

MFPT 



MFPT 2018

**Intelligent Technologies
for Equipment and
Human Performance Monitoring**

MAY 15-17, 2018

*Sheraton Virginia Beach Oceanfront Hotel
Virginia Beach, VA*



Welcome to MFPT 2018!

On behalf of The Society for Machinery Failure Prevention Technology it is our honor to welcome you again to Virginia Beach, Virginia for MFPT 2018. Over the past 50 years, MFPT has been the leading forum for technology, application, and methodology for machinery failure prevention. This has been an exciting year for MFPT. We launched a new Website in March which should allow us to communicate more effectively with our members. Our hope is to make MFPT.org the launching pad for collecting, analyzing and disseminating technical information.

Please be sure to attend the Vendors' Reception and visit the exhibits on Tuesday evening. Thanks to our corporate sponsors and exhibitors we can offer the tutorials, technical sessions, breakfasts, luncheons and session breaks that you have come to expect at an MFPT meeting. This year we have added a special Wednesday Night reception at the Virginia Aquarium and Life Science Center. This is sure to be an exciting and entertaining event as we get to know each other better and also get to see some of the wildlife of this beautiful area in its natural habitat.

Perhaps the most exciting addition this year is our Focus Group Lounge. Focus Groups have long been the backbone of the MFPT. These groups provide guidance for annual meeting program, establish terminology, criteria and terms of reference, provide advisory recommendations and technical expertise and encourage appropriate research and development. Throughout the conference we will be hosting sessions in the Focus Group lounge featuring each of our groups. Please check your schedule and make sure to drop by to any that are interested in! Participating in a Focus Group is a great way to get more involved with others with similar interests in the MFPT.

While you are here, please be sure to take some time to visit Virginia Beach. Take a walk down the boardwalk, stroll on the beach or enjoy some of the restaurants and night spots. Thank you for attending MFPT 2018. We hope that you are challenged by the speakers, make new connections, renew your old contacts and take home new ideas and methods for failure prevention!

Sincerely,

Chris Nemarich
Chris Nemarich
Chairman of the Board of Directors

Amy Wynn
Amy Wynn
Executive Director of MFPT



MFPT Conference Exhibitors

Visit our Exhibit Hall where you can discover the newest technologies, and network with industry leaders.

- American Society for Nondestructive Testing
- British Institute of Non-Destructive Testing
- Connection Technology Center, Inc.
- D2K Technologies
- SpectraQuest, Inc.
- IMI Sensors
- PCB Piezotronics
- Dytran Instruments, Inc.
- Maintenance Technology Systems
- Mechanical Solutions, Inc.
- MFPT
- UE Systems, Inc.



Enter the MFPT 2018 Prize Drawing!

Enter the Exhibitor Prize Draw to win an Amazon Echo Plus.

The Amazon Echo Plus connects to Alexa—a cloud-based voice service—to play music, make calls, set timers and music alarms, ask questions, check traffic and weather, and more—instantly.

Qualify for a chance to win by visiting all the Exhibitors and completing the entry form. Bring the form to the registration desk before the morning break at 10:00 am on Thursday to be entered into drawing.

Winners will be announced at the Thursday Awards Luncheon. Participants must be present to claim their prize!!



