

Curriculum Vitae

Position : Renewable Energy and Energy Efficiency Specialist
Skat, Vadianstrasse 42, CH-9000 St. Gallen,
Switzerland

Name of Firm : Tel: +41 71 228 54 50
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Name of Staff : **Martin BOELLI**

Profession : Exec. Master of Environmental Technology and
Management NDS
Electrical Engineer FH

Date of Birth : 14.11.1973

Years with Firm : Since January 2012

Nationality : Swiss

KEY COMPETENCIES

- Expert on renewable energy: conceptual design and environmental, economical and technical assessments of small hydro and hybrid schemes in isolated and grid-connected mode
- Consultancy for the development of national energy policies, analysis of regulatory frameworks and design of national feed-in rules and respective tariff systems
- Conceptual design of isolated and grid-connected power systems and of electric transmission and distribution systems in rural areas
- Expert on stakeholder analysis, barrier removal strategies, knowledge dissemination, on-the-job training and organisation of workshops
- Expert on energy efficiency: conceptual design of production processes, optimization of production efficiency (Cleaner Production Assessment), energy and material flow assessments in industrial fields
- Project and programme design, planning, management and monitoring
- Broad experience in different developing countries
- Accustomed to work in interdisciplinary and international project teams, both as a team member and a project leader

EDUCATION

- 2009-2011 Certificate of Advanced Studies (CAS) ETH in Development Cooperation, Swiss Federal Institute of Technology Zurich (ETH), NADEL, Zurich / Switzerland; Courses: "Rural development", "Organisational development", "Planning and monitoring", "Current trends in the international cooperation", "Financial management", "Corruption and Corruption Control" and "Evaluation of programmes and projects"
- 2003-2005 Executive Master of Environmental Technology and Management, University of Applied Sciences / Institute of Environmental Technology, Muttenz / Switzerland, Diploma thesis: "Jordan olive oil & its production – cleaner production potential and quality requirement for the successful export"
- 1993-1997 Electrical Engineer FH, University of Applied Sciences, Rapperswil SG / Switzerland, main orientation: "energy technology", "electronics" and "digital signal processing"
Semester and diploma project in digital signal processing (different implementation versions on a DSP), semester project in energy technology (Assessment and optimisation of a thermal solar plant)
- 1990-1993 Technical Matura degree, parallel to apprenticeship
- 1989-1993 Vocational school, St. Gallen, Switzerland; apprenticeship electronic technician for radio and television devices

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

- Swiss Small Hydro, Swiss association of Small Hydropower, Managing Director (www.swissmallhydro.ch)
- AEE SUISSE, Umbrella organisation of the Swiss economy of renewable energies and energy efficiency, Member of the Board (www.aeesuisse.ch)
- OTTI International Small Hydropower Operation Conferences, Member of the advisory board (www.otti.de)
- Hydroenergia Conference and Exhibition 2010 in Lausanne, Switzerland: Member of the International Scientific Committee and Chair Person

PUBLICATIONS

- Publisher of the Small Hydropower Newsletter of the Swiss Federal Office of Energy (since 2005)
- Several articles for professional journals and newspapers about Small Hydropower in Switzerland
- Several presentations about small hydropower at different events world wide

OTHER TRAINING

- 2014 Course on facilitation, Skat, Switzerland
- 2010 Capacity Works, gtz
- 2008 French studies in Guadeloupe / France
- 2006 Community of Practices, 24 hours training course, SDC / Switzerland
- 2001 Project Management Training, Skyguide, Switzerland
- 2000 English studies and travelling in Australia
- 1999 Leadership & Project Management Training, Siemens Building Technologies AG, Switzerland
- 1998 Spanish studies and travelling in Central America
- 1997 Situation diagnostic, problem solution, decision finding and risk analysis method (SPER method)

