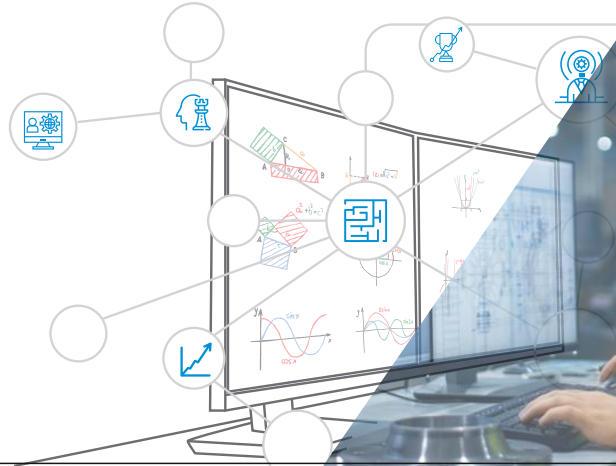


Computational Fluid Dynamics Consulting Services Case Study 2020



DFM AND FLOW OPTIMIZATION FOR 2.5 MW AXIAL STEAM TURBINE 8 - STAGE PRESSURE REDUCTION SYSTEM

THE CLIENT

A Europe-based client offering an array of customized solutions to power generation equipment along with performance guaranty.

THE BUSINESS NEED

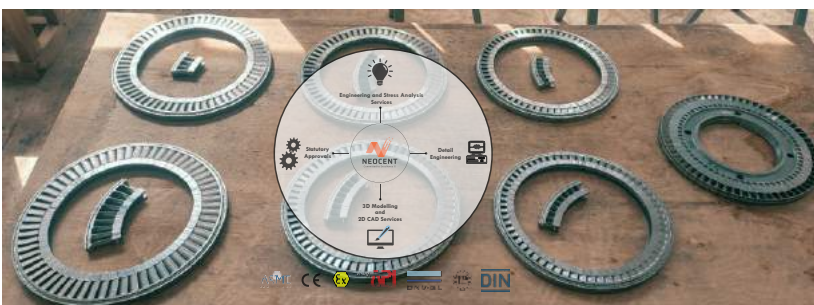
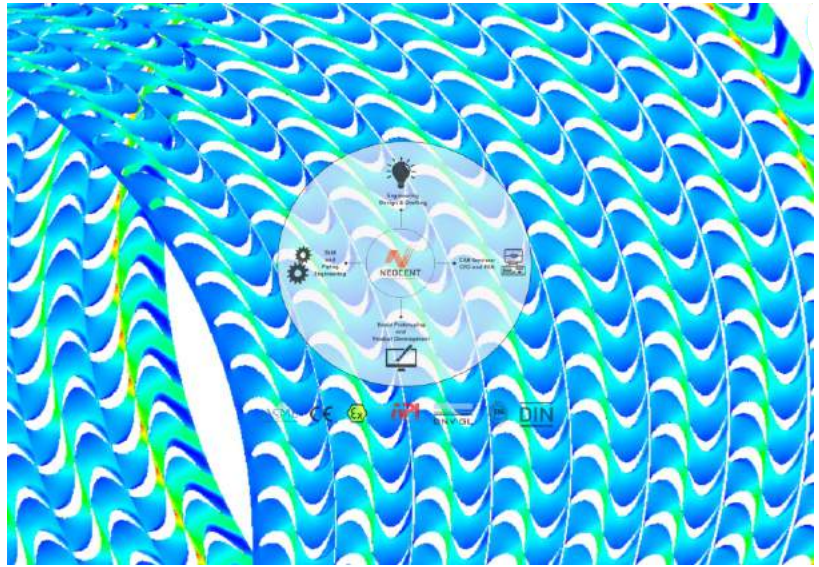
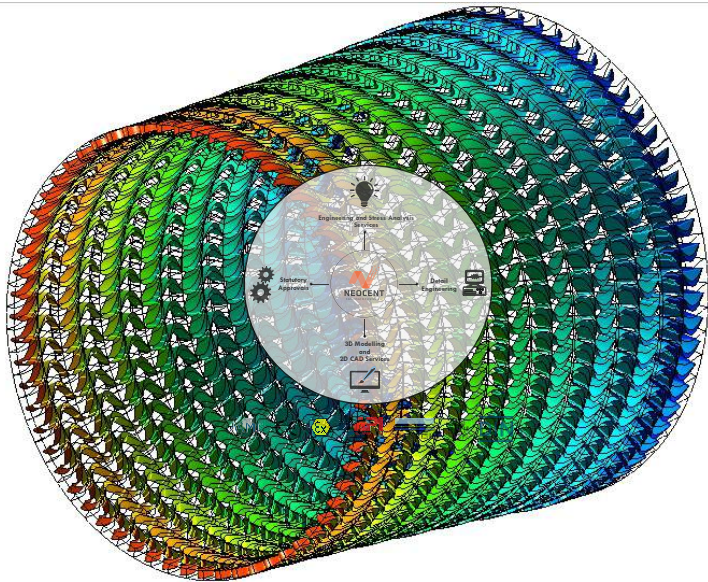
Our client was seeking engineering design assistance for a 2.5MW steam turbine with 8 stage pressure reduction. Client wanted Stress simulation and Flow simulation for whole system package along with boiler to turbine piping header and Exhaust hood CFD validation.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Mechanical design calculation, Thermal process design calculation, bearing selection, Shaft diameter optimization, Blade shape optimization, Mass-flowrate optimization.

CAD Detailing : G.A. Drawing , Details drawing ,3D Modeling.

Analysis : CFD simulation at each stage of the pressure reduction, CFD simulation on full 9-stage reduction system, CFD simulation from boiler to inlet of turbine stator section, CFD Turbine exhaust hood.



Design and Performance optimization(Reduced Turbulent Zone) on Open Refrigerant Display Cabinets (ORDC) system

THE CLIENT

A USA-based client offering an array of customized solutions to power generation/Thermal equipment along with performance guaranty.

THE BUSINESS NEED

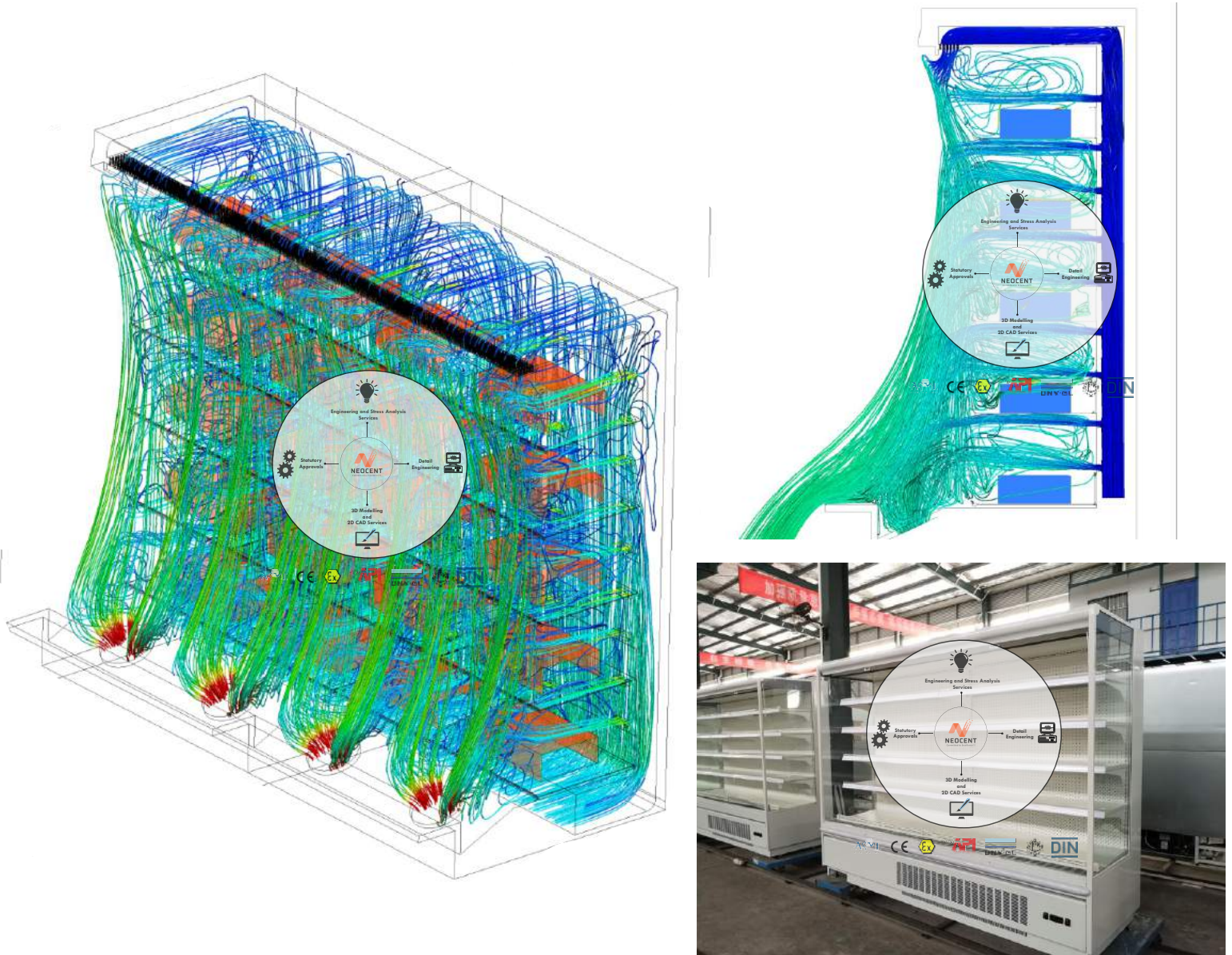
Our client was seeking engineering design assistance for Open Refrigerant Display cabinets system along with Performance optimization through CFD simulation. Re-circulation zone / Turbulent need to be rectified and optimize.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Mechanical design calculation, Flow / Process calculation, heat transfer calculation, Fan capacity and flow Calculation