installing SCHED app

1. On your Phone's browser visit :
mfpt2018.sched.com

Click the icon at the bottom on the screen to "save" the page



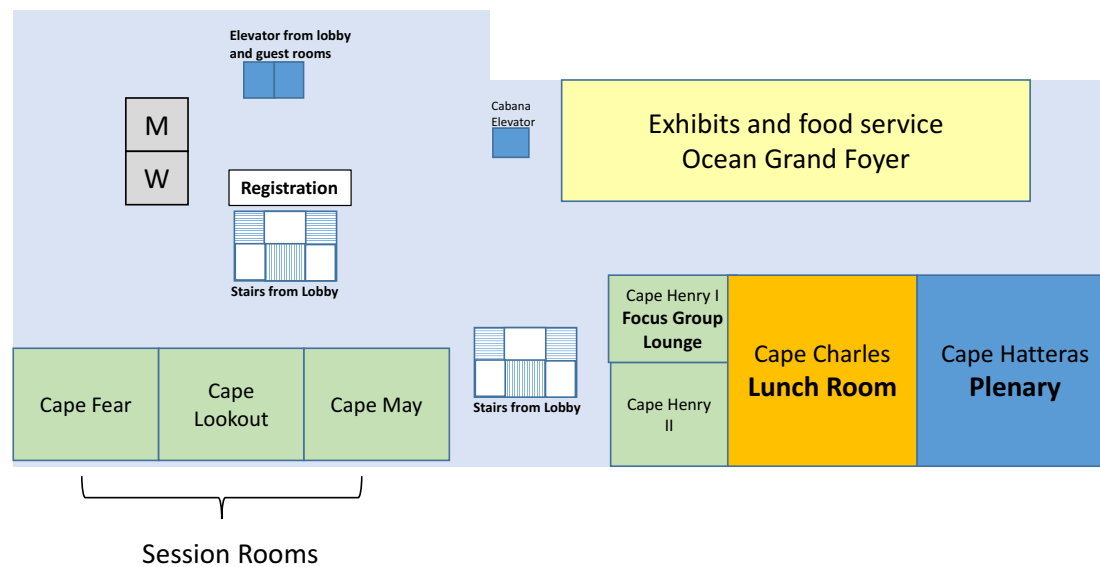
2. Click add to Home Screen



3. The "App" will be saved on your home screen with this icon



floor plan



session chairs



Tuesday

Signal Analysis: Suri Ganeriwala, SpectraQuest, Inc.

Model-Based Diagnostics and Failure Analysis: Preston Johnson, Allied Reliability Group

Failure Analysis and Sensors: Demetrios Tzelepis, TARDEC-Materials Division

Wednesday

Diagnostics & Prognostics and CBM: William Marcher, Mechanical Solutions, Inc.

CMAS and Additive Manufacturing: Marc Pepi, US Army Research Laboratory

Sensors: James "Hoffy" Hofmeister, Ridgetop Group

Thursday

Diagnostics & Prognostics: William Marcher, Mechanical Solutions, Inc.

NDE/SHM and Data:

Electric Equipment Monitoring and Sensors and Pumps: Jason Farmer, HII-Ingalls Shipbuilding

In Memory of Bruce Wallin

March 22, 1959 - April 28, 2018



MFPT Focus Group Chair, Colleague, and Friend

You will be greatly missed

MAY 15 • TUESDAY

Breakfast (7:30am – 8:30am)

8:30am PLENARY	How Can We Bring the Diagnostic Advances of the Past 20 Years to the Mainstream Machine CM Community? Bob Randall, Visiting Emeritus Professor, University of New South Wales Steven Holland, Research Fellow, GM Global R&D			How Can We Bring the Diagnostic Advances of the Past 20 Years to the Mainstream Machine CM Community? Bob Randall, Visiting Emeritus Professor, University of New South Wales Steven Holland, Research Fellow, GM Global R&D		
Morning Break (10:00am – 10:30am)						
10:30am – 11:00am	Cape Fear	Xiaotong Sun, Guangyan Zhao	Multivariate Degradation Dependency Reliability Modeling Based on Copula Function [Student presentation]	Cape Lookout	Ziemowit Dworakowski, Kajetan Dziedzic, Adam Jablonski	Application of Advanced Modulation Maps for Diagnostics of Multi-Stage Epicyclic Gearboxes
10:30am – 11:30am	Cape May	Robert Sayer	Rotor Design Considerations to Prevent Impeller and Premature Bearing Failures in DWDI & SWSI Centrifugal Fans (1 hour session)	Cape Fear	Yufeng Sun	Research on the Reliability Modeling Method of Complex Multi-state System based on UGF [Student presentation]
11:00am – 11:30am	Cape Lookout	Suri Ganeriwala, Jun Yang	Using Synchronous Averaging for Detecting Rolling Element Bearing Defect of a Two Stage Gearbox	Cape Fear	Dongxiang Jiang, Chao Liu, Wenguang Yang, Yizhou Yang	Modeling and Simulation Analysis of Dual-Rotor Vibration System with Multiple Faults [Student presentation]
11:30am – 12:00pm	Cape Lookout	Robert Randall	Use and misuse of the Teager Kaiser Energy Operator (TKEO) for machine diagnostics	Cape May	Peter Liaw, Julian Raphael	Crack Propagation in a Compact Tension Specimen Subjected to Gaussian Random Vibrations with Occasional Overloads

