

Virtual Classroom Edition

This program is based on MD&A's world recognized open enrollment program, currently not offered due to COVID-19 concerns. The program has been shortened from 36 to 24 hours but covers the same range of topics.

January 25-28, 2021

Hours are 9:00 AM – 4:00 PM
(Central Time Zone)

Participants will receive a 3-ring binder with presentation material copies.



presented by
David V. Hagenbuch

About the Program

Mechanical Dynamics & Analysis LLC Phone: 518-399-3616



Steam Turbine Fundamentals: 4 Days (24 hours)

This course is ideal for plant operations, maintenance, and engineering personnel interested in gaining broad understanding of turbine-generator design, operation, troubleshooting and maintenance. It is ideal for new engineers and/or those who are new to turbine-generator technology. The program is based on a large steam turbine design by GE, but several references to different OEMs will be made. Participants will learn about turbine-generator design and construction and will be able to identify major components using correct terminology. Auxiliary systems will be described, and students will review one-line diagrams and consider typical problems and corrective responses.

Control system philosophy and design overview will give participants a clear understanding of speed and load control. The starting and loading chart and instruction will be discussed and participants will work through interactive exercises to practice using this important tool. An overview of protective systems including alarm and trip functions will further the student's appreciation for safe operation and what to do under alarm or trip conditions. A significant portion of time will be spent reviewing and discussing correct response to each alarm and trip function. The recommended periodic testing procedures will be reviewed and the reasons behind each explored.

Abnormal operating conditions such as high vibration, water induction, bearing oil/metal temperature excursions, and generator faults will be reviewed. Emphasis will be placed on the underlying causes and prevention whenever possible and how to deal with them properly when they do occur. Protection of personnel and equipment will be given high priority throughout the program.

Finally, an overview of routine and periodic maintenance will round out the program. Students will be instructed on typical outage workscopes including subcontracting practices. They will learn the importance of sound maintenance and operating practices and their impact on outage intervals, efficiency, and equipment life.

Instructor – David V. Hagenbuch

David Hagenbuch (“hay-gen-book”) is a mechanical engineer with forty years in the power generation industry. He holds the BS degree in Mechanical Engineering from Lehigh University and the MBA degree from New York University.

Dave's career highlights include 23 years with GE in a variety of roles. He is a certified large steam turbine startup engineer and has been on dozens of new unit startups and hundreds of restarts. He started a customer training unit for the US market catering primarily to utilities and IPP's during the combined cycle boom of the early 1990's. After that he managed GE's world-renowned Field Engineering Program.



Dave started his own consulting practice in 2003 to help clients improve productivity. Much of Dave's activities were involved in technical curriculum/course design and delivery, and knowledge management projects, as well. One of his major clients was MD&A. In January 2010, Dave joined MD&A on a full-time basis to provide focus and resources to offer world class customer training programs.

System Requirements



Mechanical Dynamics & Analysis LLC Phone: 518-399-3616

Steam Turbine Fundamentals – VIRTUAL CLASSROOM EDITION

This is a virtual training program. We utilize the **GoToTraining** software platform which enables us to share desktop, video, documents, and conduct breakout activities, polling and tests. The virtual experience will be interactive. See requirements below.

System Requirements for Attendees

You can attend a training from anywhere, anytime using a compatible computer or mobile device!

Join by downloading on Windows or Mac

To get the most out of GoToTraining, you can download and install the full-featured desktop software on your Windows and Mac computer.

Operating system	Windows 7 – Windows 10 Mac OS X 10.9 (Mavericks) - macOS Mojave 10.14
Internet connection	1 Mbps or better (broadband recommended)
Software	GoToTraining desktop app JavaScript enabled
Hardware	2GB or more of RAM Microphone and speakers (headphones recommended) Webcams (to use HDFaces)

To save you time, we've designed the desktop software to automatically install itself when you join a session. When you click Download below, you will be launched into the waiting room for a test meeting. Note that this is not a live session, so as soon as you see the confirmation screen appear you can exit.



[Windows](#)

Download



[Mac](#)

Download

System Requirements (continued)



Mechanical Dynamics & Analysis LLC Phone: 518-399-3616

Steam Turbine Fundamentals – VIRTUAL CLASSROOM EDITION

Join from a web browser (no download required)

Using the GoToTraining Instant Join app, you can join trainings entirely within your web browser (rather than installing and using the GoToTraining desktop app). Learn more.

Operating system	Windows/Mac Linux / Ubuntu Google Chrome OS (Chromebook)
Web Browser	Google Chrome (most recent 2 versions) Mozilla Firefox (most recent 2 versions) (Linux only)
Internet connection	1 Mbps or better (broadband recommended) 3G connection or better (WiFi recommended for VoIP audio) for Chromebooks
Software	None
Hardware	Microphone and speakers (headset recommended**)

Note: Most devices have built-in speakers, but you will get much better audio quality while using VoIP if you use a headset. You can also use your phone to dial in to the audio connection.

Join from iOS

You can use the GoToTraining app for iOS to join trainings and present from anywhere!

Operating system	iOS 9 - iOS 12
Device	iPhone 4s or later iPad 2 or later
Internet connection	3G connection or better (WiFi recommended for VoIP audio)
Software	Free GoToTraining App from the App Store
Hardware	Microphone and speakers (headset recommended**)

Join from Android

Download the GoToTraining app for Android to schedule and join trainings from anywhere.

Operating system	Android 5 (Lollipop) - Android 9 (Pie)
Internet connection	3G connection or better (WiFi recommended for VoIP audio)
Software	Free GoToTraining App from the Google Play Store
Hardware	Microphone and speakers (headset recommended)

Note: Most devices have built-in speakers, but you will get much better audio quality while using VoIP if you use a headset. You can also use your phone to dial in to the audio connection.

Registration Information (Virtual Classroom / January 25-28, 2021)

Pricing:

- \$1,695 ea. Group Rate (3 or more from the same company, registering together)
- \$1,895 ea. Single Rate (1-2 Registrants on or before January 7, 2021)
- \$1,995 ea. Late Registration Rate (after January 7, 2021)

Payment Methods Accepted:

Payment is due upon registration. The following methods of payment are accepted.

- Most major credit cards* (**If single purchase limit is less than fee, please call!**)
- Company/personal check made payable to Mechanical Dynamics & Analysis LLC
- Purchase Order. Invoice will be issued at time of registration and due upon receipt.

*American Express cards are not accepted

All registrations are completed on-line by visiting our secure website:

<https://www.mdaturbines.com/events/2021-virtual-steam-turbine-fundamentals/>

Regular Registration Closes January 7, 2021

Cancellation Policy

If you cannot attend the session you registered for, you may send a substitute. Please contact MD&A regarding substitutions. There is a \$150 fee for those who cancel 31 days or more from the date of the event and do not send a substitute. Those who cancel 30 days or less from the date of the event and do not send a substitute will be charged 50% of the registration fee.

International clients are required to pay in advance by credit card.

MD&A reserves the right to cancel seminars due to low attendance.

STEAM TURBINE FUNDAMENTALS

GENERAL QUESTIONS should be directed to David Hagenbuch in our Palatine, IL office: 847-705-0826, or email dhagenbuch@mdaturbines.com

ON-LINE REGISTRATION QUESTIONS should be directed to Kelly Plunkett in our Latham, NY office: 518-399-3616, or kplunkett@mdaturbines.com