CAD Detailing : G.A. Drawing , Details drawing ,3D Modeling.

Analysis : CFD simulation and Optimization on Discharge Grill Angle, Evaporator thermal design, fan position and Flow-rate, Back panel opening position and shape, ORDC top side channel Nozzle effect, Discharge Honeycomb Implementation effect.



Design and Performance optimization Hull with different speed and Pitching Angle

THE CLIENT

A UAE- based client offering an array of customized solutions to Military, Law enforcement and commercial organization around the world.

THE BUSINESS NEED

Our client was seeking engineering design assistance for hull body along with Performance optimization through CFD simulation. Final design need to be validate with different hull speed, Wave height and pitching Angle.

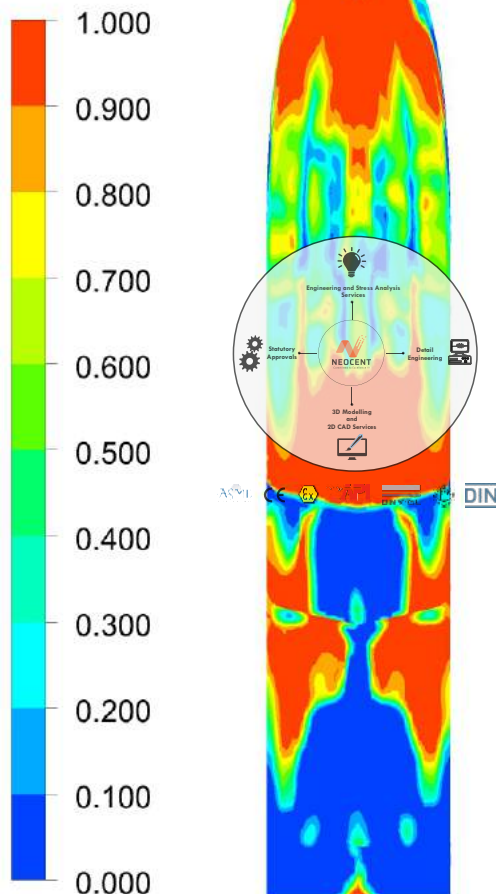
Detail Engineering : Mechanical design calculation, Shape / Aerodynamic study and calculation, Wave Generation and Wave Acceleration calculation.

NEOCENT SOLUTION & DELIVERABLE

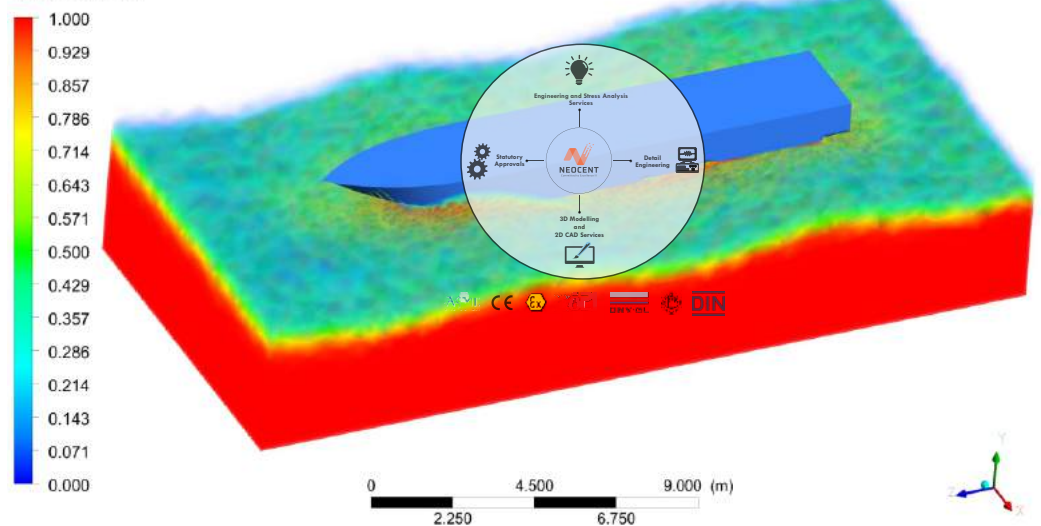
CAD Detailing : G.A. Drawing , Details drawing ,3D Modeling.

Analysis : CFD simulation and Optimization on Hull with Different Speed of Hull (Aerodynamics behavior and reduction of drag force, Different wave Height and Pitching Angle (Stability of hull during pitching and wave height)).

Water.Volume Fraction
Contour 1



Water.Volume Fraction
Volume Rendering 1



Vertical Spindle coal Pulverize performance optimization with CFD study

THE CLIENT

A India-based client offering an array of customized solutions to cement industries with customized material handling equipments.

THE BUSINESS NEED

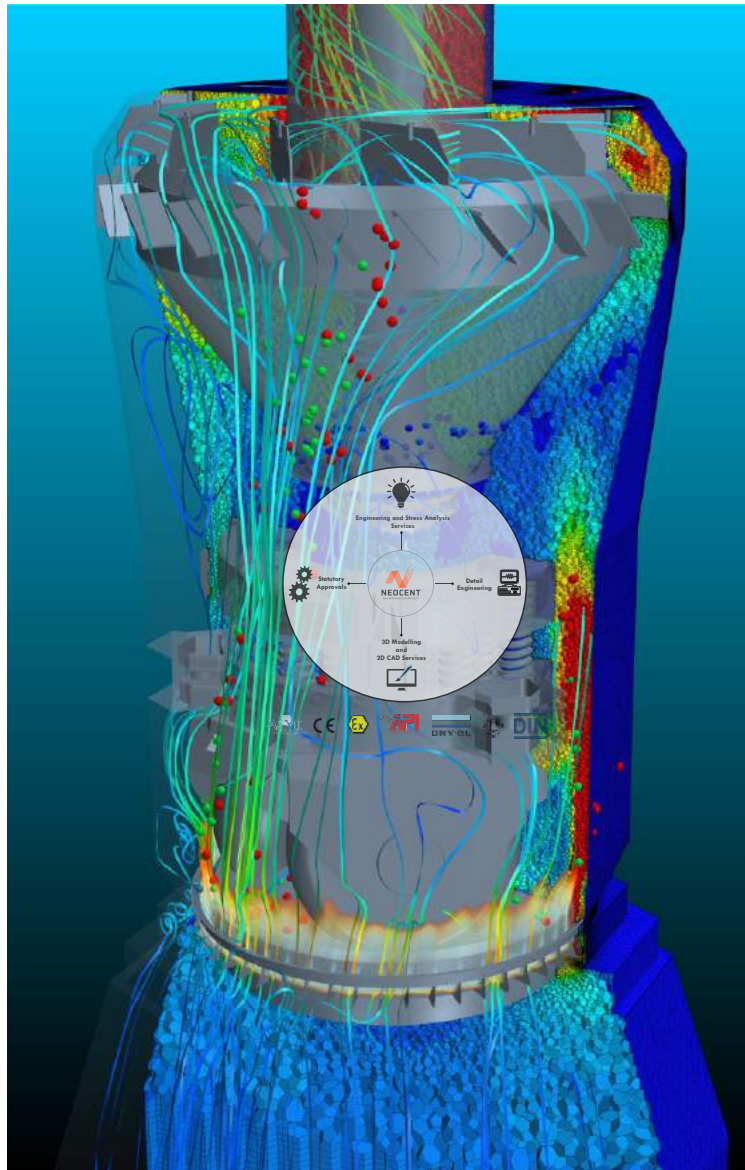
Our client was seeking engineering design assistance for vertical Spindle Coal Mill Performance optimization through CFD simulation.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : -

CAD Detailing : 3D CFD Modeling.

