

ROTATING MACHINERY BOOTCAMP COMPRESSORS & PUMPS

A THREE-DAY WORKSHOP

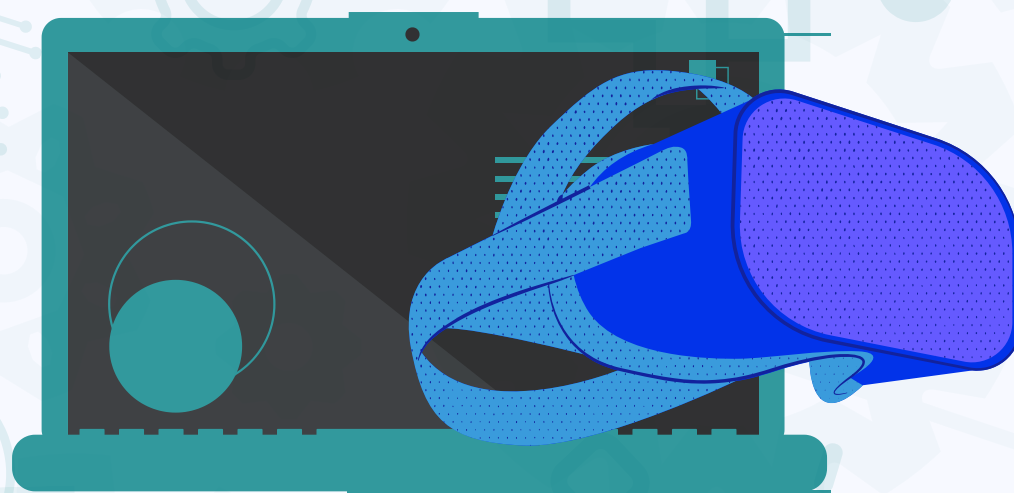
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भारी उद्योग मंत्रालय
MINISTRY OF
HEAVY INDUSTRIES

Course developed as part of the SamridDHI Skill-building Initiative of Ministry of Heavy Industries, under mentorship of Indian Institute of Science (IISc), Bengaluru.

Faculty Mentor : Prof. Pramod Kumar, Dept. of Mechanical Engineering, IISc



Online
Course Material
Available for
90 Days

All participants will
receive a certificate*

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Plot No:- 273, Sector-10, Kharghar,
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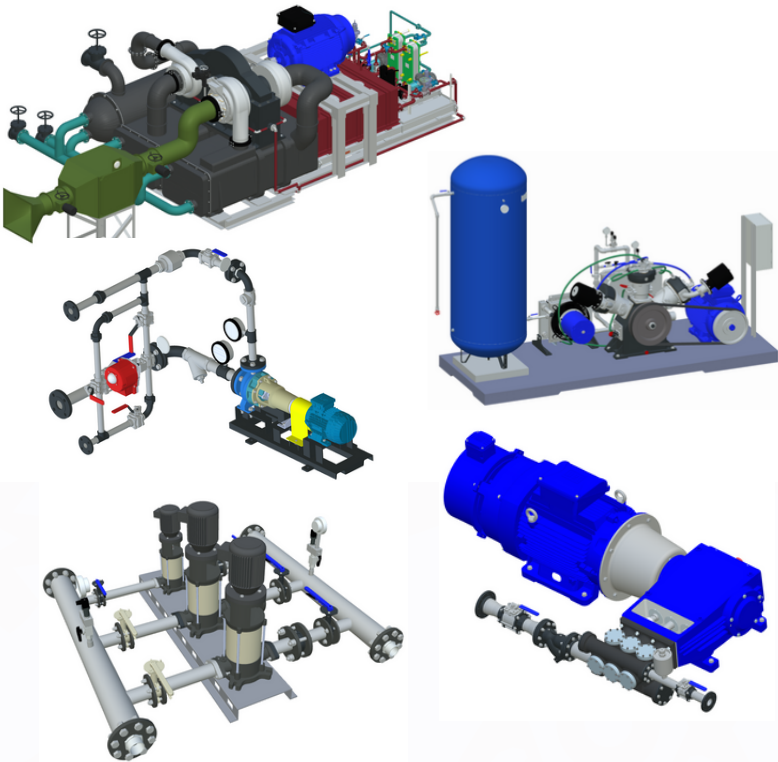
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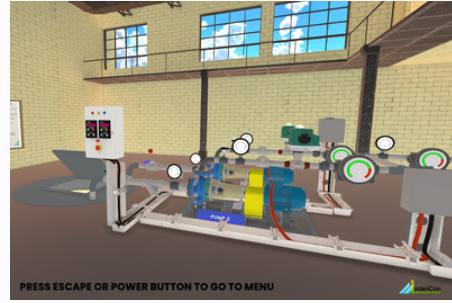
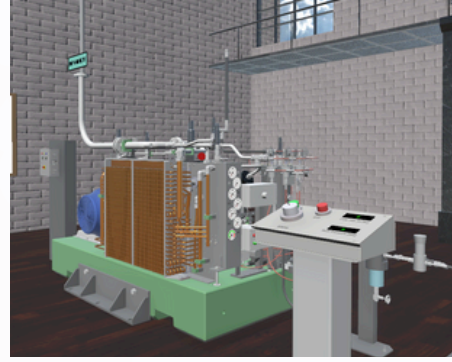
* A Participation Certificate will be provided to all attendees, and a Completion Certificate will be awarded to participants who qualify in the online assessment test



