

# COMPUTATIONAL FLUID DYNAMICS (CFD)

Let us simulate the world...

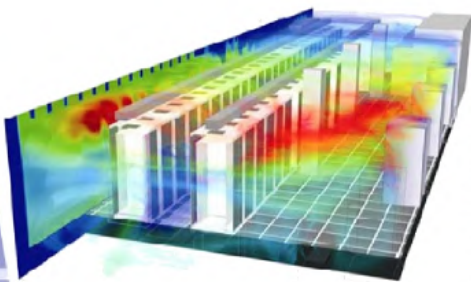
## Who we are?

We, “**TEFUGEN Technologies Private Limited**”, a dynamic organization have a major objective to become successful in providing solutions and services all over the world in the best manner. We provide various solutions & services such as CFD analysis, FE analysis, Automation, IT & Security services in open source world to name a few. We are using the most effective techniques for providing solutions to engineering problems. Our main aim is to exceed the expectations of the customers by offering solutions with best practices in a timely manner. We never compromise ourselves in achieving our goals.



## Computational Fluid Dynamics (CFD)

CFD is a branch of fluid mechanics used to analyze & solve the problems in the flow of fluids with the help of principles, calculations & algorithms. Computational Fluid Dynamics (CFD) has seen dramatic growth throughout the world over the last several decades. CFD modeling is a key tool used to analyze flows and their interaction with complex surfaces in pipes, manifolds, separators, etc. This technology has widely been applied to various engineering applications such as Automobile, Aircraft design, Civil Engineering and so on. It provides an accurate representation of the expected flow profiles, which can be used to predict the product performance. Many traditional methods using physical prototypes will be complemented or may even be replaced by this approach.



## CFD Advantages

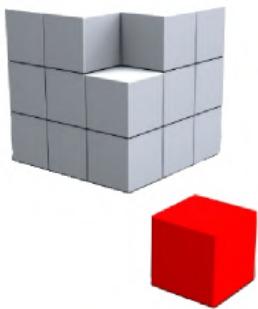
- ▶ Cost effective
- ▶ Reliable results
- ▶ Design evaluation
- ▶ Performance evaluation
- ▶ Reduced turn around time
- ▶ Effective simulation of flow in fluids
- ▶ Unlimited level of detail in the system
- ▶ Virtual modeling with powerful visualization capabilities
- ▶ Possibility to analyze the experiments which are difficult & dangerous





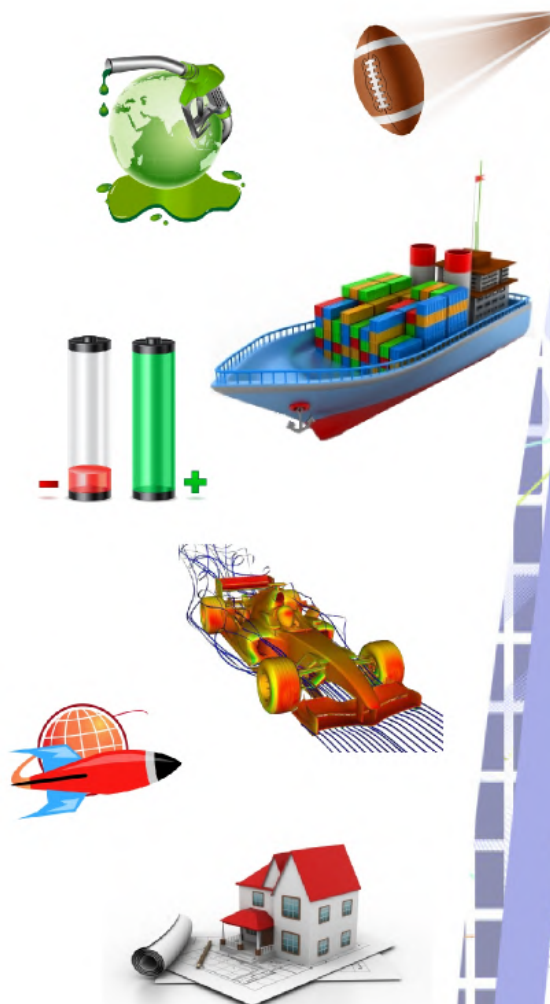
## Why TEFUGEN is Unique?

