

Bigger R&D Projects performed in the Engine- & Exhaust Emission Control Laboratories of the University of Applied Sciences Biel, CH

1989 - 2018

- 1.) Measures for reduction of the fuel consumption in the road traffic - BEW Bundesamt für Energiewirtschaft, Bern
- 2.) Emission factors for 2-wheelers – part of an international project D, A, CH, NL - BUWAL Bundesamt für Umwelt Wald und Landschaft, Bern – competence center, continuous actualization of data
- 3.) Potentials for reduction of energy consumption and emissions of the city cars with IC-engines (KmV), BEW Bundesamt für Energiewirtschaft, Bern
- 4.) Basic investigations on a construction Diesel engine with blending of water, alcohol and crude rapeseed oil
- 5.) Reconstruction of the intersection General Guisan Platz in Biel – creation of a roundabout – measuring campaign and evaluation of potentials of reduction of energy consumption and emissions of traffic, Bundesamt für Strassenbau, Bern
- 6.) Research of the Lambda regulation and conversion behavior of 3-way- catalyts
- 7.) VERT ... reduction of emissions of real machines in tunnel construction - international project CH, A, D - SUVA Luzern, BUWAL Bern – engine research, preparation of the BUWAL/VERT particle filter test, analysis of nanoparticulates
- 8.) TVI ... Transvalve Injection - multipoint gas injection for CNG-engine - KTI Kommission für Technik und Innovation, Bern, industrial partners
- 9.) Research and quality tests on particle filter systems, SUVA, BUWAL, industrial partners
- 10.) Investigations with different EGR-variants on a CNG-engine – industrial partners
- 11.) Possibilities of emission reduction of small 4 stroke engines for agricultural machines - BUWAL Bern, FAT Landwirtschaftliche Forschungsanstalt Tänikon
- 12.) Measures of emission reduction of handhold machines with 2 stroke engines - BUWAL Bern
- 13.) Basic research on CNG-engines with different qualities of natural gas and with different gas injection systems
- 14.) Investigations of the wall heat losses during the engine combustion process – Oppenheim Correlation
- 15.) Collaboration in expert consortium for decision making of the Swiss Government concerning the parliamentary postulate Stump about "Technical basics for retrofitting of HD-vehicles with Diesel particle filters"
- 16.) Participation at the EU-Project ARTEMIS (Assessment and Reliability of Transport Emission Models and Inventory Systems), workpackage 500 "2-wheel vehicle emissions", 1999-2001

- 17.) Participation at the EU-Project DIEXFIL (Development of Diesel Exhaust Gases Filtration Technology with Fuel Additives for City Buses in Poland), 2001-2004
- 18.) Participation at the UN GRPE PMP Particle Measuring Program , performing of Part 1 & Part 2 of the Swiss contribution to the PMP, 2001-2002
- 19.) Participation at the UN GRPE WMTC Worldwide Motorcycle Test Cycle part of the Swiss contribution to the WMTC, 2002-2003
- 20.) Research of particle emissions and regenerations of different DPF's on a 2-S Detroit Diesel engine (Swiss Californian joint project, CARB)
- 21.) Participation at the projects of the Swiss EPA and Canton Berne about: retrofitting of city busses with particle filter systems SBB & EFO (Saubere Busse Biel und Emissionsminderung der Fahrzeuge im Oeffentlichen Verkehr)
- 22.) Research on SI engine with bi-fuel-operation including different reformergases
- 23.) Collaboration in expert consortium for decision making of the Swiss Government concerning the "Technical basics for incentives of passenger cars with Diesel particle filters"
- 24.) Research of emissions of city busses with RME blend-fuels and with CRT (Continuously Regenerating Trap), 2003-2005
- 25.) Research of (nano) particle emissions of 2-wheelers (BUWAL) in an international network project, conducting of Annex XXXIII of the IEA Implementing Agreement AMF (Advanced Motor Fuels), 2005-2010
- 26.) Operation of a Diesel engine for a cogeneration unit with rapeseed oil (ROR) including exhaust gas aftertreatment with DPF + SCR, 2005-2007
- 27.) Investigations of injection, combustion and emissions of a modern construction machines engine with alternative fuels GTL, RME, ROR, 2006
- 28.) Basic investigations of different particle catalysts on a Diesel passenger car with detailed analysis of nanoparticles, (BMU, UBA, 2006-2007)
- 29.) VERTdePN – investigations and assessment of the combined exhaust gas aftertreatment systems (DPF + SCR) for retrofitting of HD-vehicles, 2007-2011
- 30.) Collaboration in Swiss Norm for the evaluation of DPF-systems for retrofitting (SNR-277205), 2008-2011
- 31.) Collaboration in research of toxicity of 2-S Scooters exhaust emissions with the Institute of Anatomy of the University of Bern, 2004-2010
- 32.) Collaboration in implementing of change of the Clean Air Ordinance (LRV), Sept. 2008 "Requirements for construction machines and for the particle trap systems", 2009-2011
- 33.) Collaboration in expert group DPF-Retrofitting, EC-JRC, Ispra; BAFU, CH, Draft Technical Document, Bruxelles, Nov. 2008 (until 2009).