Lunch (12:00pm – 1:30pm)

FOCUS GROUP LOUNGE: Stop by after lunch to learn more about the Failure Analysis Group & Data Management Group						
1:30pm – 2:00pm	Cape Fear	Douglas L. Goodman, James P. Hofmeister, Ferenc Szidarovszky	Degradation Signature Modeling	Cape May	Weiwei Hu, Sufen Li, Yufeng Sun	Modeling Method for Creep-Fatigue Life of Alloy Steels Based on the Stress Relaxation Phenomenon
1:30pm – 2:30pm	Cape Lookout	Nazir	Induction Machines Fault Detection Employing QR Decomposition (1 hour session)	Cape Fear	Daniel Barsky, Miri Erihov, Eduard Rudyk	Crowdsourcing Machinery Diagnosis
2:00pm – 2:30pm	Cape May	Xiaotong Sun, Guangyan Zhao	Reliability Modeling of Degradation Process by Considering Natural Degradation Mutation and Impact Damage Recovery [Student presentation]	Cape Fear	Mantosh Bhattacharya	Optimized Testing Campaign and Creation of Onerous Baseline Data of Centrifugal Compressor - A Proposal to Equipment Manufacturer
2:30pm – 3:00pm	Cape Lookout	Nazir	Motor Bearing Fault Detection and Health Monitoring using Motor Current Signature Analysis (MCSA)	Cape May	Lei Li, Zhiqiang Li, LELE QI	Finite Element Simulation Research on Thermal Reliability of BGA Lead-Free Solder Joint

Afternoon Break (3:00PM - 3:30PM)

3:30pm – 4:00pm	Cape Fear	Madhumitha Ramachandran, Zahed Siddique	A Data-Driven Based Prognostics Approach to Predict the Performance Degradation of Rotary Seal [Student presentation]	Cape Lookout	Ruoyu Li, Jae Yoon	A Novel Approach for Stress Cycle Analysis based on Empirical Mode Decomposition
4:00pm – 4:30pm	Cape Fear	Jordan Jameson, Gregory W. Vogl, Thomas Winnard	Comparative Analysis of Bearing Health Monitoring Methods for Machine Tool Linear Axes	Cape May	Douglas L. Goodman, James P. Hofmeister, Wyatt Pena, Robert Wagoner	Improved RotoSense for Rolling Stock: Locomotives and Cars
4:30pm – 5:00pm	Cape Lookout	Portia Banerjee, Jim Benson, Yiming Deng, Nathan Driessen, Lalita Udpa	Confidence Assessment in Automated Classification of Nondestructive Evaluation (NDE) Data	Cape May	William D. Marscher, Chad Pasho, Michael J. Platt	Using a High Speed Video Camera System for Vibration Assessment

Exhibitor Networking Reception; Ocean Grand Foyer

Student Mingling Session; Cape Henry I

MAY 16 • WEDNESDAY

Breakfast (7:30am – 8:30am)

8:30am PLENARY
The Interface for Intelligence: The Importance of Operationalizing Analysis of Production Assets in the Industrial Internet of Things Edward Cuoco, Vice President, ThingWorx Analytics
Performance Dr. Mark Derriso, CTC Lead and Technical Advisor, Air Force Research Laboratory
Human Monitoring Systems for Health, Fitness &

Morning Break (10:00am – 10:30am)

