

#### Dr. D. Y. Patil Educational Federation's Dr. D. Y. Patil College of Engineering & Innovation Approved by AICTE, Affilated to SPPU Pune

Sr. No. 27/1/A/2C, Varale Campus, Near Talegaon Railway Station, Tal. Maval, Dist. Pune - 410 507. Ph. : 020 - 27400802, 3, 4, 8, Website : dypatilef.com, dypatilcoei.com, E-mail : principal@dypatilef.com, info@dypatilef.com

Dr. D. Y. Patil Founder Dr. D. Y. Patil Group Dr. Sushant V. Patil President

# **Mechanical Engineering Department**

# TRAINING PROGRAM REPORT

- Title: Introduction to CFD
- Name of Resource Person: Prof. S. M. Gaikwad, Army Institute of Technology
- Name of Event Coordinator: Prof. M. N. Pohare
- Date and Time: 06/08/2021 10:30 AM To 12:30 PM
- Venue: Online Google Meet Platform and YouTube live
- Total Number of participants: 28

## What is CFD?

Computational Fluid Dynamics (CFD) is the analysis of fluid flows using numerical solution methods. Using CFD, you are able to analyse complex problems involving fluid-fluid, fluid-solid or fluid-gas interaction. Engineering fields where CFD analyses are frequently used are for example aerodynamics and hydrodynamics, where quantities such as lift and drag or field properties as pressures and velocities are obtained. Fluid dynamics is involved with physical laws in the form of partial differential equations. Sophisticated CFD solvers transform these laws into algebraical equations and are able to efficiently solve these equations numerically.

## How does CFD work?

A CFD analysis basically consists of the following three phases:

## Pre-processing

In this phase the problem statement is transformed into an idealized and discretized computer model. Assumptions are made concerning the type of flow to be modelled (viscous/inviscid, compressible/incompressible, steady/non steady). Other



#### Dr. D. Y. Patil Educational Federation's Dr. D. Y. Patil College of Engineering & Innovation Approved by AICTE, Affilated to SPPU Pune

Sr. No. 27/1/A/2C, Varale Campus, Near Talegaon Railway Station, Tal. Maval, Dist. Pune - 410 507.

Ph.: 020 - 27400802, 3, 4, 8, Website: dypatilef.com, dypatilcoei.com, E-mail: principal@dypatilef.com, info@dypatilef.com

Dr. D. Y.	Patil
Founder Dr. D. Y.	Patil Group

Dr. Sushant V. Patil President

processes involved are mesh generation and application of initial- and boundary conditions.

#### Solving

The actual computations are performed by the solver, and in this solving phase computational power is required. There are multiple solvers available, varying in efficiency and capability of solving certain physical phenomena.

#### Post-processing

Finally, the obtained results are visualized and analyzed in the post processing phase. At this stage the analyst can verify the results and conclusions can be drawn based on the obtained results. Ways of presenting the obtained results are for example static or moving pictures, graphs or tables.

#### Ready to start your CFD analysis?

We hope you found this article to be both informative and useful. If you like to read more on the subject, we recommend to read our article: <u>Bottlenecks in CFD analysis</u>. Should you have any questions or do you want to know more about Femto Engineering's CFD projects, please contact us.

Outcome: After the end of this session students are\_

- > Able to create modal geometry and apply Ansys tools.
- > Able to operate advanced futures of Ansys.
- > Able to validate experiments results.



**Ph.** : 020 - 27400802, 3, 4, 8, **Website** : dypatilef.com, dypatilcoei.com, **E-mail** : principal@dypatilef.com, info@dypatilef.com

Dr. D. Y. Patil Founder Dr. D. Y. Patil Group

#### Dr. Sushant V. Patil President

#### Photograph No: 01 Screenshot of slide presentation



#### Photograph No: 02 Screenshot of Google Meet attendance

<ul> <li>(1) What × (38) Train</li> </ul>	🗙 🞑 Mee 🖣 🗙 M Sent	Ma 🗙   🖿 Nifty Op 🗙   🗖	Introduc 🗙 🛛 M Agenda 🗙	▼ About F) ×   ▼ * 16271.	×   Option ×   +	o - o ×
$\leftrightarrow$ $\rightarrow$ C $\blacksquare$ meet.goog	gle.com/aie-bmux-pgo				☆ 6	💋 💿 🗯 🗐 👷 E
🗰 Apps 🕝 Google 🚺 Wha	atsApp 附 Inbox (74) - mange	YouTube Open Mar YouTube	rket, S 🗨 Dashboard / Kite ୟ	F Fyers 🚾 Portfolio & Watchli	. 🔕 NSE - National Stoc	» 🔝 Reading list
You have extensions installe	ed that may affect the quality c	f your call				
Mangosh Poharo	, sahay Gakwad	Prashan Kotkar	Deepali Sahap	Nitin Mohite	HARISH LOHAR	* mukesh kanade
Siddharth Suman	Rishi Bhalerao	HOD Mechanical	Mahesh Pawar	Kushabh Vidya Baliram	Ritesh salunke	RAJESH WAGHMARE
sachin ambekar	Suresh Neharkar	Rohit purandare	S Satyajit Dhore	K G Ganesh Salunke	Kr. Vidyadhar Dixit	atul lokhande
	Ganesh Mhaske	Kaveri kadam	PRATHAMESH NAIK	Siddharth Suman	You	
11:06 AM   aie-bmux-pgc		<b>(</b>		•		0 x e a
・ ア Type here to searc	ch	o 🗄 🥫 🌖	🐖 🦛 💀 📰		🧼 26°C Light rain \land 👄 <sup>t</sup>	도 d») ENG 11:06 06-08-2021 🐻

Prof. M. N. Pohare Event Coordinator Prof. R. Y. Daspute HOD Mechanical Dr. S. N. Mali Principal