Assignment 1a in the course “Hybrid Vehicle Drives”

Wankel vs. Piston ...

Introduction

The Wankel engine has a number of properties that makes it interesting in hybrid applications, smaller size, lower weight etc, but also drawbacks that in conventional vehicles are more pronounced, like low torque at low speed which is less of a problem when paired with an electric drive in e.g. a parallel hybrid. A Wankel hybrid is an interesting alternative.

The assignment

1. Search literature and talk to combustion engine specialists to find as much data on Wankel engines as possible. Particularly, the efficiency map and the maximum torque as function of speed are important, all related to size and weight.

2. Implement the Wankel data in a parallel hybrid simulation model.

3. Compare the piston and Wankel hybrids on as equal terms as possible. The model should account for differences in weight, rated power, efficiency and torque limitation. Run both driving cycles from the course, the US06 and EUDC.

4. Write a report with approx. 10 pages. It should include system introduction, problem formulation, system analysis (incl. Model and results) and a comparison with the conventional parallel hybrid studied in the course.

5. Submit the report by e-mail to Mats Alaküla and Yury Vargas. Use the filename “student1_student2.XX”. The report should be complete including front page and table of contents, all in one file.

6. Prepare a 10 minute presentation of your work at the 3’rd course meeting.

mats.alakula@iea.lth.se                                      yury.loayza-vargas@iea.lth.se