Analysis : CFD simulation and performance optimization



Design and Thermal simulation on Duplex Solar heater with better performance guaranty

THE CLIENT

A India-based client offering an array of customized solutions to Power and Renewable industries with customized Solar heater system.

THE BUSINESS NEED

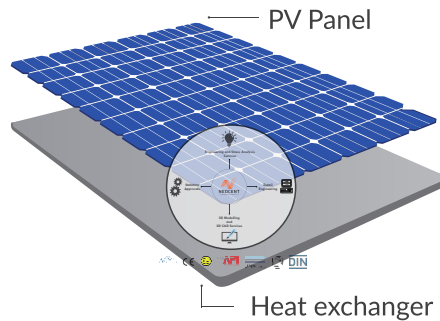
Our client was seeking engineering design assistance and performance guaranty through CFD simulation.

NEOCENT SOLUTION & DELIVERABLE

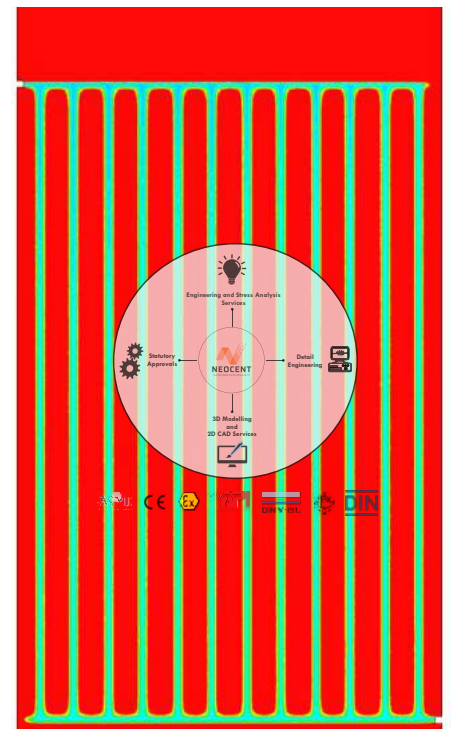
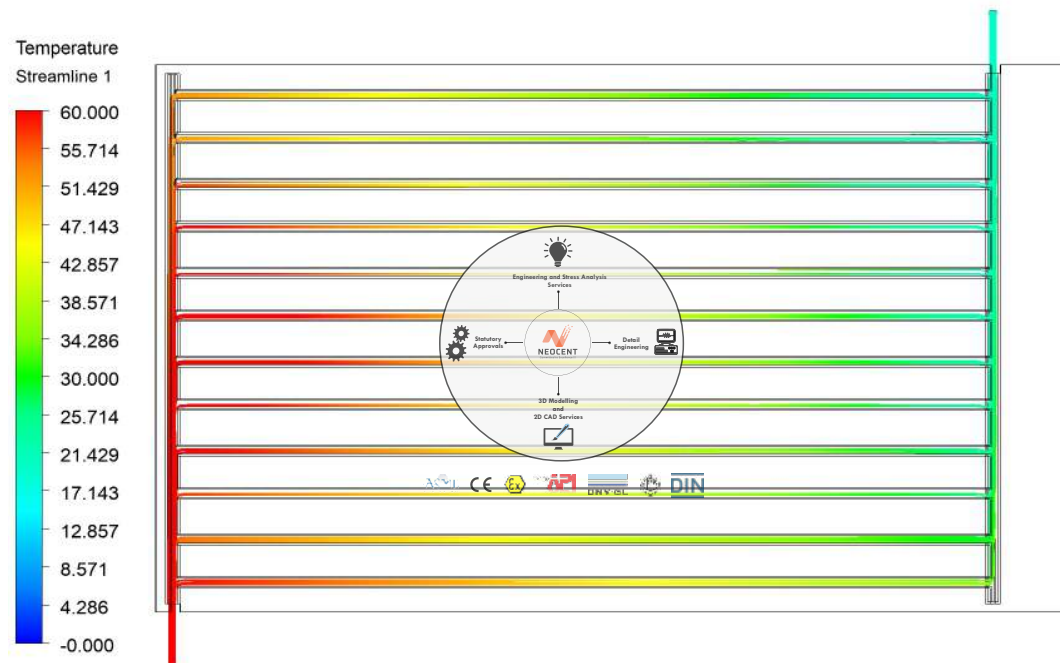
Detail Engineering : Details Mechanical and Thermal design calculation, Performance and Efficiency optimization.

CAD Detailing : G.A. Drawing, 3D CFD Modeling, Details fabrication drawing.

Analysis : CFD simulation with different position of solar panels, Different flow of water inside, Heat transfer area optimization, thermal simulation with different material.



PV panel generates electricity and in addition, transfers heat to heat exchanger



Design and thermal heat transfer simulation for instant water heater for bathroom interior

THE CLIENT

A US-based client offering an array of customized solutions to Power and Electronics industries with customized water heater system.

THE BUSINESS NEED

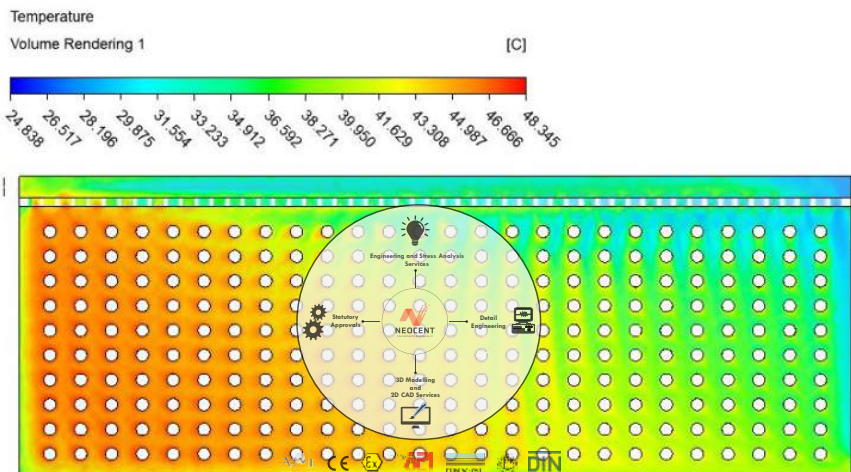
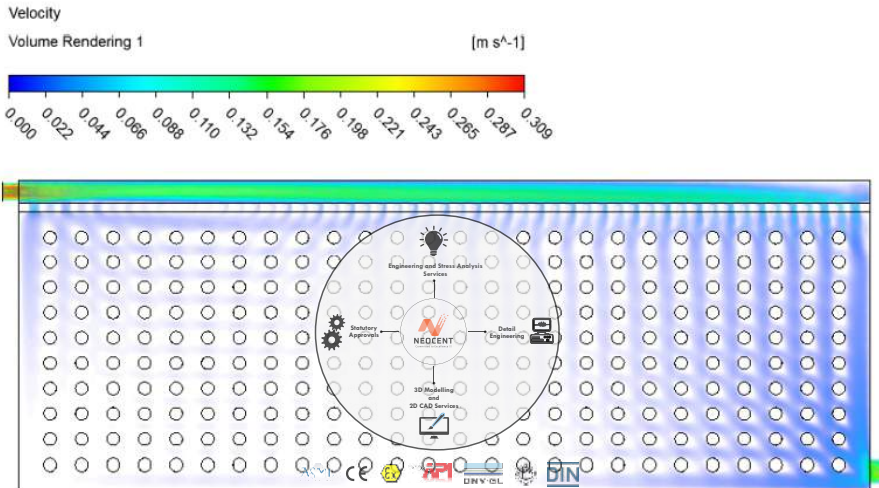
Our client was seeking engineering design assistance and performance guaranty through CFD simulation.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical and Thermal design calculation, Performance and Efficiency optimization.

CAD Detailing : G.A. Drawing, 3D CFD Modeling, Details fabrication drawing.

Analysis : CFD simulation with different tube material, Tube thickness, Different flow rate, Pressure drop optimization.



CFD Simulation on Valve with different opening and closing position to calculate Flow Co-efficient and Pressure Drop

THE CLIENT

A UAE- based client offering an array of customized solutions to Power, Pharmaceutical, Oil and gas, Offshore industries with customized valves.

