



SENSE – Affordable CFD simulation software for SMEs in the transportation industry

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DELIVERABLE 5.4

European Workshops

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Content

List of Figures	2
1. Introduction.....	3
2. MiniWorkshops.....	3
2.1. Audi/VW.....	3
2.2. AVL Meeting.....	4
2.3. JLR (Web Workshop).....	4
2.4. Metalsa	4
2.5. Daimler.....	5
3. Conclusions.....	6

List of Figures

Figure 1 A pictorial overview of the mini workshops organised during for our customers.....	6
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1. Introduction

The main aim of the Work package 5 is to maximize the exposure of SENSE technology through demos, congresses, publications and set-up the commercial network needed for market release after Phase 2. This includes Commercialization, Dissemination and Communication.

The deliverable D5.4 includes work done under Task 5.7 (Promotional Material) and Task 5.8 (European & International Workshop) particularly, we will consider the European Workshop.

Task 5.7 Promotional Material (M1-M24)

Design, develop and produce flyers and posters to present the project, its objectives, expected results and benefits to end-users.

Task 5.8 European & International Workshop (M13-M20)

We also intend to organize two workshops (one European and one global scale) where we can get in personal contact with our customers, present them our progress and get valuable feedback.

2. MiniWorkshops

ESS intended to make one European workshop bringing all together. Nowadays companies within automotive industry are usually not coming to such conferences especially if there are no user presentations and no ready to ship modules. Although a rare happening in the automotive industry, many of our customers agreed to come directly to our company in Steyr. The workshops were organized to suit the specific needs of our customers. These mini workshops enabled close interaction with the companies. During the workshops, we presented our existing softwares (Merge and Alsim) and introduced Sense as our state of the art in computational fluid dynamics (CFD), see Figure 1 for an overview of the miniworkshops. In the subsections below, we list the content of the workshops for each customer. Mini workshops were mainly organised in Steyr and lasted two (2) days where customers also got to interact with several workers.

2.1. Audi/VW

➤ **Audi: Meeting in Steyr (9.08 - 10.08.2017)**

- Introduction of SENSE technology.
- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.

- Discussion of possibilities to simulate non-Newtonian fluids (esp. according PVC-sealing, and waxing), oven-applications and e-coating (including cross selling discussions about existing software-tools MERGE and ALSIM).
- Definition boundary conditions for PVC- and wax-simulation.
- Discussion needed input-parameters for e-coating (box-experiments for deposition rate of paint)
 - Audi meanwhile most important customer (productive projects for PVC and waxing)

2.2. AVL Meeting

➤ Meeting in Steyr (14.03.2018)

- Introduction of SENSE technology.
- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.
- Current and future status of different SENSE solvers.
- Workshop: What are the needs of AVL according to simulation software-tools? Is it possible to answer that needs with our SENSE-technology?
- AVL most interested in: gearbox simulation, drainage modelling, pipe-flow simulation, rain simulation, non-Newtonian fluids, oven-simulation.

2.3. JLR (Web Workshop)

➤ Jaguar/ Landrover: Webmeeting (23.04.2018)

- Introduction of SENSE technology.
- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.
- special workshop discussion concerning advantages of our different solvers
- ESS workflow of testing and validation
- hardware requirements

➤ Benteler: Webmeeting (24.04.2018)

- Introduction of SENSE technology.
- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.

2.4. Metalsa

➤ Meeting in Steyr (02.05 - 03.05.2018)

- Introduction of SENSE technology.

- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.
- Discussion on e-coating (electric potential, fluid flows, paint particle density, etc.), spray waxing, oven simulation.

2.5. Daimler

➤ Meeting in Steyr (03.07 - 04.07.2018)

- Introduction of SENSE technology.
- Differences, advantages and disadvantages against commercial Eulerian grid-based methods.
- workshop concerning possibilities to simulate: Pipe-flow, powertrain, drainage, spray modelling, rain simulation, waxing, fluid-structure-interaction, tank sloshing, non-Newtonian flows, graphical user interface, solid materials.
- Daimler showed in a first step biggest interest in spray modelling.



Figure 1: A pictorial overview of the mini workshops organised during for our customers.

3. Conclusions

We have organized mini workshops for our customers including Daimler, Metalsa, Audi/VW, AVL and JLR. The mini workshops were organized and tailored to the needs of the customers. The workshops were organized in our office building in Steyr. This enabled customers to interact with our workers and also gain an insight to our working environment.

Next year, we will organize an international conference in Steyr scheduled for 21-24th of May 2019.

During this conference, we will already have user presentations, which attract a bigger crowd from all over the world to join. We organize the world conference in week 21 2019 in Steyr and already planning about the schedule.