedings of the Predictive Maintenance Technology National Conference, November 1994, and *P/PM Magazine*, December 1994.
 - Troyer, Drew D. and J. C. Fitch, "An Introduction to Fluid Contamination Analysis," Proceedings of the Predictive Maintenance Technology National Conference, November 1994.
 - Fitch, J. C., "The Accuracy and Reliability of Optical Particle Counters with Industrial Oils and Hydraulic Fluids," *Diagnetics, Inc.*, PB No. 9, 1994.
 - Fitch, J. C. and Stuart Bents, "Applying Satellite Communications Technology to Condition-Based Maintenance for Mobile Equipment," *Condition Monitoring '94 Proceedings on an International Conference on Condition Monitoring*, Swansea, U.K., March 1994.
 - Fitch, J. C. and H. Borden, "Lubricant-Based Techniques for the Condition Monitoring of Non-Circulating Gear and Bearing Systems," *P/PM Technology magazine*, August 1993.
 - Borden, H. J. and J. C. Fitch, "Proactive Maintenance — The New Technology For Cost Efficient Contamination Control of Mechanical Machinery," 47th Meeting of the Mechanical Failures Prevention Group (MFPG), April, 13, 1993.
 - Fitch, J. C. and H. Borden, "Lubricant-Based Techniques for the Condition Monitoring of Non-Circulating Gear and Bearing Systems," Proceedings of the National Conference of Preventive and Predictive Maintenance, Dallas, Texas, November 1992.
 - Fitch, J. C. and H. Borden, "Interpreting Contaminant Analysis Trends Into a Proactive and Predictive Maintenance Strategy," The 4th International Conference on Profitable Conditioning Monitoring, Stratford-Upon-Avon, UK, December 1992.
 - Fitch, J. C., "Proactive Maintenance Can Yield More Than a Ten-Fold Savings Over Conventional Predictive/Preventive Maintenance Programs," 1992 Predictive Maintenance Indaba Proceedings, South Africa, September 1992.
 - Borden, H. and J. C. Fitch, "Particle Contamination — Both a Cause and a Result of Mechanical Failure," Proceedings of 16th Annual



Jim Fitch

Trade Magazine Technical Articles (cont'd.)

- Meeting of the Vibration Institute, June 9-11, 1992.
- Borden, H. and J. C. Fitch, "Use of Lubricant Proactive Maintenance and Contamination Control to Achieve Predictable Machine- Life Extension," 47th Annual Meeting of the Society of Tribologists and Lubrication Engineers (STLE), May 1992.
 - Borden, H. and J. C. Fitch, "Extensive Cost Saving Opportunity from Strategic Implementation of Proactive Maintenance in the Iron and Steel Industry," Association of Iron and Steel Engineers, Spring Conference, 1992.
 - Borden, H. and J. C. Fitch, "Strategic Implementation and Cost Benefit of Contamination Control," Proceedings of the International Fluid Power Applications Conference, March 1992.
 - Fitch, J. C. and I.T. Hong, Condition Monitoring, Chapter 13, edited by 3. R. McEwan, Published by Elsevier, 1991.
 - Fitch, J. C., "Contaminant Monitoring Targets Root Causes of Machinery Problems," P/PM Technology magazine, Volume 4, Issue 2, March/April 1991.
 - Fitch, J. C. and I. T. Hong, "Model of a Fuzzy Logic Expert System For Real-Time Condition Control of A Hydraulic System," The Condition Monitoring Journal and 3rd International Conference, London, U.K., October 1990.
 - Blok, P. and J. C. Fitch, "Concept and Application of a Portable Contaminant Monitor for Hydraulic Systems," 9th Aachener Conference on Fluid Power, March 1990, West Germany.
 - Blok, Peter, Jim C. Fitch, and Kim A. Hodgson, "Measuring Contaminant Levels in the Field (Bestimmung des Ölreinheitsgrades on Ort und Stelle)," Olhydraulik und Pneumatik, 34. No. 5., 1990.
 - Fitch, J. C. and D. Dyer, "Model of a Knowledge-Based Expert System for Real-Time Condition Control of a Hydraulic System," SAE Paper 891937, International Off-Highway & Powerplant Congress and Exposition, 1989.
 - Blok, P. and J. C. Fitch, "Filter Konnen das Wasser aus Hydraulikol Entfernen," Olhydraulik und Pneumatik, July 1989.
 - Blok, P. and J. C. Fitch, "Filtreren Van Water Uit Hydraulische Olie," PT Werktuigbouw, April 1989.
 - Fitch, J. C., "Fluid Conditioning of Aviation Hydraulic Fluids," Proceedings, Commercial Aircraft and Helicopter Panel, SAE Committee A-6, Aerospace Fluid Power and Control Technologies, April 1987.
 - Fitch, J. C., "Systems and Methods for Real-Time Condition Monitoring of Mechanical Machinery," SAE Paper 861308, International Off-Highway and Powerplant Congress and Exposition. Additionally, this paper was selected for and republished in the 1986 SAE TRANSACTIONS.
 - Fitch, J. C., "Quantifying the Contaminant Tolerance of Hydraulic Systems Using the 'Contaminant Life Index'," National Conference On Fluid Power Transactions, 1986.
 - Fitch, J. C., "Theory, Design, and Performance Characteristics of a Direct-Reading Portable Solid Contaminant Analyzer," SAE Paper 860738. 1986 Earthmoving Industry Conference. Additionally, this paper was selected for and republished in the 1986 SAE TRANSACTIONS.
 - Fitch, J. C., "The Influence of Marketing on the Design of Fluid-Power Products," The BFPR Journal, October 1982. This article was selected for presentation at the 1981 Annual BFPR Conference.
 - Fitch, J. C., and E. C. Fitch, "Safety Considerations in Fluid Power Products — Design Aspects," The BFPR Journal, July 1979.
 - Fitch, J. C., "Safety Considerations in Fluid Power Products — Motivation Aspects," The BFPR Journal, April 1979.
 - Fitch, J. C., "The Heritage of Fluid Power," The BFPR Journal, January 1979.

