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Working Paper No. HDH-06-03  
(6th HDH meeting, 06 June 2011)



# **GRPE Informal Group on Heavy Duty Hybrids**

**6th HDH, Geneva, 06 June 2011**



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# Report 5th HDH Meeting

- **The results of the 5th meeting are as follows:**
  - **US EPA presentation**
    - is part of Greenhouse gas (GHG) rule to be signed by 31/07/11
    - focus on CO<sub>2</sub> of hybrid vs. conventional vehicle incl. PTO assessment
    - testing options are powerpack and chassis
  - **Environment Canada presentation**
    - close collaboration with US EPA
    - evaluation of different drive cycles showed significant cycle influence on CO<sub>2</sub> reduction potential
  - **Cummins presentation**
    - simulation will be an essential part of hybrid certification
    - hybrid certification should build on existing engine certification
  - **Japan presentation on open source model**
    - rigid model presented in detail
    - fluid coupling and torque converter model under development



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# Task List for HDH Research Program

- **To accommodate with its mandate, HDH will conduct a research program on the major elements of the HILS method. The research program covers the following five tasks:**
  - **Task 1: Investigation and modification, if applicable, of the Japanese HILS model and interface including a proposal for a verification method w/o vehicle testing**
  - **Task 2: Investigation and modification, if applicable, of the HILS component testing**
  - **Task 3: Extension of HILS to non-electrical hybrids, which are currently not covered by the Japanese test procedure**
  - **Task 4: Inclusion of PTO operation, which normally takes place outside the test cycle**
  - **Task 5: Development of WHVC weighting/scaling factors to represent real world vehicle operation**



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# HDH Research Program

## ➤ Quotes

- A request for quote on the five tasks was sent on 16/02/2011
- Offers were received by TU Graz / TU Vienna (joint program) and Chalmers University

## ➤ Project Overview

- HDH agreed at the 5th meeting that all three institutes be involved in the research program; the following project plan is proposed
  - TU Vienna will cover tasks 1 and 2; budget by OICA
  - TU Graz will cover tasks 4 and 5; budget by EU COM
  - Chalmers will cover task 3 and contribute to tasks 1, 4 and 5; budget shared between OICA, Sweden and Swedish Hybrid Center (SHC)
  - TRL will coordinate the program
  - Total budget is 265 k€



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## Cost Overview

| Task             | TU Vienna     | TU Graz       | Chalmers                                   |
|------------------|---------------|---------------|--|
| 1                | 40 k€         | 10 k€         | 4 k€                                       |
| 2                | 45 k€         | -             | -  |
| 3                | -             | -             | 47 k€                                      |
| 4                | -             | 28 k€         | 2 k€                                       |
| 5                | -             | 41 k€         | 3 k€                                       |
| Travel           | 15 k€         | 15 k€         | 15 k€                                      |
| <b>TOTAL</b>     | <b>100 k€</b> | <b>94 k€</b>  | <b>71 k€</b>                               |
| <b>Budget by</b> | <b>OICA</b>   | <b>EU-COM</b> | OICA: 25 k€<br>Sweden: 19 k€<br>SHC: 27 k€ |