THE BUSINESS NEED

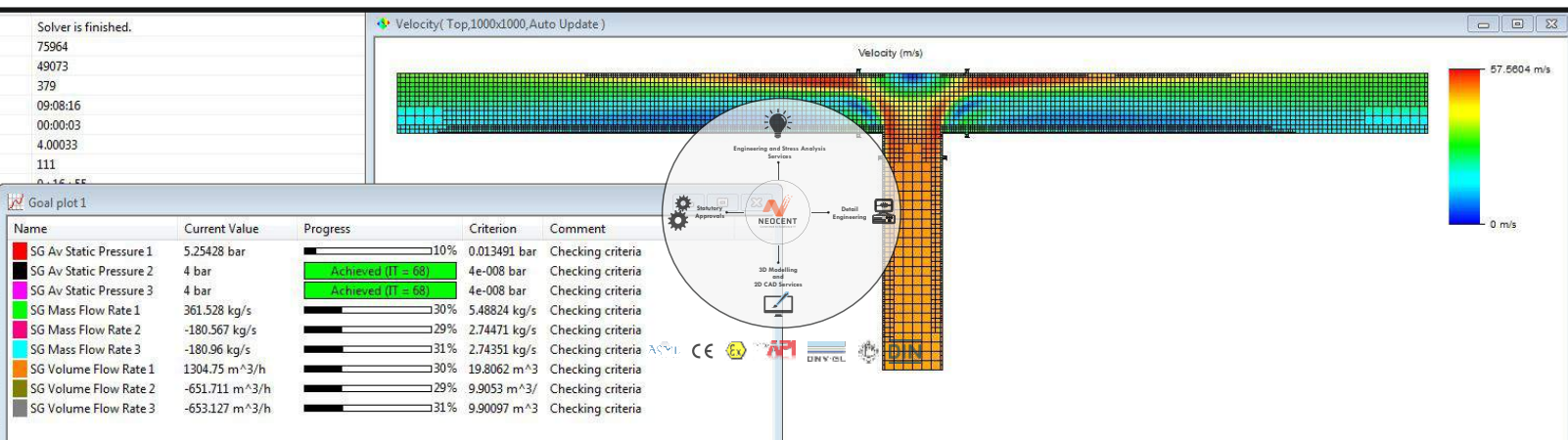
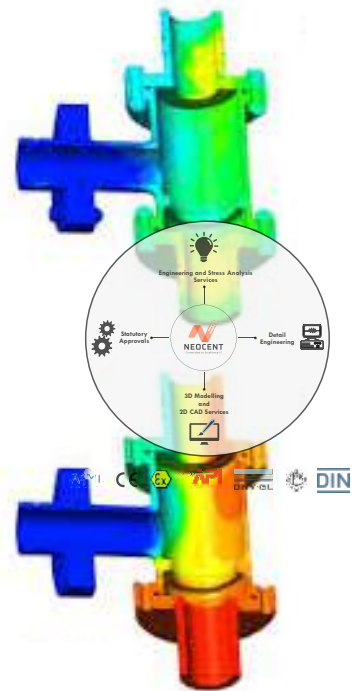
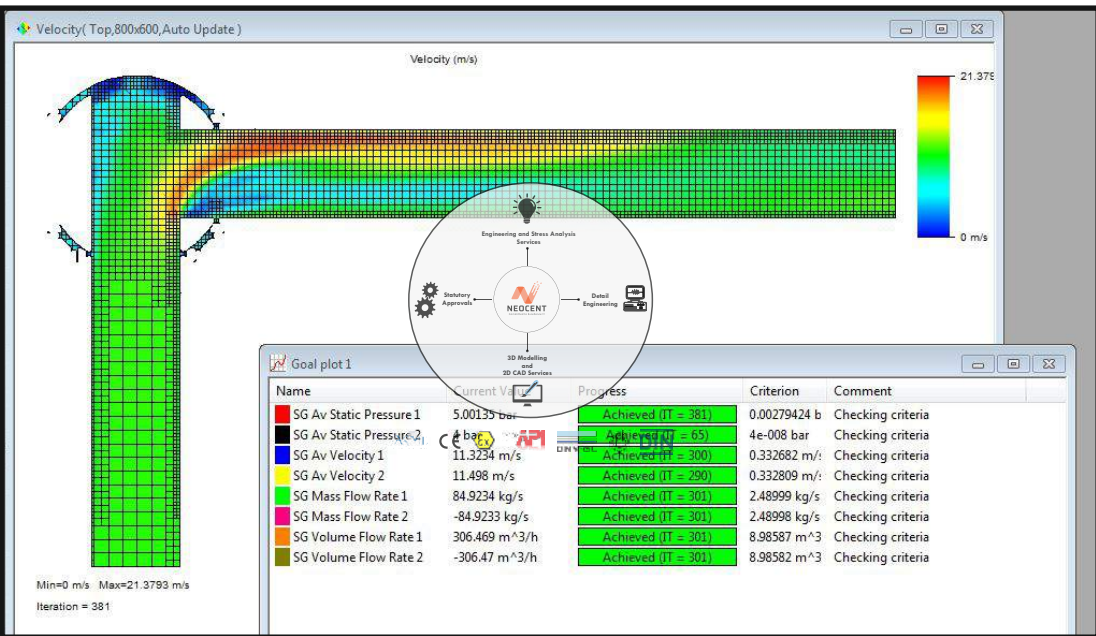
Our client was seeking engineering design assistance and performance guaranty through CFD simulation for valve.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical design as per ASME B16.34 and process design - Pressure drop - Flow Co-efficient calculation.

CAD Detailing : G.A. Drawing, 3D CFD Modeling, Details machining drawing.

Analysis : CFD simulation with different valve opening and closing position, Pressure drop and flow co-efficient, Fluid-Solid (FSI) stress on valve body to evaluation critical location.



CFD Simulation on Gaps / Block unit for Air purification system to Commercial and Residential building

THE CLIENT

A European- based client offering an array of customized solutions to Environmental, Pollution control product.

THE BUSINESS NEED

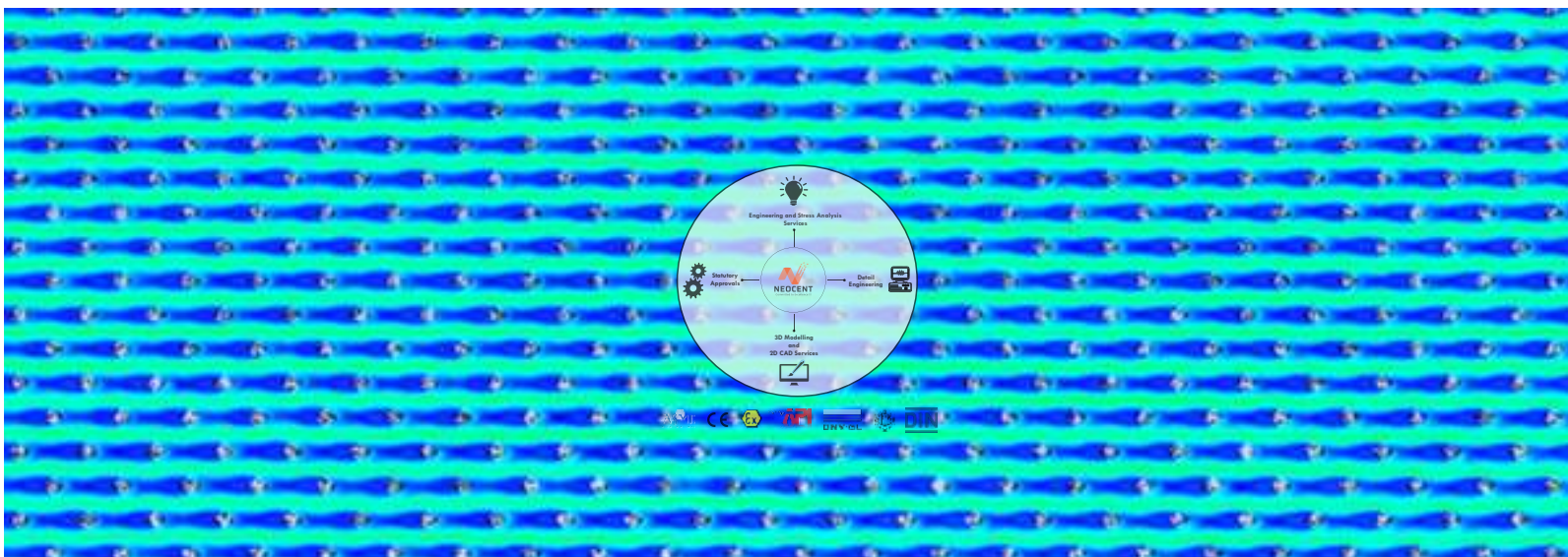
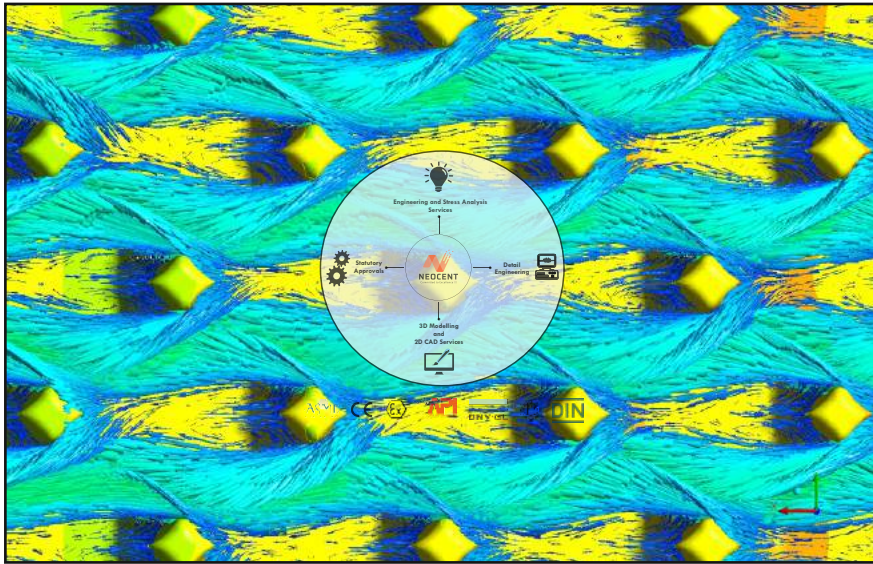
Our client was seeking engineering design assistance and performance guaranty through CFD simulation for gaps. GapS is a 100% recyclable industrial panel, is equipped with smart maintenance system, it is durable, harvest the rain and can remove amount of NOx, SOx, CO2, VOC, PM2.5 etc.