We are more passionate and dynamic towards developing innovative computational methods which stands as our unique strength. We are constantly developing and validating our computational methods and set the best practices industry wise, thereby providing the best solutions to our clients. Teaming with young and high spirited professionals having wide experience and knowledge in the area of fluid dynamics, we are always able to deliver optimized solutions reliably and efficiently with proven results. We analyze the problems in depth and provide the best possible solutions. We treat the product design of every company as their intellectual right and exercise a high level of confidentiality while working on it.



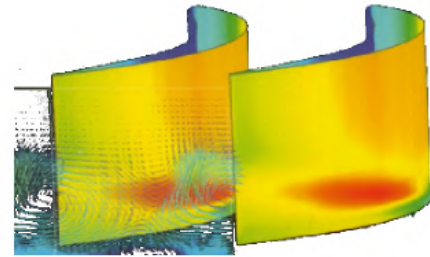
## Industries we serve

- ▶ Aeroacoustics
- ▶ Aerospace & Defense
- ▶ Architecture
- ▶ Automotive & Transportation
- ▶ Battery Modeling
- ▶ Biomedical
- ▶ Casting
- ▶ Civil
- ▶ Consumer & Medical Appliances
- ▶ Electronics & Semi-conductors
- ▶ Energy & Utilities
- ▶ HVAC, Building Services & Clean Room
- ▶ Marine
- ▶ Process Industries
- ▶ Sports
- ▶ Turbomachinery

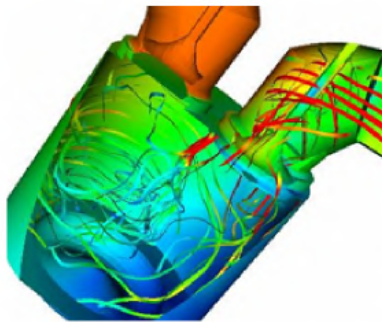


## Aerospace & Defense

Right from wing blade analysis to cabin air-conditioning, optimization is performed using CFD for faster visualization. CFD had been evolved quite considerable to handle complicated aerodynamics which is pivotal in performance analysis of given profile. We specialize in aerofoil profile study and thereby giving an edge in turbomachinery simulations.



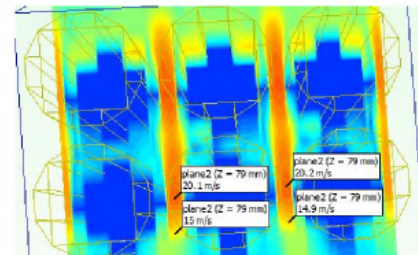
## Automotive & Transportation



CFD finds immense scope for evaluating vital parameters in transportation sector. We excel in handling varying analysis for automotive, heavy equipment and rail transportation. Under hood thermal management is key for uninterrupted long distance operation, actual testing adds significant time and cost for an automotive maker in this competitive market environment. IC combustion are better simulated than tested in terms of cost. CFD analysis is highly reliable for combustion and emission simulations.

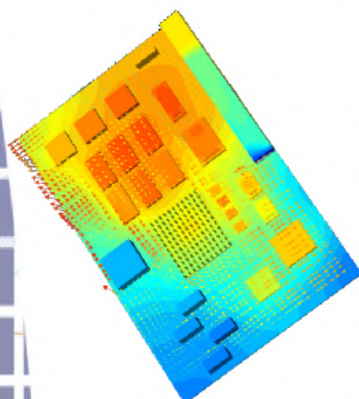
## Consumer & Medical Appliances

Recently the scope for fluid flow study has drastically grown for consumer appliances. The industries understood the necessity of CFD which is to be applied to even small consumer products since CFD analysis can swiftly get the required results that help the consumer appliances industries to evaluate and benchmark the products with their peers. Similarly electronics density in medical appliances have grown multi-folds requiring the need for maintaining optimum temperatures. We work closely with the consumer and medical appliances industries to help them as fluid specialists to develop better products.



