Education- and Research activities at the EHV-Project

Development process of suspensions with active components

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The EHV-Project

Education  Research  Recruiting

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The EHV on education

- Illustration for lectures
- Involvement of practical knowledge during study
- Intensive training of the teammembers during assignments
- Ability to work in a team („Soft Skills“)
The EHV at research

- **Method strategies**
  - total development-process to build up a car
  - Daily used development-tools

- **Overall university Research-Platform**
  - Proving of Components
  - Proving of different Versions and subjectiv dynamic evaluations

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The EHV as Recruiting- und networkplatform

- numerous projectpartners
  - Industry
  - Universities

- Recruiting
  - personal contact between students and project partners
  - technical advise of the project partners to improve education

- Professional exchange and networking
  - Exchange between students and companies
  - Exchange different projectpartners
  - Innovative input and new ideas for the project

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Status quo

2002 2003 2004 2005 2006 2007 2008

Virtual handling

Start of project
Idea

Freeze of Frame
Freeze of suspensions
Freeze of drivetrain
Freeze of design

Roll-Out

Real bodywork

Validation

Real advancement

Research

Frame
Suspension
Drivetrain
Validation of conventional suspensions in Papenburg
Validation of conventional suspensions in Papenburg

- raising waggle drive at $v_x = 60$ km/h
Preparation of active suspensions

- Drafts of controlling strategies for active anti-roll-bars:
  - Rollstability
  - Reduce of wheel loads
  - Control of over- and understeering behaviour

- virtual proving of vehicle systems

- virtual proving on virtual testrigs

- real proving on a testrig

- real vehicle proving and validation

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Virtual proving of vehicles
Virtual proving on virtual test rigs

Virtual test device

Virtual signal noise

Virtual process noise

State observer

Controller

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Real test rig proving

development computer

control unit

couplebox

12V DC

electric hydraulic pump

actuator

oil-cooling

valvebox

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Real vehicle proving

- actuator
- valve box
- oil-cooling
- electric hydraulic pump

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Further aims at the EHV-Project

- active tierods
- active suspension kinematic
- homologation for road service
- aerodynamic und aeroacustic analysis
- much more in confidential agreements with projectpartners