HIGHLIGHTS



3D Interactive Models



Virtual Reality



Hands-on tutorial



BACKGROUND

The Compressor and Pump Bootcamp workshop offers a comprehensive foundation on compressors and pumps in industrial applications. Starting with the fundamentals of rotating machinery, the course explores everything from basic unit systems to rotor dynamics.

Building on this foundation, participants learn about compressor systems, including compressor maps, selection, and sizing. The course covers essential procedures such as pre-start checks, startup and shutdown processes, fail-safe conditions, performance testing standards, control methods, and the compressor selection process.

The focus then shifts to pump technology, encompassing definitions, purposes, types, classifications, and specialized pumps. Participants delve into fluid dynamics and pump performance parameters, including flow rate, head, efficiency, and net positive suction head (NPSH). Additionally, the course covers performance curves, materials of construction, system design considerations, pump selection, fault diagnostics, and troubleshooting.

This integrated approach ensures participants gain comprehensive skills in both pumps and compressors for various industrial settings.



OBJECTIVE

- Understand rotating machinery basics, including rotor dynamics and design.
- Identify critical speeds and methods to avoid resonance issues.
- Learn about pump types and their applications.
- Use pump system maps to analyze performance.
- Optimize pump performance under off-design conditions.
- Grasp gas compression principles and their impact on compressors.
- Interpret key compressor performance metrics.
- Consider factors for selecting and sizing compressors.
- Explore strategies for optimizing compressor control.



KEY TAKEAWAYS

- Understand rotating machines, including types, mechanics, dynamics, materials, and instrumentation.
- Explore compressor applications in industries and basic gas compression principles.
- Assess compressor performance metrics like capacity, power, and efficiency for suitability.
- Consider factors for compressor selection, sizing, and control to ensure optimal performance.
- Classify pumps by their principles, construction, and applications for optimal selection.
- Analyze pump performance - flow rate, head, power consumption, and efficiency for better operation.
- Manage pumps under off-design conditions and develop effective strategies.



SCHEDULE

DAY 1

TIME	ACTIVITY	TIME	ACTIVITY
09:00 - 09:15	Inauguration	13:15 - 14:00	Lunch Break
09:15 - 10:45	Foundation to Rotating Machinery Concepts (Part-1)	14:00 - 15:30	Foundation to Rotating Machinery Concepts (Part-3)
10:45 - 11:00	3D Interactive Visualization of Foundation to Rotating Machinery	15:30 - 16:00	Foundation to Rotating Machinery Computations
11:00 - 11:15	Tea Break	16:00 - 16:15	Tea Break
11:15 - 13:15	Foundation to Rotating Machinery Concepts (Part-2)	16:15 - 17:15	VR Demo
		17:15 - 17:30	Preview of Day 2

DAY 2

TIME	ACTIVITY	TIME	ACTIVITY
09:00 - 09:15	Recap of Day-1	13:15 - 14:00	Lunch Break
09:15 - 10:30	Compressor Concepts (Part-1)	14:00 - 15:30	Compressor Concepts (Part-3)
10:30 - 11:00	3D Interactive Visualization of Compressors	15:30 - 16:00	Compressor Computations (Part-2)
11:00 - 11:15	Tea Break	16:00 - 16:15	Tea Break
11:15 - 12:45	Compressor Concepts (Part-2)	16:15 - 17:15	Compressor Basics VR
12:45 - 13:15	Compressor Computations (Part-1)	17:15 - 17:45	Compressor Startup VR
		17:45 - 18:00	Preview of Day 3

DAY 3

TIME	ACTIVITY	TIME	ACTIVITY
09:00 - 09:15	Recap of Day-2	13:15 - 14:00	Lunch Break
09:15 - 10:30	Pump Concepts (Part-1)	14:00 - 15:30	Pump Concepts (Part-3)
10:30 - 11:00	3D Interactive Visualization of Pumps	15:30 - 16:00	Pump Basics VR
11:00 - 11:15	Tea Break	16:00 - 16:15	Tea Break
11:15 - 12:45	Pump Concepts (Part-2)	16:15 - 16:45	Pump Startup VR
12:45 - 13:15	Pump Computations	16:45 - 18:15	Assessment
		18:15 - 18:30	Closing Remarks

For Venue-related Enquiries:

Ph: +91 8805022148
Email : cko@reliabilitydiagnostic.com

For Registration-related Enquiries:

Ph: +91 6361328813
E-mail: skilling@modelicon.in