10:30am – 11:00am	Cape Fear	Chance Kleineke, Nilimb Misal, Michael Santucci	An Application of Pattern Anomaly Detection Methods to Fleet-wide Asset Level Diagnostics
	Cape Lookout	Robert Gamble, Mark Graybeal, Marc Pepi, Jeffrey Swab	Sand-phobic Thermal Barrier Coatings Materials and Processing for Life Extension of Power Generation Components in Austere Environments
11:00am – 11:30am	Cape May	Vinod Agarwala	Damage Detection and Monitoring
	Cape Fear	Eric Bechhoefer, Ed Spence	Generation of a Tachometer Signal from a Smart Vibration Sensor
	Cape Lookout	Anindya Ghoshal, Jian Luo, Muthuvel Murugan, Andy Nieto, Michael Walock, Andrew Wright	Sand Infiltration and CMAS Development within Dense Ytria-Stabilized Zirconia Pellets
11:30am – 12:00pm	Cape Fear	Xiaoxi Ding, Qingbo He, Yimin Shao	A Sub-space Clustering Chart Using Healthy Data for Featureless Bearing Performance Degradation Assessment [Student presentation]
	Cape Lookout	Joseph Shumaker	Environmental Particulate Collection and Analysis
	Cape May	Yu De Quan	Application of Sensor Design in Nitrogen Supply System for Space Station [Student presentation]

Lunch (12:00pm – 1:30pm)

FOCUS GROUP LOUNGE: Stop by after lunch to learn more about the Sensor Group & Signal Analysis Group

PANEL SESSION: Human Monitoring Systems Challenges and Applications

Afternoon Break (3:00PM - 3:30PM)

1:30pm – 3:00pm	PANEL SESSION: Human Monitoring Systems Challenges and Applications		
	FOCUS GROUP LOUNGE: Stop by after lunch to learn more about the Sensor Group & Signal Analysis Group		
3:30pm – 4:00pm	Cape Fear	Gurpreet Mohaar, Junda Zhu	Haul Truck Final Drive Incipient Fault Detection Using On-board Sensors, Vibration Measurements and Oil Testing Data
	Cape Lookout	Marc Pepi	Point of Need Manufacturing for Failed Components/repair
	Cape May	Pete Sopcik, Ed Spence	Enabling Elements of an Embedded Smart Sensor for the Machine OEM
4:00pm – 4:30pm	Cape Fear	Yimin Shao, Keming Zhang	Research on Dynamic Response of Planetary Gear Train with Spalling Fault [Student presentation]
	Cape Lookout	Christian Gobert	ARL Metal Add. MFG Capabilities/Applications
	Cape May	Anthony Desimone, Suri Ganeriwala	A Comparison of New High Frequency Ultra-Low Noise MEMS Accelerometer with Conventional Piezoelectric Accelerometer for a Two Stage Gearbox Defects Diagnosis
4:30pm – 5:00pm	Cape Fear	Douglas L. Goodman, James Pierson, Ferenc Szidarovszky	Degradation Modeling: From Condition-based Data Signatures into Functional Failure Signatures
	Cape Lookout	Rob Jackson	A Report on the 'Low Cost' Additive Manufacturing Priorities in US and UK Military Propulsion Systems
	Cape May	Anthony Desimone, Suri Ganeriwala	Application of a New High Frequency Ultra-Low Noise MEMS Accelerometer for a Wind Turbine Simulator

Networking Reception At Virginia Aquarium & Marine Science Center; See registration desk to buy tickets!

