

Future Directions

This session was dedicated to discussions about future orientations of the ECN. Different topics were discussed concerning experimental and modelling directions as well as the organisation of the next ECN workshop.

At first, the topic of canonical engine flows was introduced by Sebastian Kaiser, motivated by the need to extend the database realized within the ECN towards more realistic engine database. The Sandia hydrogen engine database available on the ECN website was taken as an example. The difficulties related to the extension of the ECN Spray A database to engine type database was discussed. It was decided to form a working group on this topic led by Sebastian Kaiser, with the objective of drawing a road map on this subject.

Then the subject of parametric variation around Spray A conditions was discussed. Different parameters of interest were mentioned and it was decided that guidelines should be provided by the ECN to specify common parameter variations. Among the parameters of interest, temperature appears to a first order one. Injection pressure, injection duration and oxygen concentration were also mentioned. It was decided to name those parametric variations as Spray A followed by the changed parameter value (for example: Spray A 950K, Spray A 750K, spray A 1000bar...). Also the interest of measurements at spray B conditions (3 hole Diesel injector) was discussed.

The subject of the modelling work group was then discussed. A work group had been active before the workshop on the experimental side but not on the modelling side. It was decided to form a modelling workgroup led by Ewatt Hawkes and consisting of the institutions that participated to the modelling sessions of ECN1 (Spray A Computational Effort Results and Baseline n-heptane Experimental Efforts). The objective of this workgroup will be to coordinate modelling efforts and to provide guidelines on the comparison between modelling results. Also it was decided that the use of the ECN webpage would be discussed in the next modelling webmeeting. It was decided to organise separate experimental and modelling meetings within the next four month and a joint experimental/modelling meeting in 8 month to exchange on the conclusions of each working group.

The next topic was Gasoline Direct Injection. Different issues were discussed. In particular the subject of injector technology was highlighted. The choice of single or multi-hole injectors was discussed. 2 hole injectors seem to have the advantage of presenting a good compromise between simplified and representative geometry since the effect of jet to jet interaction seems to be a key issue. It was decided to form a work group on this topic led by Scott Parish.

Finally the organisation of the next ECN workshop, ECN2, was discussed. It was decided to hold the next workshop approximately 18 month after ECN1 and in Europe. An interesting possibility would be to organize ECN2 jointly with ICLASS (September 2-6, 2012 in Heidelberg, Germany) since the synergy was ICLASS was proven to be fruitful. It was decided to contact the ICLASS chairman to investigate this possibility. Other possibilities were proposed (ECN2 joint with LES4ICE or with Thiesel).

Discussion- Droplet Break-up Theory on San Buenaventura State Beach

The last session of ECN1 was the most important. All the participants joined the San Buenaventura State Beach. An experimental investigation of the secondary break-up of wave droplet clouds was carried out using almost non-intrusive boogie board sensors. However because of the high uncertainties of the measurements it was not possible to conclude on the thermodynamical pathway of the wave, the possibility that wave break-up might be occurring at supercritical state is still open, especially when considering the high tube roll up pressure increase induced by the wave break down... Then, in order to investigate the origin of primary wave break-up, a remote study of the wind motion was carried out using volley ball sensors. However again the experimental campaign was not successful due to the high uncertainty on the position of the field borders, especially when French guys were around... It all ended by an unfruitful but pleasant discussion about completely different

subjects... Therefore it was decided that this session should absolutely be renewed in the next workshop to finally try to come up with a conclusion!