## Electronics & Semi-conductors

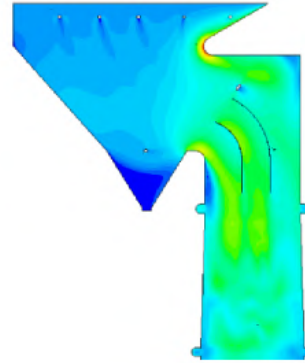
In the era of super computers and high power electronics, the watt loss footprint per feet had drastically increased demanding the need for reliable electronics cooling which has become stringent to keep the chips working under safe operating junction temperatures. Many concept design and analysis for electronic packaging were carried out successfully matching U/L and NEMA standards, optimal cooling needs can be studied swiftly by CFD and multiple configurations can be compared from the analysis.





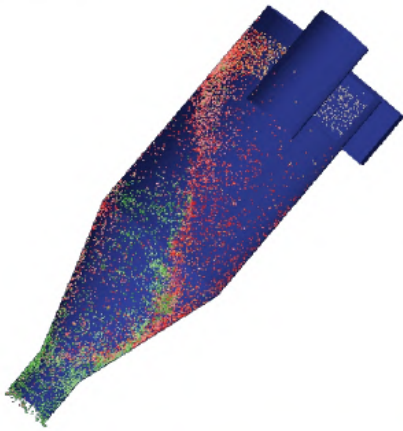
## Energy & Utilities

CFD is continually exploited extensively for both energy extensive and intensive industries in order to extract the maximum possible energy from the available reserves. We work on continuous basis for many oil and gas projects requiring analysis of burners, pumps and power plant ductings. We extend our support to optimization and zeroing in to the best possible configuration of the analyzed component.



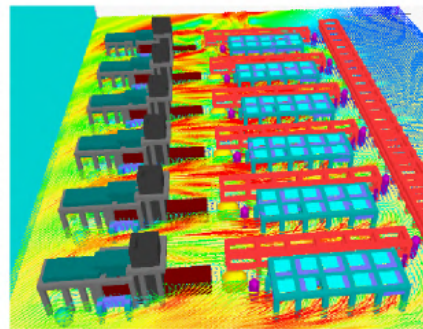
## Process Industries

Most of the energy extracted from natural sources are utilized in process industries, that being the case, the need for energy conservation becomes crucial. CFD analysis of heavy equipments, boilers, refineries and process equipments which is mostly multiphase needs more effective analysis since they directly affect the working process. We specialize in multiphase modeling applicable to chemical industries and other process heat industries.



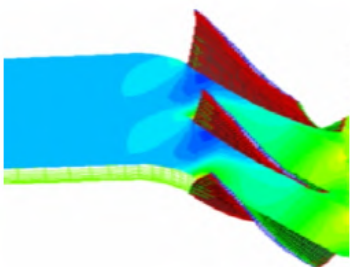
## HVAC, Building Services & Clean Room

CFD analysis has large impact on deciding the critical thickness of insulation for ducting of large air-conditioning systems. We apply computational analysis for many HVAC layouts of industries, malls and living spaces. Now clean rooms had become a mandate in hospitals where optimal temperature levels are to be maintained in it. CFD analysis help in proper selection of size and minimum flow of chilled air in the room to match the thermal load. We can work at ease in getting the right size of duct and pressure booster pump to handle the necessary air.



## Turbomachinery

Turbomachinery being impeccable part of fluid mechanics and thus everyday's energy transfer requires detailed study of the movable and immovable parts. We can deliver the best analysis of blade profile, impeller casing and system analysis. Empirical calculations are also worked to estimate the best operating point and idealize the system and friction curves. We specialize in technical terms of providing best CFD analysis of turbomachinery.





## OUR OTHER SOLUTIONS INCLUDE . . .

- ▶ **Finite Element (FE) Analysis**
- ▶ **Engineering Automation**
- ▶ **Open Source Migration**
- ▶ **Cost Free Server**
- ▶ **Laptop & Desktop Security**
- ▶ **IT Infrastructure Management**
- ▶ **Web Development**
- ▶ **Office Automation**

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