MAY 17 • THURSDAY

Breakfast (7:30am – 8:30am)			
	Cape Fear	Renata Klein	Fault Type Characteristics in Gears
8:30am – 9:00am	Cape Lookout	Mohammad Azarbayejani, Chase Beckstead, Summer Little	Application of Piezoelectric MFC Sensors and Fibre Bragg Grating Sensors in Structural Health Monitoring of Composite Materials [Student presentation]
	Cape May	Humberto Lopez, Chris Nemarich	Arc Fault Monitoring
9:00am – 9:30am	Cape Henry II	Eric Bechhoefer, Ed Spence	Comprehensive Condition Monitoring Analysis for Power Plant Boiler Circulating Pumps
	Cape Lookout	Ankit Patel	Health and Usage Monitoring: Design of experiment & monitoring techniques [Student presentation]
	Cape May	Yu De Quan	The Application of the Condition-Based Maintenance for Lithium Battery in the Space Station [Student presentation]
	Cape Henry II	Thomas Hazelwood, Blake van Hoy	Failure Analysis of a Primary Reactor Cooling Pump Using Modal and Vibration Analysis
	Cape Fear	Mark Walker	New Advances Associated with The Application of Advanced Health and Prognostics Management in Biologics Manufacturing
9:30am – 10:00am	Cape Lookout	Renata Klein	Using Optical Fiber Sensors for Detecting Natural Fault in Ball Bearing during Endurance Test
	Cape May	Ori Negri, Eduard Rudyk	The Magnetic Analysis of Electrical Motors
	Cape Henry II	Ed Spence, David Siegel	Pump Vibration Analytics Case Study and the Need for More Deployable Instrumentation
Morning Break (10:00AM - 10:30AM)			
	Cape Fear	Mantosh Bhattacharya	Slow Roll Run out Problem of Rotor Genuine or Benign
10:30am – 11:00am	Cape Lookout	Yiming Deng, Mohamood Haq, Oleksii Karpenko, Lalita Udpa	Multiscale System for Rapid NDE of Advanced Composite Products
	Cape May	Preston Johnson	Implementation Lessons Learned in the Condition Monitoring Industrial Internet of Things Era
10:30am – 12:00pm	Cape Henry II	Tony Barlow, Suri Ganeriwala	Pump Cavitation (1.5 hour tutorial)
11:00am – 11:30am	Cape Fear	Josh Gelinske, Nathan Schneck, Jesse Trana	Grain Elevator Quality Assurance using Deep Convolutional Neural Network
	Cape Lookout	Manigandan Kannan, Gregory Morscher, Michael Presby, Sulochana Shrestha, Yogesh Singh	Use of Non Destructive Techniques to Analyze the Fatigue of Metals [Student presentation]
	Cape May	Dongxiang Jiang, Nanfei Wang	Prediction of Vibration Responses of a Dual-Rotor-Blade-Casing System with Blade-Tip Rubbing
11:30am – 12:00pm	Cape Fear	Xiaotong Sun, Jie Xuan, Guangyan Zhao	System Reliability Modeling and Analysis of Alternating Work of Systems Based on Dynamic Fault Tree [Student presentation]
	Cape Lookout	Portia Banerjee, Yiming Deng, Mohamood Haq, Rajendra Prasath Palanisamy, Lalita Udpa	Particle Filtering Techniques for Prognosis of Fatigue Delamination Growth Using Multi-Sensory NDE Methods
AWARDS LUNCHEON: Annual MFPT Awards, Exhibitor Prize Drawing, Induction of MFPT Fellow			
PANEL SESSION: Putting Diagnostic Technology of Past 20 Years into Tomorrow's Condition Monitoring Practice; Diego Galar, Professor of Condition Monitoring Division of Operation and Maintenance Engineering, Luleå University of Technology with John Lacontara (Drexel), and Professor Yimin Tchoa (Chongqing)			
1:00pm – 2:30pm			

schedule at-a-glance

MFPT Conference Schedule

TUESDAY

7:30 - 8:30 AM	Breakfast
8:30 - 10:00 AM	Plenary Session
10:00 - 10:30 AM	Break
10:30 AM - 12:00 PM	Concurrent Sessions
12:00 - 1:30 PM	Lunch
1:00 - 1:30 PM	Focus Group Presentations: Failure Analysis and Data Management
1:30 - 3:00 PM	Concurrent Sessions
3:00 - 3:30 PM	Break
3:30 - 5:00 PM	Concurrent Sessions
5:00 PM	Exhibitor Networking Reception
6:00 PM	Student Mingling Session

WEDNESDAY

7:30 - 8:30 AM	Breakfast
8:30 - 10:00 AM	Plenary Session
10:00 - 10:30 AM	Break
10:30 AM - 12:00 PM	Concurrent Sessions
12:00 - 1:30 PM	Lunch
1:00 - 1:30 PM	Focus Group Presentations: Senors Technology Signal Analysis
1:30 - 3:00 PM	Special Panel Discussion
3:00 - 3:30 PM	Break
3:30 - 5:00 PM	Concurrent Sessions
6:00 PM	Networking Reception at the Virginia Beach Aquarium

THURSDAY

7:30 - 8:30 AM	Breakfast
8:30 - 10:00 AM	Concurrant Sessions
10:00 - 10:30 AM	Break
10:30 AM - 12:00 PM	Concurrent Sessions
12:00 - 1:30 PM	Awards Luncheon
1:00 - 2:00 PM	Panel Session

