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GRPE-HDH Research Project Offer To Next Validation Phase



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Outline

GRPE-HDH

- Introduction
- Offered working tasks for upcoming “Validation Test Program”
 - Cooperating Institutes
 - Detailed Working Tasks
 - Time Schedule

Introduction

- In part one of the project the existing Japanese HILS method was analysed and necessary adaptations and extensions of the Japanese HILS method to provide test conditions for Heavy Duty Hybrid (HDH) power packs comparable to the existing EURO VI regulation for conventional ICE's were identified.
- The actual quote covers “Part two of the project” which includes the work necessary to produce a HILS simulation tool which meets the demands identified in part one of the project.

Offered working tasks for upcoming “Validation Test Program”

Cooperating Institutes

- The work is offered by Vienna University of Technology, Institute for Powertrains & Automotive Technology (IFA) and will be supported by the Institute for Internal Combustion Engines and Thermodynamics at TU Graz (TUG) and the Department of Signals and Systems at Chalmers University of Technology (CHAL).
- The Institutes shall cover all relevant fields of expertise necessary to fulfil the offered tasks and shall provide sufficient manpower to handle the work in the available short period.

Offered working tasks for upcoming “Validation Test Program”

Detailed Working Tasks

Task 1) Adaptation of the Japanese HILS Simulator for serial hybrid powertrain

- Task 1.1) Set up a serial HDH in the Simulator with the ECU as software in the loop as basis for further programming and software development

- Task 1.2) Add a software tool (“driver model”) which allows running the simulator with test cycles consisting of power and rpm at the wheel hub and at the power pack shaft as basis for the “GTR-HILS” model

- Task 1.3) Extend the Simulator with a library for non-electric components (as defined in part one of the project)

Offered working tasks for upcoming “Validation Test Program”

Detailed Working Tasks

- Task 1.4) Meetings with OEM’s and stakeholders to discuss relevant components to be included in a first version of the GTR-HILS model as basis for tasks 1.5 and 1.6
- Task 1.5) Extend the GTR-HILS Simulator with a library for power pack components not yet included in the Japanese HILS model (e.g. planetary gear box and power split, others if relevant and possible)
- Task 1.6) Extend the GTR-HILS Simulator with thermal models for exhaust gas aftertreatment components, coolant, lube oil, battery and electric motor where relevant according to task 1.4
- Task 1.7) Simulation runs and validation of basic functions

Offered working tasks for upcoming “Validation Test Program”

Detailed Working Tasks

- Task 2)** Adaptation of the GTR-HILS Simulator for parallel hybrid
- Task 2.1) Meetings with OEM’s and stakeholders
 - Task 2.2) Set up a data bus system in the model to allow various combinations of engines, gear boxes and storage systems
 - Task 2.3) Adapt the Software to simulate a parallel HDH
 - Task 2.4) Simulation runs and validation of basic functions, including the functions from task 1

Offered working tasks for upcoming “Validation Test Program”

Detailed Working Tasks

Task 3) Reporting on test procedure and writing a user manual for software

- Task 3.1) Report on test procedure and user manual for software
- Task 3.2) Provide the interface system for real ECU's
- Task 3.3) Adaptations and improvements on the methods for component testing, test cycle definition and simulation method according to demands of industry and Commission

Offered working tasks for upcoming “Validation Test Program” Time Schedule

Time Table		1	2	3	4	5	6	7	8	9	10	11	12
1	SILS for serial hybrid												
1,1	Set up a serial HDH as SILS												
1,2	Adapt driver model												
1,3	Library for non electric com												
1,4	Meetings with OEMs and stakeholders												
1,5	Library for new power pack components												
1,6	Thermal models												
1,7	Simulation runs and validation												
2	Adaptation of SILS for parallel hybrid												
2,1	Meetings with OEMs and stakeholders												
2,2	Set up a data bus system in the model												
2,3	Adapt the Software to parallel HDH												
2,4	Simulation runs and validation												
3	Reporting on test procedure and writing a user manual for software												
3,1	Report on test procedure, user manual												
3,2	Provide the interface system for real ECUs												
3,3	Adaptations and improvements of methods												

According to time schedule of planned roadmap, the project, should start not later mid of May 2012. The final report is planned 12 Months after beginning.

Thank you for your attention!



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