Detail Engineering :-

CAD Detailing : Details CFD Modeling gaps with different Scale size.

Analysis : CFD simulation to check pressure drop across boundaries with different weather condition to ensure performance of gaps reaming same in all weather, Percentage of NOx, SOx, CO2, VOC, PM2.5 etc removing rate, Cleaning process with CFD iteration.

NEOCENT SOLUTION & DELIVERABLE



CFD Simulation on Suction Strainer and Pressure drop / Pump cavitation reduction through Re-Design

THE CLIENT

A Australia- based client offering an array of customized solutions to Agriculture, Mining-Civil, Commercial-Environmental industries.

THE BUSINESS NEED

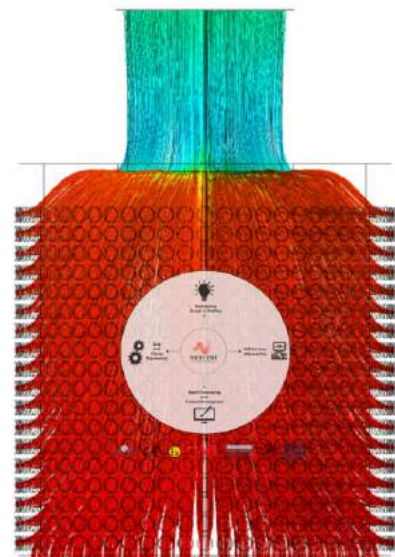
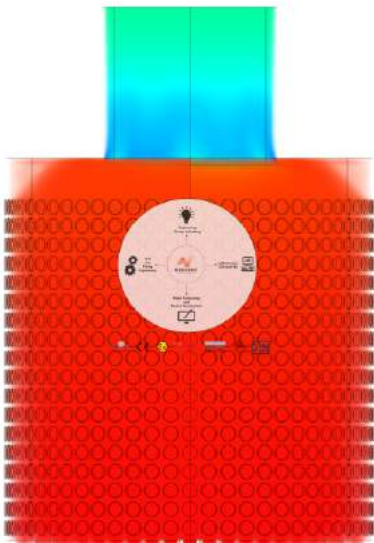
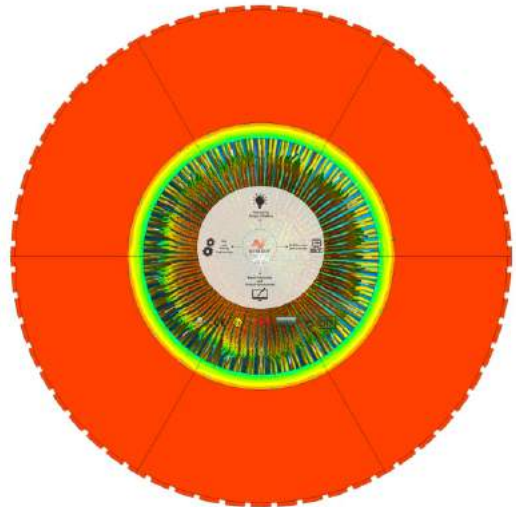
Our client was seeking engineering design assistance and performance guaranty through CFD simulation for suction strainer to ensure on Pump capacity, Pressure drop evaluation, Pump cavitation.

Detail Engineering : -

CAD Detailing : Details CFD Modeling Strainer

Analysis : CFD simulation to check pressure drop across boundaries, Turbulent / Re-circulation zone, Suction capacity and Pump cavitation, Water depth and Surrounding area for proper functioning, Vortex breaker and breaking capacity in terms of water flow.

NEOCENT SOLUTION & DELIVERABLE



CFD Simulation and Optimization from Boiler header pipe to Turbine Inlet section

THE CLIENT

A Europe-based client offering an array of customized solutions to power generation equipment along with performance guaranty.

THE BUSINESS NEED

Our client was seeking engineering design assistance for a high pressure flow distribution inside turbine chamber from boiler header pipe. Client wanted Flow simulation for whole system package along with boiler to turbine piping header.

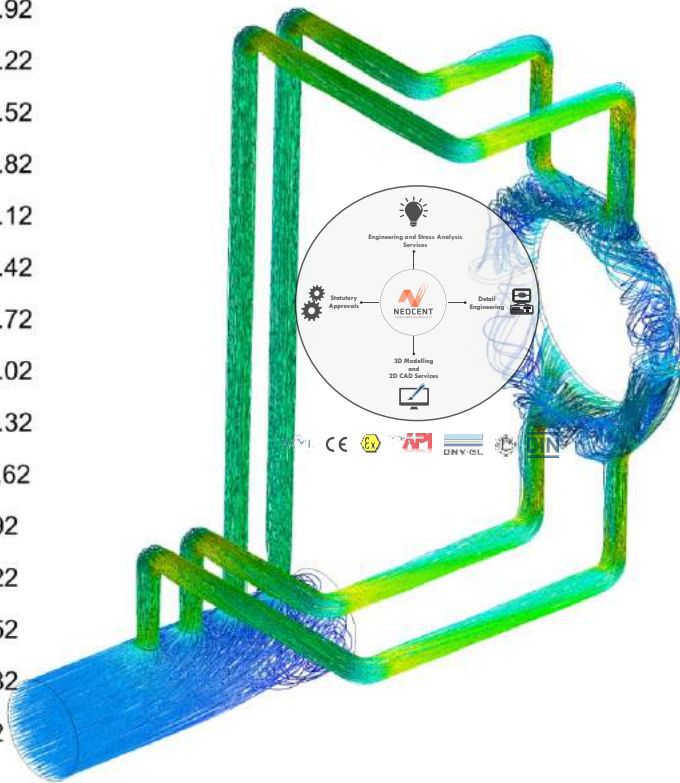
NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : -

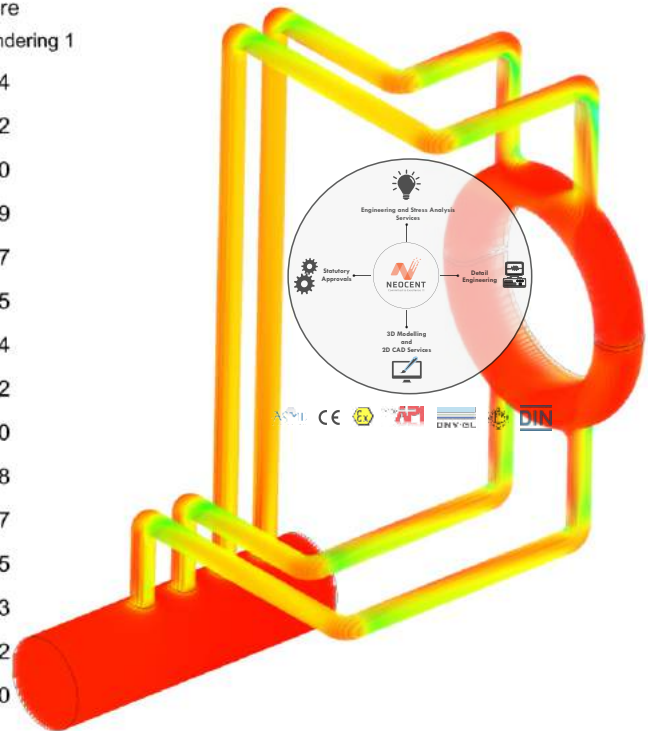
CAD Detailing : Details CFD Modeling Strainer

Analysis : CFD flow simulation from Boiler header pipe to Turbine inlet / stator.