COUNTRY EXPERIENCE

<u>Country</u>	<u>Year(s)</u>	<u>Country</u>	<u>Year(s)</u>
Cameroon	2013	Liberia	2012
Tunisia	2012	Ghana	2010
Azerbaijan	2007	Laos	2006
Nepal	2006, 2010, 2013	Poland	2005
Vietnam	2005, 2006, 2007, 2010	Jordan	2004, 2011-2013
St. Vincent	2009	Yemen	2004
Ethiopia	2008, 2009	Germany	2001
Indonesia	2006, 2009	United Kingdom	2001
St. Lucia	2009	Australia	2000
Uganda	2008	Guatemala / Mexico	1998
France	1999, 2000, 2008		

LANGUAGES

	<i>speaking</i>	<i>reading</i>	<i>writing</i>
German (mother tongue)	Excellent	Excellent	Excellent
English	Very Good	Excellent	Very Good
Spanish	Good	Very Good	Fair
French	Good	Very Good	Fair

EMPLOYMENT RECORD AND PROFESSIONAL EXPERIENCE

01/12 – ongoing Renewable Energy and Energy Efficiency Specialist at **Skat Consulting AG, St. Gallen, Switzerland.**

Tasks:

- Consulting services in local power generation, small hydro power, commercial use of electricity, rural power supply, grid infrastructure and grid extensions
- Developing strategies, programs and measures, adapted to the particular needs of the countries and allowing the reasonable use of local resources.
- Publications and documentations for public events

Main Activities/Projects:

- Swiss Small Hydro (Swiss Association of Small Hydropower, until 2016 known as "ISKB"): Managing Director; information and consulting about Small Hydropower (SHP) in Switzerland for stakeholders, networking, Stakeholder discussions, Improvement of frame conditions for the development of SHP in Switzerland, energy policy (Swiss Small Hydro, 2013 ongoing)
- Promotion of Small Hydropower (SHP) in Switzerland, SHP Expert, Swiss Federal Office of Energy (SFOE): Consulting for questions regarding the improvement of frame conditions for the development of SHP in Switzerland, Compilation of the Newsletter (3 editions per year), Initiation and Coordination of Pre-Feasibility Studies(SFOE, 2012 ongoing)
- Quality check of Micro Hydropower (MHP) Feasibility Studies in Rwanda: backstopping, review of Feasibility Studies (giz, 2013 ongoing)
- Hydropower Research Program of the SFOE: coordination, expertise on demand (SFOE, 2012 ongoing).

- Small Hydropower Publication Concept, SHP Expert, SFOE: Development of a new general publication concept, implementation in a first modul, coordination of the preparation of five further modules (SFOE 2015 ongoing)
- Regional Assessment of the potential for retrofitting small hydropower capacity at existing barrages / dams in SADC countries (desk study): Development of the methodology, review of the report; (GIZ, 2016)
- MHP Statistics Switzerland, SHP Expert, SFOE: Analysis of different databases, synthesis and development of a general valid MHP statistic for Switzerland (SFOE, 2015)
- Analysis of operation & maintenance cost of Small Hydropower Plants in Switzerland, SHP Expert, ISKB / SFOE: Survey, analysis, report and publication (SFOE, 2015)
- Cost structure of SHPs in Switzerland, SHP Expert, SFOE: Analysis of over 500 SHP Projects in Switzerland, based on several parameters (investment and O&M costs, location, hydrology, energetic performance, ...); (SFOE, 2014)
- Evaluation of the issuance of “proof of origin” certificates of Small Hydropower Plants in Switzerland, SFOE: Audit process, recommendation of improvements (SFOE, 2014)
- Development of a Small Hydropower documentation structure, SFOE: Review of the existing documentation about Small Hydropower (with a special focus to Switzerland), proposal of a structure, Document template, Tender documents (SFOE, 2014).
- 6 Feasibility Studies of Micro Hydropower Plants in Tanzania: Backstopping, focus on electric and electromechanical equipment and the design of the distribution grids; operation and maintenance concept (GVEP, 2013)
- ISKB, Switzerland: Backstopping, coordination of the subject areas “Politics” and “Public Relations” in collaboration with the General Secretary (ISKB, 2012-2013)
- VSBK – Vertical Shaft Brick Kiln and other SCP (Sustainable Construction Practices), Nepal, EU SWITCH-Asia programme: Verification of measurement results of Nepalese brick kilns, visualization (EU SWITCH-Asia programme, 2013)
- Support in construction, operation and maintenance of Micro Hydropower Plants (MHP), Cameroon: Technical Support of ADEID, a NGO in Cameroon, in Planning, Construction and Operation & Maintenance of isolated MHP’s (Misereor, 2013)
- Reuse of Treated Wastewater for Irrigation Purposes in the Northern Jordan Valley, KfW Bankengruppe (KfW): Tender Design and Documents (KfW, 2012)
- Scoping of Opportunities for Integrating Micro Hydro Turbines into existing Irrigation Weirs in the Lower Mekong Basin, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ): Technical Design Expert, Backstopper (GIZ, 2012)
- Support of the Tunisian Drinking Water Provider SONEDE in the development of hydro power systems in their network: Assessment of the available hydropower potential, Identification of a pilot side, elaboration of a feasibility study and detailed design, tender docs, training of local staff on hydrological and technical aspects (3 day classroom training with exercises and excursion), (GIZ, 2012)
- Micro to small scale hydro-power assessment for public utilities and networks in Lebanon, United Nations Development Programme (UNDP): Backstopping (UNDP 2012)

