

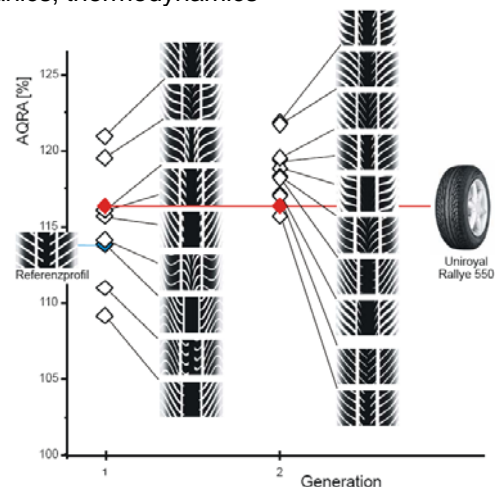
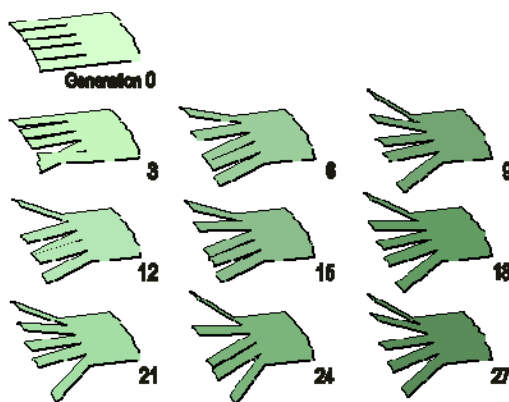
ICT Proposers´ Day Budapest, Jan 22th 2009**Institution/Company**

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Scientist in several projects (Bionics Competence Network, Bionic Ideas Competition, ...)
Freelancer (consulting and developing in optimization, bionics, fluid dynamics, ...)
Teaching assignments in engineering mechanics, fluid mechanics, thermodynamics

**Project idea: Optimization by evolutionary experimentation and computation**

The evolution strategy is a robust and universal optimization procedure. Only two conditions must be fulfilled to apply the evolution strategy. The optimization object must be changeable or in term of evolution mutable (e.g. adjustable objects, throw-away models / rapid prototyping, variables in computerized simulation) and it must be possible to determine the best descendant of the current generation. The figures show two examples of use.

- The multi-winglets were optimized in a wind tunnel. This setup of wingtip was inspired by the primary-feathers of soaring birds. The connecting pieces between the winglets und the basic-wing are made of deformable lead to realize the mutability. The optimization purpose was to minimize the drag to lift ratio. The experiment started with the flat setup of the five winglets. The setup after the optimization run looks similar to the setup of birds and the drag to lift ratio could be improved about 10 %.
- The resistance against aquaplaning of vehicle tires was improved, which was determined on the Contidrom testing grounds. The varied tire profiles were robot-carved in each case in smooth tires. Compared with the start configuration clear improvements could be already achieved during the first both generations (with Dr. R. Mundl, Continental).

Now we are looking for further project partners in the field of optimization applications.

Expertise:

Optimization in experiment and computation problems (by the evolution strategy: development of technical systems using principles of biological evolution), bionics, fluid dynamics, wind tunnel experiments, acoustic measurement, ventilator design

Key words:

Optimization, evolution strategy, winglets, wing design, drag reduction, noise reduction, bionics, bird flight.