Velocity
Streamline 1



Temperature
Volume Rendering 1



CFD Simulation shell and tube type heat Exchanger along with validation with Experimental results

THE CLIENT

A India-based client offering an array of customized solutions to power generation equipment along with performance guaranty.

THE BUSINESS NEED

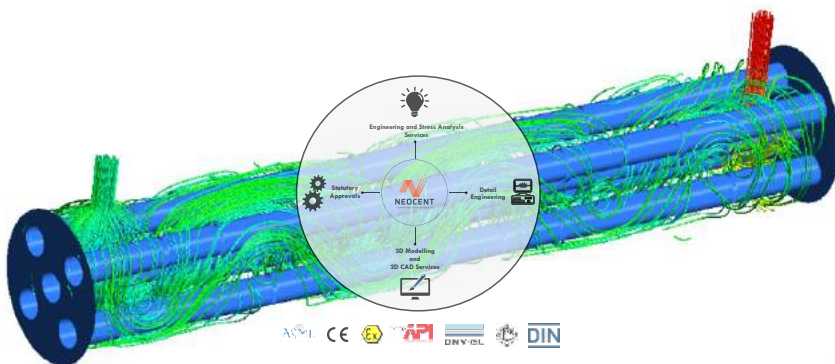
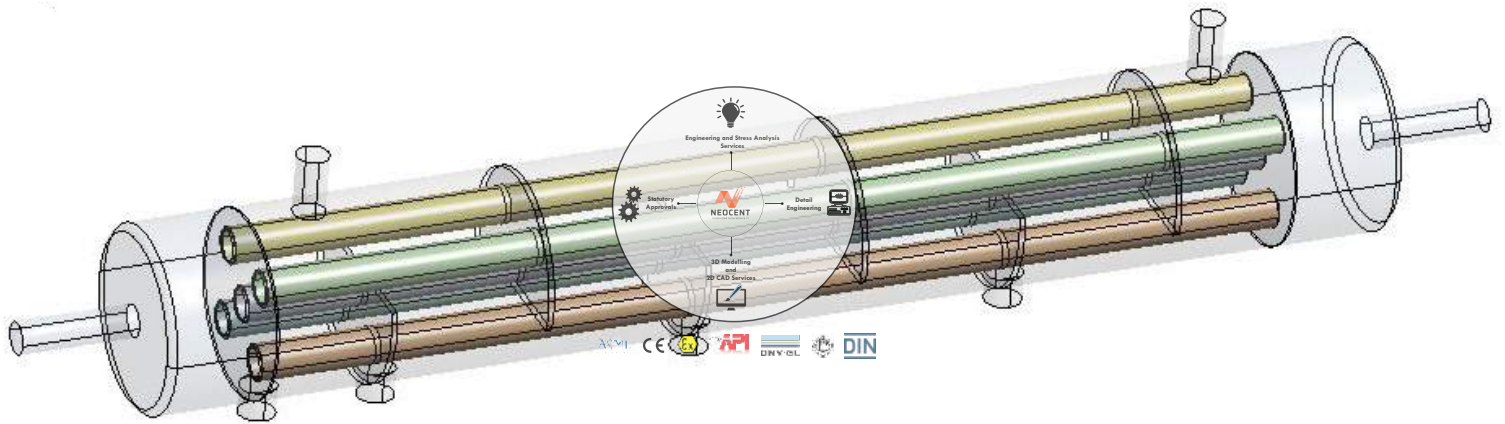
Our client was seeking engineering design assistance for a heat exchanger shell and tube type for a heat transfer application.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical Design, Details heat transfer simulation

CAD Detailing : G.A Drawing, Details Manufacturing drawing, Details CFD Modeling

Analysis : Heat transfer simulation with different flow rate, Pressure drop calculation, Equal Heat transfer distribution.



Design and CFD simulation for Cyclone Separator to optimize performance

THE CLIENT

A India-based client offering an array of customized solutions to power generation and Cement industry equipment along with performance guaranty.

THE BUSINESS NEED

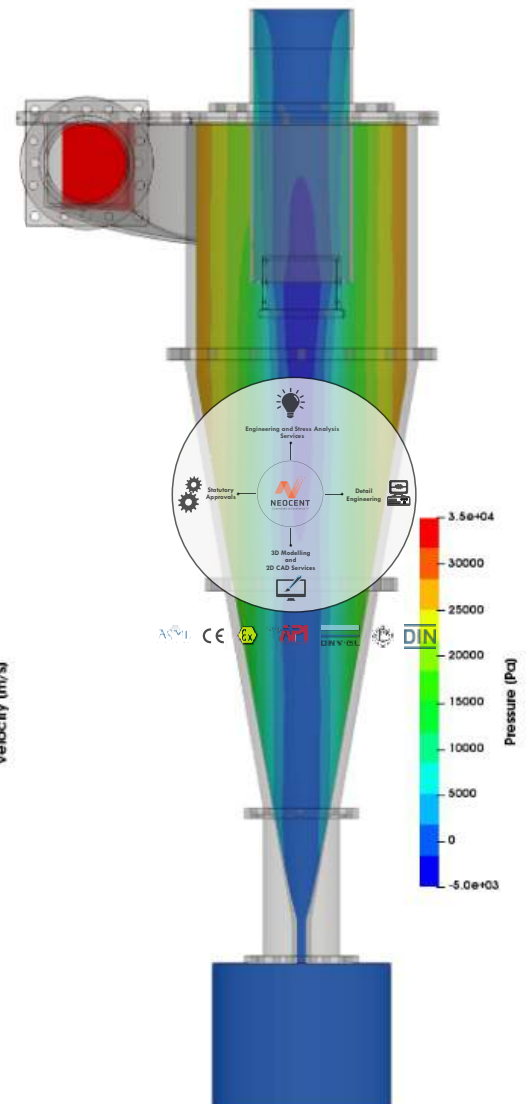
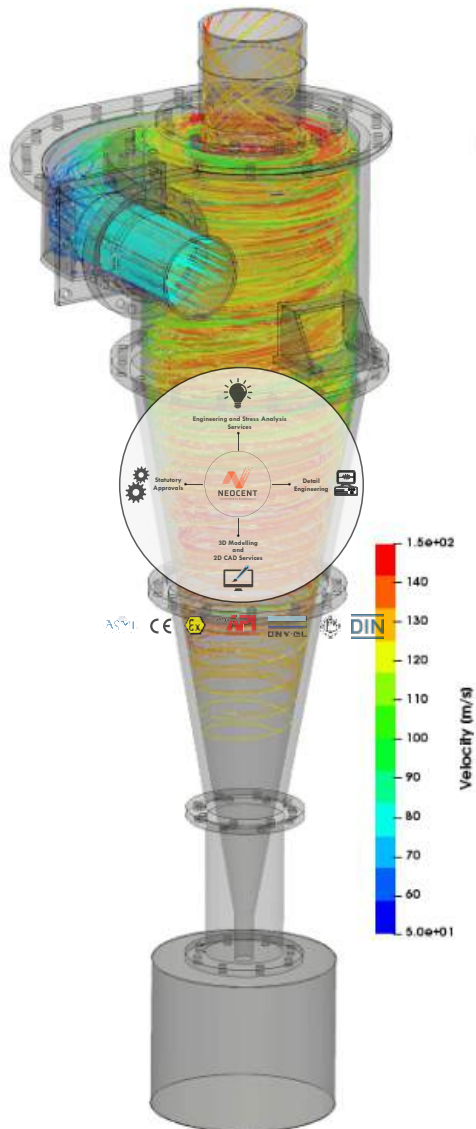
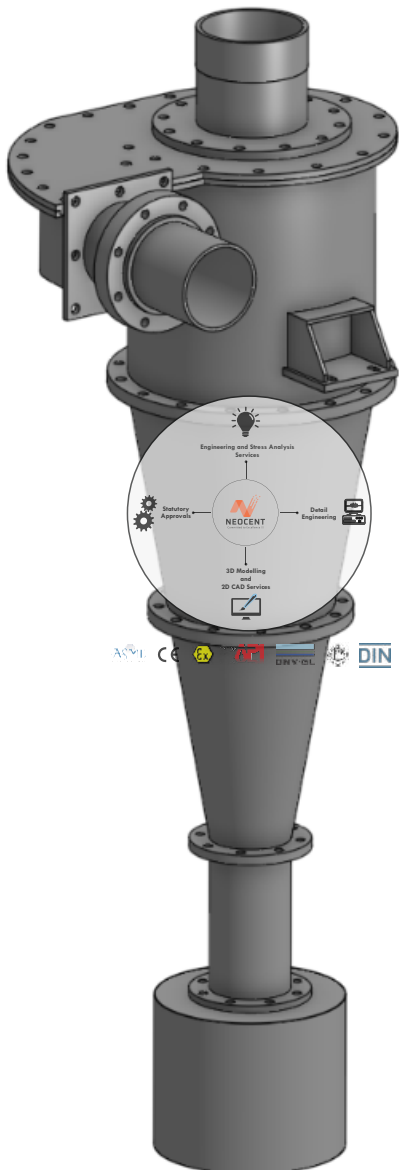
Our client was seeking engineering design assistance for Cyclone Separator along with computational fluid dynamics testing.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical Design, Details Process Design calculation.