- Site assessment for a Small Hydropower Station in Central Switzerland, KIBAG Bauleistungen (2012)
- Workshop on the ECOWAS Scale-Up Program for Small-Scale Hydro Power in Monrovia, Liberia, ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREE): International workshop instructor and moderator (UNIDO ECREE, 2012)

12/04 – 01/12

R&D, consulting and engineering activities at **Entec AG, St. Gallen, Switzerland**, with focus on electrical and environmental aspects. Participation in consulting projects in the field of small scale hydro power.

Tasks:

- Consulting services in local power generation, small hydro power, commercial use of electricity, rural power supply, grid infrastructure and grid extensions
- Developing strategies, programs and measures, adapted to the particular needs of the countries and allowing the reasonable use of local resources.
- Conceptual design of local hydro power plants and electrical installations, in cooperation with local engineers in the offices in Nepal, Indonesia, Vietnam and Malaysia as well as in other countries. Feasibility studies.
- Publications and documentations for public events
- Collaboration in the range of control devices for the further development of Entec products
- Support in the coordination of the different worldwide Entec offices

Main Activities/Projects:

- Swiss Small Hydropower Promotion Program, Program Manager: Small Hydropower Sector within “SwissEnergy”, the Renewable Energy Promotion Programme of SFOE. Improving the national frame conditions to allow the cost efficient utilisation of the existing small hydropower potential in Switzerland. Communication, information, coordination with partners / networking, assessment of studies, presentations at public events, financial management and reporting (SFOE, 2005-2011, 2005 – 2007 Co-Programme Manager).
- Reuse of Treated Wastewater for Irrigation Purposes in the Northern Jordan Valley, KfW Bankengruppe (KfW): Feasibility Study for a Small hydropower station using the hydroelectric potential of the irrigation network and Design (KfW, 2011-2012)
- Hydropower Research Program of the SFOE, Deputy Programme Manager: in collaboration with Industry and Universities. Communication, reporting, coordination with partners, financial management and reporting (SFOE, 2008-2011).
- Set-up of a small hydropower competence centre in Indonesia with the former hydropower testing laboratory of the Hochschule für Technik, Zürich. Coordination of the dismantling, transfer and installation of the equipment and of the reconstruction, institutional setup and business plan (REPIC, 2005-2011)
- Product Manager Entec Turbines and Turbine Technology (T15 licenses). International turbine marketing and sales, coordination with suppliers in Indonesia; coordination of the technology transfer projects; (Entec, 2007-2011)
- Poverty Oriented Grid Extension Project POGE, Ghana, Rural Electrification Expert: Update of the 2005 POGE report, Feasibility Study, Recom-