Invited Lectureships & Conference Presentations

- Congreso Mexicano de Confiabilidad 2019, Lima, Peru
- IDCON Reliability Conference, September, 2019, Raleigh, NC
- OilDoc 2019, Rosenheim, Germany, January, 2019
- Spectro Scientific Annual Sales Meeting, Orlando, FL, Oct., 2018
- Congreso Mexicano de Confiabilidad 2018, Monterrey, MX
- Chevron Reliability Maintenance Conference, Atlanta, GA, Oct. 2017



Jim Fitch

Invited Lectureships & Conference Presentations (cont'd.)

- Congreso Mexicano de Confiabilidad 2017, Monterrey, MX
- Ingredion North American Management Reliability Meeting, Quebec, Canada, Aug. 2017
- TriFluLub Conference and Exhibition (keynote address), Lima, Peru, Oct. 2016
- TOTAL Lubricants National Sales Meeting (keynote address), Phoenix, AZ, Nov. 2016
- LubMat Conference and Exhibition, Bilbao, Spain, 2016
- World Maintenance Congress (keynote address), Cartagena, Columbia, June 2015
- Oil Doc Conference and Exhibition, Munich, Germany, 2011, 2013, 2015
- Congreso Mexicano de Confiabilidad 2013, Monterrey, Mexico, October, 2013
- Reliable Plant Asia (keynote address), Kuala Lumpur, Malaysia, December, 2012
- AIMAN Congress (keynote address), Florence, Italy, November, 2012
- LubMat Conference and Exhibition, Bilbao, Spain, June, 2012
- Congreso Mexicano de Confiabilidad 2011, Leon, Mexico, October 2011
- EPRI (PUG), Portland, Ore., August 2011
- EPRI (GAPAC Users Group), Pittsburg, Pa., August 2010
- International Paper Lubrication Workshop, August 2010
- Brazilian Maintenance and Reliability Conference (ABRAMAN), Sao Paulo, June 2010 (Keynote Address)
- Goodyear Lubrication and Reliability Meeting, Lawton, Okla., April 2010
- Vibration Institute, Wisconsin, March 2009
- EPRI (NMAC Lubrication Workshop), August 2008, San Antonio, Texas, NMAC
- EPRI (Circuit Breaker Reliability Meeting), August 2008
- ASIATrib Conference, Kanazawa, Japan - Keynote Address, October 2006
- Chevron-Texaco Sludge and Varnish Symposium, Phoenix, Ariz., July 2006
- Lubrication Excellence 2006, Columbus, Ohio - Keynote Address, May 2006
- ASTM Lubricant Oxidation Symposium, Norfolk, Va., December 2005
- Water Environment Federation Conference (WEFTEC), October 2005, Washington, D.C.
- STLE Conference, Workshop on Condition Monitoring, Las Vegas, Nev., May 15, 2005
- 34th A&M TurboMachinery Symposium, September 2005, Houston, Texas
- ASTM Oxidation and Testing of Turbine Oils Symposium, D02 Meeting, Norfolk, Va., December 2005
- EPRI Turbine Generator Users Group Annual Meeting, St. Pete, Fla., January 2005
- EPRI Predictive Maintenance Users Group Annual Meeting, St. Pete, Fla., June 2004
- TAPPI Annual Conference, Atlanta, Ga., May 2004
- Nuclear Regulatory Inspectors (NRC) Annual Meeting, Atlanta, Ga., May 2004
- Rio Tinto Asset Management and Reliability Conference, Denver, Colo., September 2003
- EPRI/NMAC Lubrication and Bearing Workshop, Mystic, Conn., June 2003
- IDCON, Predictive Maintenance Conference, Raleigh, N.C., October 2002
- ACSIM 2002 Conference, Cairns, Australia, Keynote address, September 2002
- Caterpillar, SOS Dealer Conference, Peoria, Ill., September 2002
- EPRI, Predictive Maintenance Users Group, Myrtle Beach, S.C., April 2002
- FOMIS Outage Control Conference, Scientech, Clearwater, Fla., August 2002
- STLE Central Illinois Section Meeting, March 2002
- World-Wide Contamination Control Conference - Caterpillar, Peoria, Ill., Keynote Speaker, March 2002
- EPRI Lubrication and Bearing Workshop, Durham, N.C., January 2002
- International Paper Annual Maintenance Conference, Shreveport, La., July 2001
- ExxonMobil Lubrication Conference, Atlanta, Ga., February 2001
- Practicing Oil Analysis, International Conference & Exhibition, Tulsa, Okla., October 2000
- CSI, Emerson Electric, Reliability Week Conference, Atlanta, Ga., October 2000
- International Standards Organization, Plenary