- 34.) Project BLODEG – Biocomponents Emissions and Lube Oil Degradation in HD Diesel Engines with Polish Oil & Gas Institute INIG and Western Norway Research Institute WNRI, 2008 - 2010
- 35.) Organisation of the technical program of the international conference about (Particle) Emissions of 2-S Scooters, Monza, Italy June 2009 in collaboration with SAE and EC JRC
- 36.) Organisation of the conference for the jubilee of the 30 Years AFHB, Biel-Bienne 3rd April 2009 “Reducing Pollution from Transport”
- 37.) Project BioExDi – Biofuels Exhaust Systems Diesel Engines together with EMPA & Swiss Nanoparticle / DPF Network, 2009 - 2011
- 38.) VERT Association International – membership & scientific committee since 2009
- 39.) Engine Toxicity Network cooperation in international activities of knowledge exchange and project coordinations since 2009, International Information Annex XLII of IEA AMF 2010 - 2014
- 40.) Project BioToxDi / EngToxDi – Biofuels/Engines Toxicity Diesel – together with UniBern, Matter Aerosol, TTM Technik Thermische Maschinen, EMPA & PSI – Schweizer Projektmodul über Toxizität der Diesellabgase, 2010 - 2013
- 41.) Nanofiltration of air in vehicle cabins; project with Swiss Nanoparticle Network and TECHNION Haifa – coorganisation of Nanoparticle Workshop Tel Aviv June 2010
- 42.) Installation of a 4 Wheel Drive chassis dynamometer in Nidau (AFHB) with CVS and measuring technics for gasoline-, Diesel-, hybrid-vehicles and 2-wheelers, 2010 - 2013
- 43.) SAS-Accreditation as measuring laboratory for DPF & deNO_x, start 2009, accreditation 2011
- 44.) Organisation of sessions „Emissions“ of the 10th International Conference on Engines & Vehicles, SAE NA, Capri, Napoli, Sept. 11-15, 2011
- 45.) Project SINO – DPF retrofitting for fuels with high Sulfur content in Beijing – together with TTM, Terraconsult & DEZA, 2011/12
- 46.) TeVeNO_x – testing vehicles with NO_x-reduction systems – Swiss Contribution to GRPE REC – with ASTRA, BAFU, EMPA, TTM, MAE 2012/13
- 47.) Organisation of workshop HEV-Network CH, 13th, September 2012
- 48.) SDPF – research on integrated SCR & DPF – with BAFU, Liebherr, TTM, Umicore, NGK, EMPA, 2013 - 2014
- 49.) GasOMeP ... Gasoline Cars Organic & Metal Particles – mit EMPA, FHNW, PSI, (SOA), start 2013 - 2017
- 50.) EmGasCars ... Emissions of Gasoline Cars – Nanopartikel und nichtlimitierte Emissionen mit Alkohol-Mischkraftstoffen, start 2013 - 2016
- 51.) Measuring procedures for reactive gaseous components, Swiss contribution to WLTP, together with BAFU, ASTRA, 2013 - 2014

- 52.) DEZA: Black Carbon Emissions of Mobile Sources, China – Experten Unterstützung, Know-How-Transfer, together with Terraconsult, TTM, Nov. 2013
- 53.) Coorganisation of Nanoparticle Workshop Tel Aviv, June 2013 with Swiss Nanoparticle Network and TECHNION Haifa, June 2013
- 54.) Coorganisation of demonstration project “DPF filtration efficiency with different busses”, Tel Aviv, Nov. 2013, with TECHNION Haifa & Ministry of Environment.
- 55.) Project EngToxGas – Engine Toxicity Gasoline – together with Uni Fribourg, Adolph Merkle Institute, TTM, EMPA, PSI, Start 2014 - 2016
- 56.) HaMaEm – handheld machines emissions – non-limited emissions, oil quality, nanoparticles – together with HaMaNet (Handheld Machines Network), 2013-2014
- 57.) DPF-Cleaner and Throttling – DPF regeneration helps for retrofitting, with VERT Association partners, start 2015 - 2017
- 58.) GasBut – research of gasoline-butanol blend fuels on SI engines – combustion & non-legislated emissions, start 2015 - 2017
- 59.) Projects PEMS/RDE, start 2015, since 2017 research RDE (ResRDE)
- 60.) Coorganisation of Nanoparticle & DPF Retrofitting Workshop, Technion, Haifa, June 2016, together with VERT Association
- 61.) Comparison PN-opacimetry on 107 machines, BAFU 2016 - 2017
- 62.) Research on GPF for MPI (ResGPF), VERT, BAFU, start 2016
- 63.) In use control Diesel (IUCD), VERT, BAFU, 2015 - 2017
- 64.) Participation on the technical group for NPTI (new periodical technical inspection), start 2016
- 65.) DiBut – research of Diesel fuel – butanol blend fuels on Diesel engines – combustion and non-legislated emissions, start 2017
- 66.) Research of emissions and in-service monitoring (ISM) of non-road mobile machinery (ISM NRMM), start 2018
- 67.) Coorganisation of Nanoparticle & DPF Retrofitting Workshop, Tel Aviv, September 2018, together with VERT Association