- mendations for implementation; In cooperation with the Electricity Company of Ghana and the Ministry of Energy and further actors (Swiss State Secretariat for Economy seco, 2010)
- Small Hydropower Promotion Program SHPP, Nepal, Expert: Development of a Power Exchange Agreement for the grid connection of isolated minigrids in Nepal. Consultancy to the Nepalese Task Force, consisting of Members of the Nepalese Electricity Authority, the Ministries of Energy and of Environment and further stakeholders (German Development cooperation gtz, 2010)
 - Vietnam Sustainable Brickmaking Project, Expert: Presentation of the MINERGIE label and evaluation of possibilities for Vietnam (Swiss Development Cooperation SDC, 2008-2010)
 - Access to Modern Energy Services, Ethiopia (AMES-E): Consultancy to the Ethiopian Ministry of Mines and Energy for the development of new Energy Policy Framework Conditions. Establishing a task force with members from the national utility, the ministries and other stakeholders, initial consultation workshop, impact assessment, draft of a power purchase agreement and a grid code, review and 2nd consultation workshop (gtz / EnDev, 2009)
 - Feasibility Studies South Rivers and Richmond hydropower stations (rehabilitations) and the 2nd stage at South Rivers (new construction) in St. Vincent, Hydropower and Environmental Expert: Responsible for all electrical and electromechanical aspects, including the integration into the electricity supply system of the main island. Coordinator for the preparation of an Initial Environmental Examination (IEE) (VINLEC / UNDP, 2009)
 - Mini Hydro Power Project (MHPP), Java / Sumatra, Indonesia: Standardisation of electro-mechanical equipment; Monitoring of three micro hydropower (gtz, 2009)
 - Pre-Feasibility Studies for the rehabilitation of two sites in Switzerland, installation and supervision of a flow measurement installation (Entec, 2008-2009)
 - AMES-E: Baseline Study of the Ethiopian Energy Sector with focus on rural electrification by the use of small hydropower and photovoltaic, taking solar-thermal applications into consideration. Assessment of different relevant aspects, like the available potential, the current energy policy, legal requirements, tariff structure and electrification plans of the utility, options to increase the load factor, the willingness and ability to pay, a comparison of the different generation costs, access to finance, ownership and operation of power plants, implementation and operation risks, proposal of mitigation strategies and barrier removal strategy, and selection criteria for viable hydropower plants (gtz, 2008)
 - Demand Assessment of Small Hydropower Players in Uganda (SDC / gtz 2008)
 - Small Hydropower Research Program of the SFOE, Programme Manager: in collaboration with Industry and Universities. Communication, reporting, coordination with partners, financial management and reporting (SFOE, 2005 – June 2007 Co-Programme Manager, July – December 2007 Programme Manager).
 - Azerbaijan Renewable Energy Project: Screening and assessments of different SHP sites. Pre Feasibility Study in Azerbaijan, organization and implementation of a study tour to Switzerland with high-level representatives of the Ministry of Industry and Energy of Azerbaijan (including Vice Minister). Assistant to the international project leader (Asian Development Bank ADB, 2007)

- Hydropower Expert for the elaboration of a new hydropower research concept of the SFOE (SFOE, 2007)
- Independent SHP Expert for the design of the new RE feed-in tariff system within the energy ordinance of Switzerland (SFOE, 2007).
- Consulting services (energy efficiency & chimney draught calculations, environmental monitoring) for the sustainable operation of brick kilns in Vietnam (SDC, 2006-2007)
- Support of the local project team of SHPP in Nepal, flow measurements of a new SHP in the Himalaya range & pre-feasibility studies (gtz, 2006)
- Pre-Feasibility study for the rehabilitation of four Small Hydropower plants in the Region of Xiengkhouang and Houaphan in Laos (Joint-Venture entec - sunlabob, 2006)
- Engineering (conceptual design) and installation of an isolated hybrid power system in Laos, with the use of Small hydropower, photovoltaic and biomass (Jatropha) (Joint-Venture entec - sunlabob (Laos), 2006).
- Environmental Impact Assessments (EIA) for four small hydro power plants in Vietnam and rehabilitation Plan for three existing small hydro schemes (Worldbank WB, 2005/2006)
- Optimisation of a fish ladder video supervision system for Freienstein hydropower station in Switzerland (2005)
- Organization of a visit to a mini hydro power plant in Switzerland for high level Thai officials (2005)
- Organization of a renewable energy study tour in Switzerland for high level Vietnam officials (WB, 2005)
- Revision of the licence agreement for local manufacturing of cross flow turbines (2005)
- Technical support for plant owners in several countries (2005)
- Participation in the European SPLASH–Altener Project: Promotion and case studies on local planning approaches to the development of small hydroelectricity projects in different countries of the EU (SFOE, 2005)

