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## Tribology COST Action Brings Reduction in Fuel Consumption

The results of COST Action 532 were reported on at the International Tribology Conference ECOTRIEB 2007 held in Ljubljana, Slovenia, from 12 to 15 June 2007. The COST Action contributed jointly with the EUREKA ENIWEP (European Network for Industrial Wear Prevention) Umbrella also dealing with friction control and industrial wear prevention.

200 participants from 35 countries attended the conference where 109 scientific papers were presented. 41 of those papers will appear in special issues of the highly ranked refereed tribology journals "Wear, Tribology International" and "Tribotest".

COST Action 532 focused European research work on solving friction, wear and lubrication related problems in engines and transmissions. Researchers from 58 institutes from 30 countries used a total of 260 research man years to find new solutions to future industrial challenges. A scientific breakthrough was the clarification of the basic mechanisms related to carbon-based low friction coatings. The one micrometer thick vacuum deposited diamond-like carbon surfaces can, in dry conditions, reduce the friction with up to two orders of magnitude. Now their interaction with lubricants and additives has been explained and new coating-additive chemical compositions developed.

Much work was focused on improving the understanding of environmentally adaptable fluids in engines and transmissions. New techniques for emission reduction in engines through the use of biogas, advanced lubricants, coatings and light weight materials were developed. A detailed theoretical and experimental study on a new piston-ring design whereby the hydrodynamic microlubrication was generated by a textured topography containing microdimples resulted in a 4 % fuel consumption reduction in engine tests. Transmission systems were redesigned to improve the frictional conditions resulting in a power loss reduction of up to 74 %. The results are of benefit to the new industrial products and improvements in production methods in the 103 companies directly involved in the research work. The 42 projects carried out have already, at the end of the 5-year Action, resulted in 32 industrial improvements in commercial use.

The Chair of the Domain Committee Materials, Physical and Nanosciences, Axel Kranzmann took part in that final event.

For more information, please see: [lds.ec-lyon.fr/cost532/](http://lds.ec-lyon.fr/cost532/)



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