



Published on *CD-adapco* (<http://www.cd-adapco.com>)

[Home](#) > STAR-CCM+ captures the acoustics buried in turbulence

---

## STAR-CCM+ captures the acoustics buried in turbulence



Presented at the STAR Global Conference 2012

DENSO Marston has been undertaking a 5-year joint R D project called 'Validation of Future Non-Road Machines' (VORM), co-funded by the UK government's Technology Strategy Board and One Northeast. In this project STAR-CCM+ has been extensively used as a tool to model the machine cooling system and to optimize its components.

Methodology and limitations of coupling a STAR-CCM+ single stream heat exchanger model with the 1D vehicle thermal modelling program KULI were firstly explored. STAR-CCM+ dual stream heat exchanger model results were then used as benchmarks to develop a KULI methodology for the prediction of heat exchanger thermal performance and pressure drop for complex cooling systems particularly with strong flow recirculation and mass pick up in between heat exchangers.

In this presentation, the focus will be on the CAD geometry preparation, moving reference fan model and single and dual stream heat exchanger model setup and modifications.

The use of CFD results for the under-hood flow and temperature distribution to identify the recirculation regions surrounding heat exchangers and potential problems of heat exchanger location in the initial design will be presented. Discrepancy from isothermal test data and qualitative analysis of CFD prediction will also be discussed.

### **Author Company:**

DENSO Marston Ltd

### **Author Name:**

Gary Yu

Martin Timmins

Mario Ciaffarafa

### **Industries:**

[Ground Transportation](#) [2] ? [Ground Transportation - Application](#) ? [Aeroacoustics](#)[3]

[Ground Transportation](#) [2] ? [Ground Transportation - Sub-Industry](#) ? [Automotive](#)[4]

### **Products:**

### **Conference:**

CD-adapco is the world's largest independent CFD focused provider of engineering simulation software, support and services. We have over 30 years of experience in delivering industrial strength engineering simulation.

---

**Source URL:** <http://www.cd-adapco.com/presentation/star-ccm-captures-acoustics-buried-turbulence>

**Links:**

[1] [http://www.cd-adapco.com/sites/default/files/Presentation/Automotive9\\_DENSOMarston\\_GY.pdf](http://www.cd-adapco.com/sites/default/files/Presentation/Automotive9_DENSOMarston_GY.pdf)

[2] <http://www.cd-adapco.com/industries/ground-transportation>

[3] <http://www.cd-adapco.com/industries/ground-transportation/%E6%B0%94%E5%8A%A8%E5%A3%B0%E5%AD%A6>

[4] <http://www.cd-adapco.com/industries/ground-transportation/%E6%B1%BD%E8%BD%A6>