Jim Fitch

Invited Lectureships & Conference Presentations (cont'd.)

- Presentation, TC108/SC5, Nanjing, China, August 2000
- Mobil Oil Lubrication Conference, Boston, Mass., July 2000
- International Paper Maintenance Conference, Atlanta, Ga., June 2000
- Institute of Nuclear Power Operations, Conference, July 2000
- WearCheck International Annual Meeting, France, July 2000
- Exxon Lubrication Conference, New Orleans, La., May 2000
- ASTM Hydraulic Failure Symposium, Lake Tahoe, Calif., December 1999
- Practicing Oil Analysis, International Conference & Exhibition, Tulsa, Okla., October 1999
- EXXON Lubrication Conference, Orlando, Fla., June 1999
- EXXON Advance Lubrication Training Symposium, Houston, Texas, June 1999
- International Conference on Condition Monitoring, Swansea, Wales, April 1999
- STLE Condition Monitoring Seminar, Swansea, Wales, April 1999
- Oklahoma Predictive Maintenance Users Group, Stillwater (OSU), Okla., January 1999
- EXXON Lubrication Conference, Las Vegas, Nev., October 1997
- EXXON Lubrication Conference, Lake Tahoe, Calif., June 1998
- EXXON Lubrication Conference, New Orleans, La., March 1998
- EXXON Lubrication Conference, Richmond, Va., October 1998
- EXXON Lubrication Conference, Minocqua, Wis., September 1997
- Technology Showcase, Joint Oil Analysis Program U.S. D.O.D., Mobile, Ala., May 1998
- ENTERACT '98, Cincinnati, Ohio, May 1998
- Maintenance 2000, World Mining Conference, Tucson, Ariz., April 1998
- Predictive and Preventive Maintenance Conference, Indianapolis, Ind., November 1998
- CSI Reliability Week, Nashville, Tenn., October 1998
- Oil Analysis I and II, Predict Engineering, Johannesburg, South Africa, June 1998
- Mobil Oil Lubrication Conference, Maine, May 1998
- DMSI Predictive Maintenance Conference, Vancouver, B.C., May 1998
- EXXON, Lubrication Conference, Maine, June 1997
- DMSI Predictive Maintenance Conference, May 1997
- Enteract '97, Cincinnati, Ohio, April 1997
- Locomotive Maintenance Officers Association, Winter Meeting, Orlando, Fla., February 1995
- Tribology Society Of India, Principal Speaker, Bombay and New Delhi, September 1995
- JOAP Condition Monitoring International Conference, Pensacola, Fla., November 1994
- Predictive Maintenance National Conference, Atlanta, Ga., November 1994
- Courses on Oil Analysis, Johannesburg, Durban, Cape Town, South Africa, October 1994, November 1995
- International Conference On Condition Monitoring, Swansea, Wales, UK, March 1994
- Symposium On Proactive Maintenance, Riyadh, Saudi Arabia, December 1993
- Enteract '93, Cincinnati, Ohio, September 1993
- 4th International Conference On Profitable Condition Monitoring, Stratford-Upon-Avon, UK, December 1992 (Speaker, Session Chairman, Member of Organizing Committee)
- 1992 Predictive Maintenance Indaba, Johannesburg, South Africa, September 1992 (Keynote Speaker)
- Sixteenth Annual Meeting And Conference, Vibration Institute, Williamsburg, Va., June 1992
- Predictive/Preventive Maintenance Technology, National Conference, Cincinnati, Ohio, September 1989
- International Off-Highway And Powerplant Congress And Exposition, Milwaukee, Wis., September 1989
- Japan Automotive Parts Industry Association (Japia) Conference, Tokyo, Japan, August 1989
- Nato/Econosto Lecture On Contamination Control Technologies, Rotterdam, Netherlands, March 1989
- Joint International Fluid Power Applications Conference & National Conference On Fluid Power, Chicago, Ill., Oct. 1988



Jim Fitch

Invited Lectureships & Conference Presentations (cont'd.)

- National Sae A-6 Aerospace Fluid Power And Control Technologies Conference, Destin, Fla., April 1987
 - International Off-Highway And Power Plant Congress, Milwaukee, Wis., September 1986
 - National Congress On Fluid Power, Detroit, Mich., May 1986
 - National Earthmoving Industry Congress, Peoria, Ill., April 1986
-