CAD Detailing : G.A Drawing, Details Manufacturing drawing, Details CFD Modeling

Analysis : Multi phase fluid dynamics study on Cyclone separator to separate waste particles.



Design and CFD simulation for Centrifugal pump to optimize performance

THE CLIENT

A US-based client offering an array of customized solutions to power generation and Cement industry equipment along with performance guaranty.

THE BUSINESS NEED

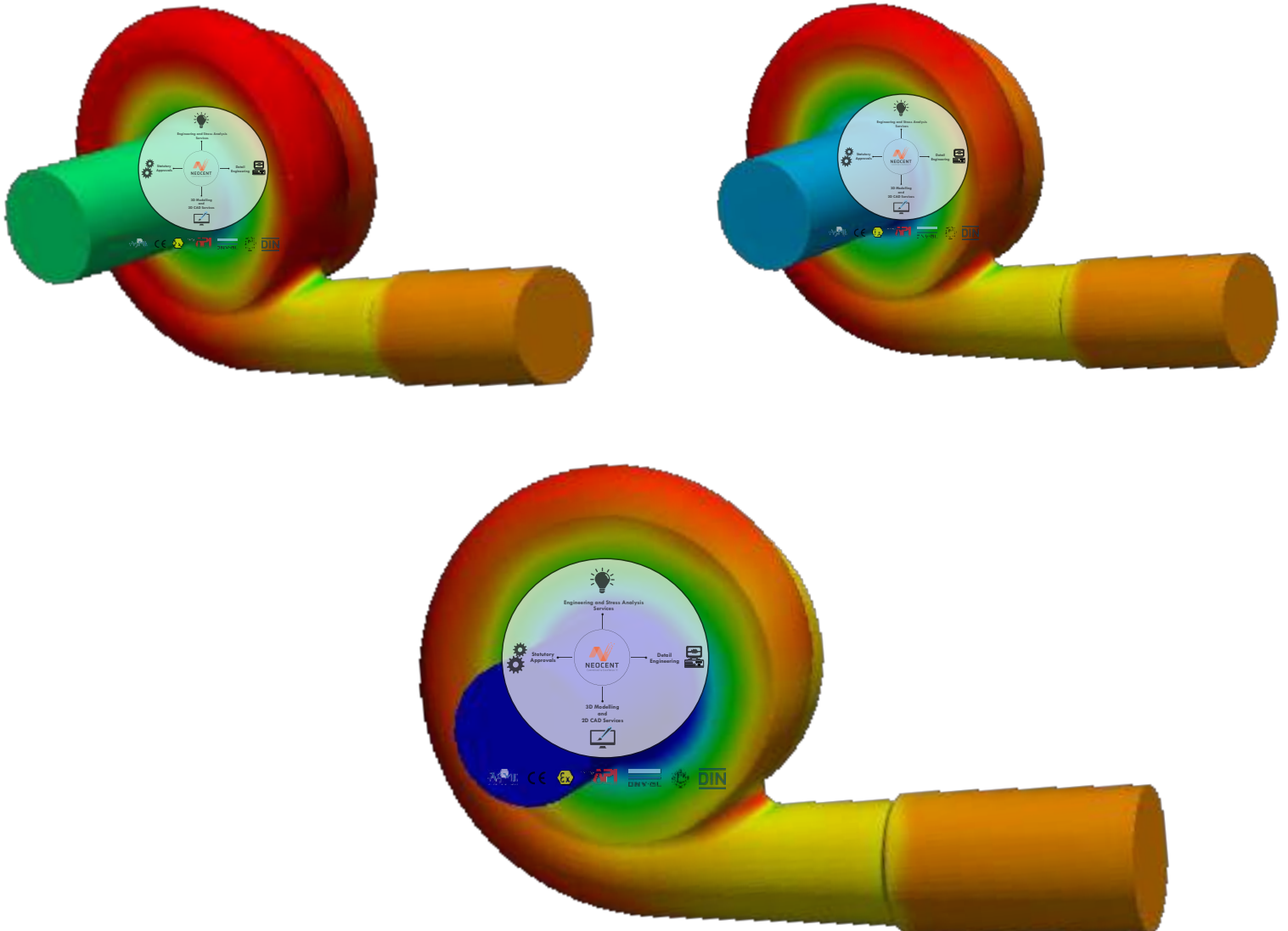
Our client was seeking engineering design assistance for Centrifugal Pump along with computational fluid dynamics testing.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical Design, Details Process Design calculation.

CAD Detailing : G.A Drawing, Details Manufacturing drawing, Details CFD Modeling

Analysis : Dynamics (6-DOF) Simulation on Centrifugal pump to check pressure drop and optimize cavitation area.



Design and Flow simulation on Turbine blades with different angle of attack

THE CLIENT

A US-based client offering an array of customized solutions to power generation and Renewable energy industry equipment along with performance guaranty.

THE BUSINESS NEED

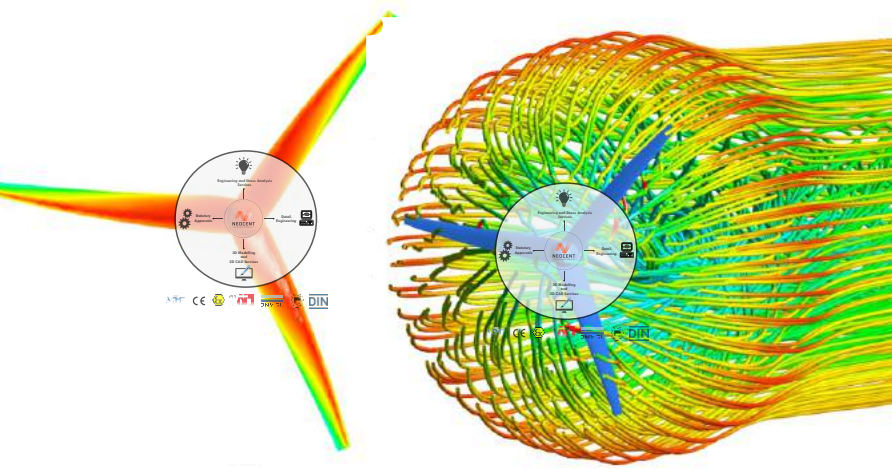
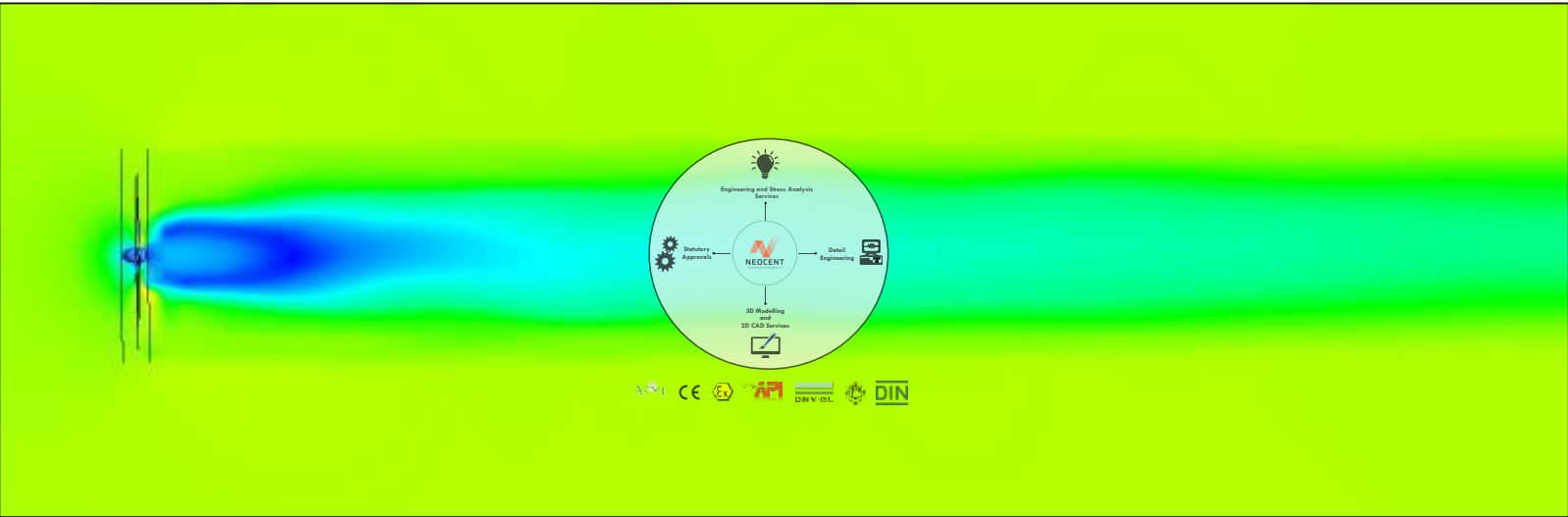
Our client was seeking engineering design assistance for Wind turbine design and Cfd simulation with different angle of attack.

NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical Design, Details Process Design calculation.

CAD Detailing : G.A Drawing, Details CFD Modeling

Analysis : Dynamics (6-DOF) Simulation on wind turbine with different angle of attack and optimize with different blades angle for better aerodynamics performance.



Design and Flow simulation on 5.0 kw Micro Hydro Vortex turbine

THE CLIENT

A US-based client offering an array of customized solutions to power generation and Renewable energy industry equipment along with performance guaranty.

THE BUSINESS NEED

Our client was seeking engineering design assistance for 5.0 kw Micro hydro vortex turbine design and CFD simulation to optimize rotor shape, Rotor Angle, cavitation, Exhaust path design

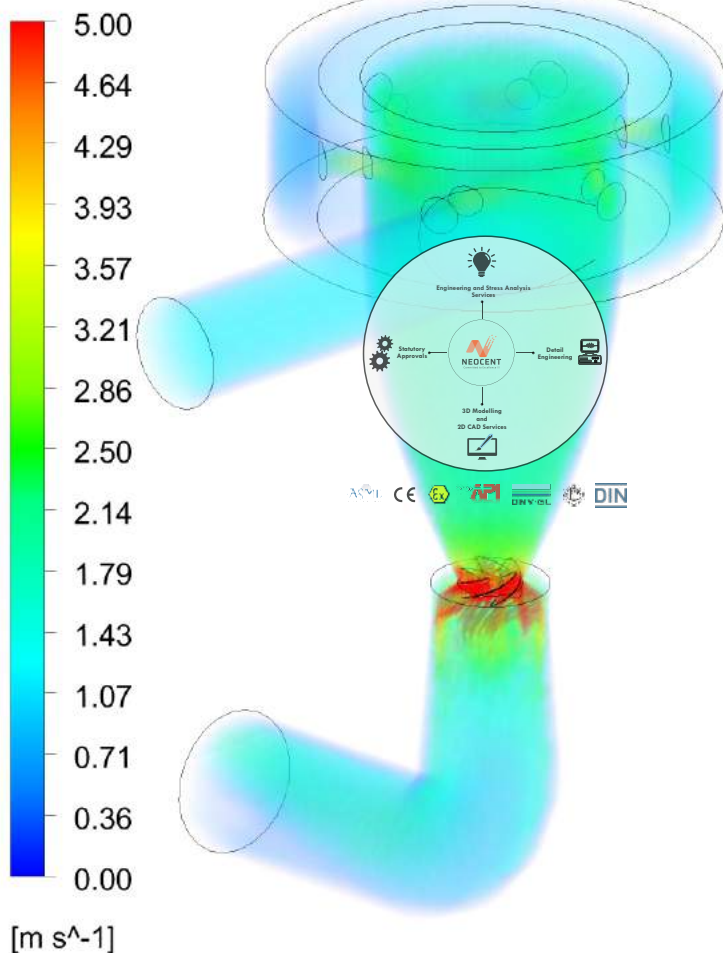
NEOCENT SOLUTION & DELIVERABLE

Detail Engineering : Details Mechanical Design, Details Process Design calculation.

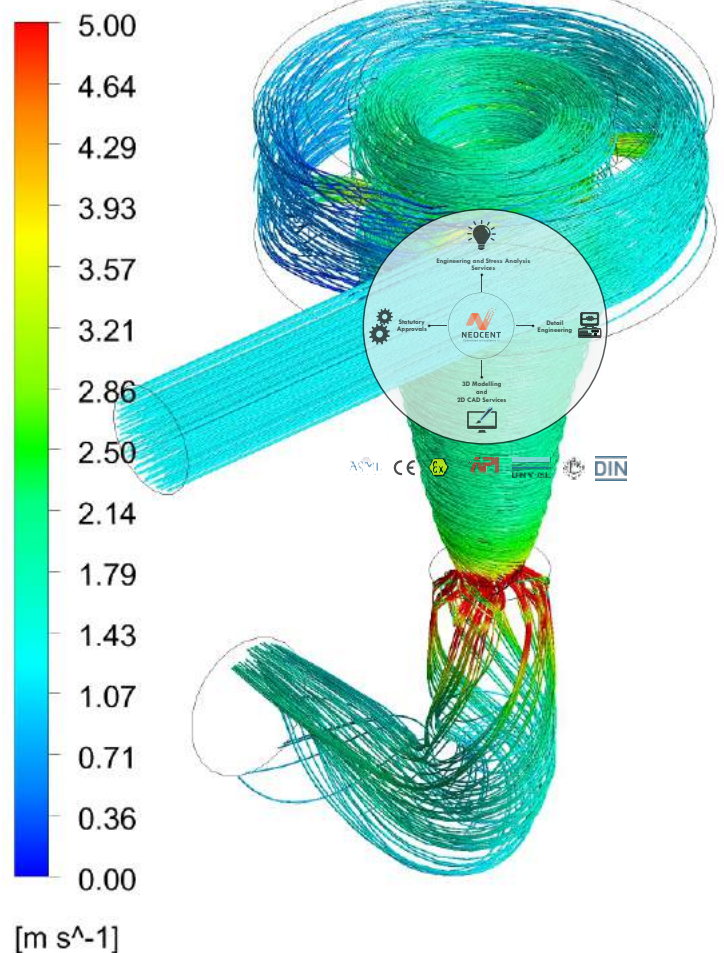
CAD Detailing : G.A Drawing, Details CFD Modeling, Details manufacturing Drawing.

Analysis : Dynamics (6-DOF) Simulation on Vortex turbine with different flow rate, Different rotor diameter, Different rotor angle.

Velocity
Volume Rendering 1



Velocity
Streamline 1



Neocent Engineering Services is a multi-discipline engineering services company. Established in 2015, we offer high-quality engineering support solutions to global EPC organizations across some of the industries listed: Automotive, Aerospace, Turbo machinery, Heavy engineering, HVAC, Oil & Gas, Material handling and Process industry.

Neocent provides detailed engineering services to EPC, EPCM, OEM, and PMC as long-term turnkey projects. Our EPCM services include Project Management, Feasibility Studies, Conceptual & Basic Engineering, Detailed Design, Procurement, Construction Management, Commissioning & Start-up, and Operations & Maintenance.

Neocent Engineering's service offering, include;

- Engineering and Stress Analysis Services
- Details Engineering
- 3D Modelling and 2D CAD Services
- Statutory Approvals

We provide the best and most comprehensive Computational Fluid Dynamics (CFD) analysis services. We excel in providing precise modelling to aid an accurate CFD analysis and propose effective engineering solutions.

Our Turbo machinery / Rotating machine CFD Analysis Services include:

- Centrifugal compressors
- Axial compressors
- Cooling fans
- Ventilation systems
- Radial blowers
- Cross-flow blowers
- Water pumps
- Water turbines

We help engineering design validate the geometry through virtual simulation prior to production and avoid last-minute hassles. To ensure accuracy in results, we also perform validity checks such as convergence analysis, boundary conditions review and hand calculations, allowing manufacturers to validate their designs faster.

In brief, clients come to us when they need high-quality work executed and documented to withstand the most rigorous reviews.

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