04/04 – 06/04

German Technical Cooperation (GTZ), Sana'a, Republic of Yemen, Junior Consultant

Tasks:

- Development of a simple diesel burner system for lime kilns in the Wadi Hadhramaut

Main Activities:

- Analysis of different lime kilns in the province of Hadhramaut
- Comparison of different fuels, kilns, burners and working environments
- Optimisation of an existing kiln and its working environment in Khumair
- Development of a simple diesel and waste oil burning system with local available materials

09/03 – 09/04

Institute of Environmental Technology, Muttenz / Switzerland

Tasks:

- several short time assignments

Main Activities:

- Review, translation and summary of Cleaner Production In-plant-assessment reports of the Centro Nacional de Produccion Mas Limpia / Costa Rica, (2003-2004)
- Internet investigation about the “relleno sanitario”, a waste disposal technique (2003)
- Assisting the Institute for the planning and execution of the “Hazardous Waste Management” Workshops (09/03 and 09/04),

07/04 – 09/04

Assistant for **Grigull / Spaan – Beratende Ingenieure**, Köln / Germany – Sommeri / Switzerland;

Tasks:

- Test series at an activated sludge tank of a biological washer

Main Activities:

- Measurement of several parameters of the biological washer (several substances, pressures)

11/03 – 01/04

SKAT foundation, St. Gallen / Switzerland, practical studies

Tasks:

- Comparison of two International Networks regarding their Knowledge Management

Main Activities:

- Analysis of the Rural Water Supply Network (RWSN) and basin regarding several aspects of Knowledge Management

03/03 – 11/04

Institute of Environmental Technology, Muttenz / Switzerland, postgraduate student (only most relevant projects):

Tasks:

- Diploma thesis & student research projects in the frame of the studies at the institute

Main Activities/Projects:

- Jordan olive oil & its production – Cleaner production potential and quality requirement for a successful export (diploma work)
- Strategic Environmental Impact Assessment for a planned settlement in northern Switzerland
- Risk assessment for a hazardous waste landfill
- Comparison of different decontamination variants for a hazardous waste landfill, by applying Life Cycle Analyses (LCA)
- Cleaner Production Assessment in the food industry
- Effort assessment for a ISO14001 certification in a Swiss company

08/01 – 02/03 R&D Engineer, **Leica Geosystems AG, Heerbrugg / Switzerland**, Surveying & Engineering;

Tasks:

- Development engineer in the electronic design department

Main Activities/Projects:

- Electronic design of a subpart (Automatic Target Recognition Module) of a high precision theodolite and definition of the production concept

12/00 – 07/01 Project Engineer, **Skyguide (Air Traffic Management Switzerland), Zurich-Airport / Switzerland**;

Tasks:

- Project manager within the department of navigation & surveillance

Main Activities/Projects:

- Sub project manager for the “Common procurement of a mode S radar system” project, in co-operation with the German and Dutch air traffic management
- Review of the project documentation in cooperation with the German and Dutch partners and with the English supplier

02/97 – 09/00 Project Leader / Development Engineer, **Siemens Building Technologies AG (SBT), Landis & Staefa Div., Zug / Switzerland**;

Tasks:

- General Project Manager (1999 – 2000), responsible for the coordination of the development, marketing, production and logistic department with the management and the customer
- Project leader Electronic design (1998)
- Development Engineer in the Electronic Design department (1997-1998)

Main Activities/Projects:

- Development of a wireless heating control system for a French OEM customer (1999 – 2000)
- Electronic design of a Control Unit for a German OEM customer and definition of the production concept (1998)
- Technical expert for the definition of a new product range (1998)
- Development of several electronic subparts for heating control devices (1997 – 1998)

OTHER ACTIVITIES

Since 2009 Glattstrom Buchholz AG (joint stock company), Switzerland: Member of the Board of Directors

LinkedIn Profile: <https://ch.linkedin.com/in/martinboelli>