



**Analyzer** CAE Solutions Pvt. Ltd.

Complete CAE Solutions...

### Our Team Motto

Design team "Transforming Ideas to Reality"


FEA Team "Don't be stressed, we are there"

CFD Team "Diverse requirement, Converged Solution"

 [bd@analyzer-cae.com](mailto:bd@analyzer-cae.com)

 [www.analyzer-cae.com](http://www.analyzer-cae.com)

 [+919561439442](tel:+919561439442)

 [224-226, Ashok Plaza,](#)  
[Viman Nagar, Pune-411014](#)



# CASE STUDY

## ENGINEERING DESIGN & ANALYSIS SERVICES

(Client Presence - **12+ Countries**, Experience - **15+Years**)

### Service Verticals

FEA, CFD, Design, Prototyping, Staffing and Mentoring

### Industry Verticals

Automobile, Aerospace, Oil & Gas, Process, HVAC, Turbomachinery & Pumping Station, Nuclear Energy. Medical & Electronic Equipment's, Industrial M/C & Equipment's, Construction Equipment's, Etc.

# CFD ANALYSIS OF CAR BATTERY

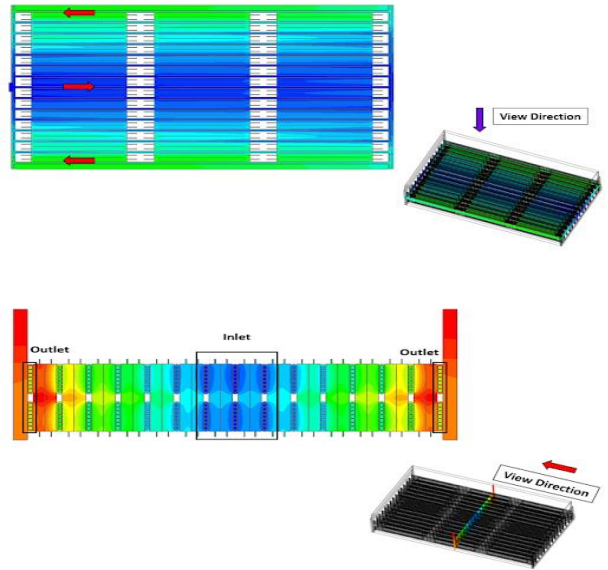
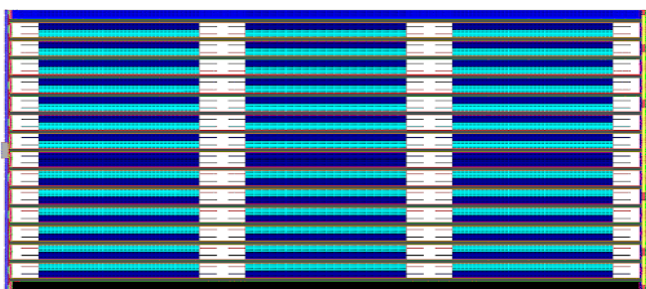
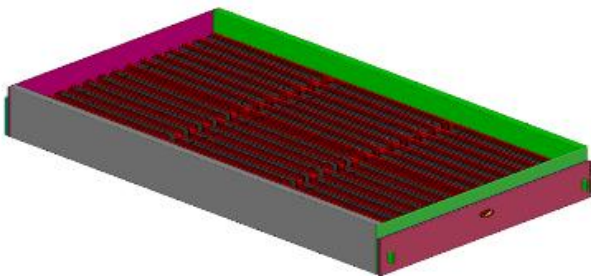
## CASE STUDY HIGHLIGHTS

### Introduction

Batteries present in automobiles are high density heat dissipating zones which require efficient cooling. It is very important that all the cells of Battery receive adequate cooling so that the temperature within cells remains below the critical limits and performance of Battery don't get degraded. Main challenge was designing of Multi-Port-Extrusion (MPE) for maximum heat transfer rate between Cells & Coolant. Also defining a contact resistance at various interfaces was bit tricky. Hence performance of the Battery will depend on the efficient cooling, and this can be achieved by CFD.

### Challenges

- Modelling all MPE channels & Cells with heat load on cells.
- Meshing battery pack with MPE channels.
- Design optimization of MPE channel for getting maximum heat transfer rate across it.



## THE SOLUTION

Flow and thermal analysis of the battery was executed for determining temperature raise, prominently temperature distribution and velocity distribution along flow path through MPE. Using CFD, temperature raise across MPE were checked and compared with critical limit. Higher temperature raise was observed across MPE with initial MPE design. Design optimization iterations were carried out on MPE channel design for keeping temperature raise across MPE below the critical limit. After design optimization of MPE, Battery performance was checked for various flow rates of coolant. In optimized MPE design it was observed that, temperature raise across MPE channel coolant flow & temperature of cells is well below the critical limit for all required flow rates values.

## BENEFITS

- Quick turnaround time to fix existing problem of Battery cells overheating.
- Energy efficient Battery MPE design.
- Prediction of coolant flow rate requirement for keeping temperature raise across battery pack within critical limit.
- Reduced number of trials for design.
- ROI in three months on CFD investment.

ABOUT ANALYZER CAE SOLUTIONS PVT. LTD.

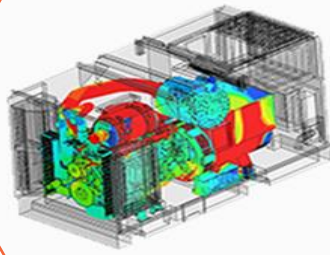
*Analyzer is one of the leading Engineering Services company. We have a team of 140+ Engineers who work on various Design, CFD and FEA projects. We have been serving our customers for more than 15 years and have retained 97% of our clients from 12+ countries by providing best quality service at reasonable cost.*

Get Quote- [bd@analyzer-cae.com](mailto:bd@analyzer-cae.com)

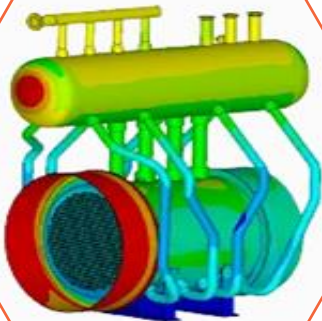
Author- [Mr. Dharani Madala](#)  
(Director Engineering)

Mobile No- [+919561439442](tel:+919561439442)

CFD



FEA



CAD/DESIGN



# SERVICES



PROTOTYPING



ACOUSTIC CONSULTANCY



STAFFING & MENTORING

## CONTACT DETAILS



**Mr. Dharani Madala**



[bd@analyzer-cae.com](mailto:bd@analyzer-cae.com)



<https://wa.me/+919890549442>



[www.analyzer-cae.com](http://www.analyzer-cae.com)



+919561439442, +919561739442



224-226, 2nd Floor, Ashoka Plaza, In-between Hyatt and Ibis Hotel, Nagar Road, Viman Nagar, Pune, Maharashtra-411014

**ANALYZER HAS BEEN PROVIDING DESIGN AND CAE SERVICES ACROSS THE GLOBE**



**PROJECTS COMPLETED**

**2400+**



**YEARS IN BUSINESS**

**15+**



**TECHNICAL EXPERTS**

**120+**



**COUNTRIES SERVICED**

**12+**