REWITEC® is an independent, medium-sized business that develops innovative nano- and micro-particle-based lubricant additives and markets these in Wind Turbine applications around the world. When applying the products, treated machinery, gearboxes and bearings can run with reduced friction, reduced temperature and great reliability and durability due to reduced abrasion and wear.
In the wind sector in particular, the service life of systems is of central importance, since any renewal or replacement of system components entails a substantial investment. Many well-known manufacturers and operators of wind turbines appreciate the efficacy of the products and use them on a regular basis. Even scientific tests and reports show that using REWITEC® products increases smooth running and reduces wear in main gears. Adding DuraGear W100 specially developed for the wind industry can extend the life of all moving parts right through to the scheduled repowering, without having to make an additional investment in a gearbox.
The special high-temperature grease GR400 has also been applied to pitch, generator and main bearings and azimuth and pitch gears. The results, like the extended service life of components, removal of previous damage and the positive impact on bearings and their CMS data, convince not only owners, operators and commercial managers but also those companies involved in the service and maintenance business.
Evaluation of life time improvement

Project
Using the REWITEC® provided specific gear and bearing surface roughness measurements with and without treatment, 3rd party Sentient Science ran two cases for each of several critical components (intermediate pinion bearing, planetary bearing and intermediate pinion gear). Aside from the surface roughness differences Sentient Science assumed that all other model input parameters including bearing and gear loads, metallurgical and material properties, and oil viscosity remained unchanged from Sentient Science´s Winergy 4410.2 prognostic model. Sentient Science used its proprietary six-step prognostic modelling process to evaluate life of the two different surface finishes. REWITEC® used these tests to provide Sentient Science with the surface finish data of the components with and without REWITEC® DuraGear W100 treatments.

Mixed – EHL Modell
To take the influence of microasperity into account for determination of probabilistic fatigue life, Sentient Science mixed EHL (elastrohydrodynamic) solver utilizes simulated surface roughness profiles in an explicit deterministic calculation of surface tractions. Surface traction refers to the pressures transmitted between two surfaces through a lubricant.
Outcome: We can directly determine the performance of a given surface finish during the generation, sustainment, and/or failure of an EHL film at the contact zone.

Result
DigitalClone predicts that a Winergy 4410.2 damaged gearbox treated with REWITEC® DuraGear® W100 has a significant improvement in life than untreated gearbox and representative turbine operating conditions. Specifically, for bearings, REWITEC´s DuraGear® W100 treatment is expected to improve the overall contact fatigue life by a factor of 3.3. For gears, REWITEC´s DuraGear® W100 treatment is expected to improve the overall fatigue life by a factor of 2.6.

REWITEC® main application are gears and bearings in wind turbines, steel-, mining production, industrial and marine industry.
Latest University test results have proven 43 % less friction, 20 % less temperature and 54 % less roughness on a 2 disc test assembly bench. Sentient’s DigitalClone technology predicts

that Winergy 4410.2 gearboxes will exhibit a significant improvement in life compared to untreated gearboxes – under field representative operating conditions, REWITEC's DuraGear® W100 treatment is calculated to improve bearing life by a factor of 3.3 and overall gear life by a factor of 2.6. This life extention upgrade solution allows for a ROI up to 49 % and a payback within 8 months and more.

For more information and contact, please visit our multi-lingual website www.rewitec.com

Dipl.-Ing. Stefan Bill
53 years, married, 2 children

- 1985–1988 Studies of Electronics, University Giessen/Friedberg (Germany), Graduate Engineer
- 1988-2002 Sales Manager LTI Drives GmbH, Lahnau, Germany
- 1999 Studies of Economics, St. Gallener Business School, Switzerland
- 2002-2004 Business Unit Manager Motors&Drives ABB Automation Products, Mannheim, Germany
- Since 2004 Executive Partner REWITEC GmbH, Lahnau. Responsible for International Accounts, R&D

REWITEC® was Finalist of the 28th Innovations Award of the German Economy 2007

Finalist 1st HUSUM WindEnergy Award 2009

Winner of Industry prize 2014 in the category – BEST OF 2014 for the product DuraGear

Finalist of the Wind Energy Award 2016 as supplier of the year