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## Carsten Guntermann

**Project Manager / Civil Engineer / Hydropower Expert**

**GERMAN**

**LANGUAGES: GERMAN, ENGLISH, INDONESIAN, MALAY**

### EDUCATION

- 1999-2001      Three Courses in FIDIC Conditions of Contract
- 1999            Course in safety engineering, graduation as certified Safety Engineer
- 1995 - 1999    Study of civil engineering and project management at University of Applied Sciences in Biberach, Germany and South Bank University in London, Great Britain.  
Graduation as Diploma Engineer (FH) (equiv. to MSc)
- 1989 -1992    Professional job education as 'Concrete Construction Specialist' at Ed. Züblin AG, Branch Stuttgart, Germany. Education Diploma certified by the German Chamber of Commerce (IHK).

### RESUME

Over twenty years of professional working experience with contractors, consultants and clients (public and private). Good understanding of the different interests and philosophies of the parties involved in construction projects. Professional working experience in project management, site supervision, expert assessment, advisory service, contract management, claim analysis and negotiation, planning and scheduling, cost controlling and management of multi-national site supervision teams. Wide range of working experience in construction of hydropower projects, dams, and industrial buildings in Chile, Vietnam, Germany, Kenya, Uganda, Nepal, Sri Lanka, China, Malaysia and Indonesia, including contract administration pursuant to FIDIC Silver, Red, Yellow and Green books. Familiar with the different stages of hydropower and underground projects. Held positions as managing director, project manager, chief resident engineer, hydropower expert and resident engineer.

Professional experience in management and administration of construction projects, preparation and implementation of site management, construction supervision systems and project manuals with focus on team building, team work, lines of communication, reporting, knowledge transfer and problem solving.



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## RELEVANT EXPERIENCE

### 2015 – Present **Consortio SAM SpA (SKAVA-Amberg-Multiconsult), Chile – Consulting Engineers**

#### **Alto Maipo Hydropower Project, Chile**

The project (value > US\$ 3.5 billion) is a run-of-the-river project located in the Andes. It is almost fully located underground, with few exceptions such as intakes and outlet structures. It comprises approximately 70 km of tunnels and shafts (50 km of feeder tunnels Ø 4-8 m, 10 km of tailrace tunnel Ø 7-8 m, and 8 km of access tunnels to caverns and adits for intermediate access Ø 6-7 m). Approximately 60% of the tunnels are driven by four TBMs; the other underground structures are excavated by drill and blast. The raise-boring method is used to construct various shafts including the two steel-lined penstock shafts (300 m and 600 m deep).

The scheme includes two underground power stations with power and transformer halls and associated structures, 4 vertical-shaft Pelton turbines (2 high speed and high-pressure Pelton turbines) with combined capacity of 531 MW, generators and all requisite auxiliary equipment to deliver electrical energy to the national grid.

The geotechnical challenges in this project are manifold and include high stresses/competent rock (rock burst control), distressed rock and high-water pressure (extensive grouting) and deterioration/swelling of rock (adjustment of tunnel support). As Chief Resident Engineer and Managing Director of the Owner's Engineer responsible for:

- Legal representation of the company Consortio SAM.
- All aspects of the management and supervision of Consortio SAM; technical, financial, contractual, and administrative.
- All activities within the role of Chief Resident Engineer / Managing Director including representation of the company in front of the client, government authorities, main contractors, sub-consultants and other parties involved in the project.
- Contract management and administration.
- Leading and support in the design tasks, design review and construction supervision for the civil and underground (caverns, tunnels and shafts) works.

- Monitoring and supervision of the performance of the project design and site teams, authorization of employment of staff including human resource management and review and approval of all correspondence, reports and design.
- Preparation and implementation of a site management system/project management plan including various management/site procedures. This included the procedures, amongst others, lines of communication, interface coordination, reporting, design review, notice procedures, QA/QC, risk management and mitigation, etc.
- Management of multi-disciplinary and multi-national design and site teams (> 70 persons).

*Alto Maipo SpA, Santiago de Chile, Chile – Chief Resident Engineer and Managing Director  
Consorcio SAM SpA*

**2013 – 2016 Fichtner GmbH & Co. KG, Germany – Consulting Engineers**

**Lai Chau Hydropower Plant, Vietnam**

The project (value approximately € 2.2 billion) consists of, amongst other things, a 1.2 billion m<sup>3</sup> reservoir storage, a 131 m high and 616 m long RCC gravity dam (2 Mio. m<sup>3</sup>) with integrated gated spillway (6 radial gates), bottom outlets and power intake, three 129 m long penstock steel liners (Ø 10.5 m), a surface powerhouse behind the dam with transformer and assembly bays and tailrace channel, 3 vertical-axis Francis turbines (total 1200 MW), generators and all requisite auxiliary equipment to deliver electrical energy to the national grid. As Project Manager/Chief Resident Engineer and Resident Engineer Spillway and Powerhouse responsible for:

- All aspects of the implementation, supervision and administration of this project.
- Preparation and implementation of a site management system for the consultant as well as amongst the client and consultant. The management system included team building / team work, lines of communication, reporting and knowledge transfer.
- Construction supervision and interface coordination of the concrete works, in particular for spillway, bottom spillway, stilling basin, power intake, penstock steel liners, powerhouse and RCC concrete gravity dam.
- Supervision of all concrete works including development of concrete trial and mix designs, quality control, powerhouse interface coordination and dam instrumentation.

- Assistance in design review for concrete works and RCC concrete gravity dam.
- Management of multi-disciplinary and multi-national site supervision team.

*Vietnam Electricity, Son La Hydropower Project Management Board, Hanoi, Vietnam – Project Manager/Chief Resident Engineer, Resident Engineer Spillway and Powerhouse.*

## **2010 –2013 Schluchseewerk AG – Energy Company, Germany**

### **Atdorf Pumped Storage Hydropower Plant, Germany.**

The project (estimated value approximately € 1.6 billion) consists of, amongst other things, an upper and a lower basin with a volume of about 9 Mio. m<sup>3</sup> each, a 2.6 km long and over 40 m high earthfill ring dam (over 5.7 Mio. m<sup>3</sup>) with asphalt concrete surface sealing, a 116 m high and 650 m long RCC gravity dam (over 1.3 Mio. m<sup>3</sup>), six vertical-axis Francis asynchronous pump turbines (total 1400 MW) and six asynchronous motor generators. The underground works consist of altogether over 26 km of underground shafts and tunnels with two 720 m long vertical pressure shafts, a powerhouse cavern (length 220 m, width 27 m, height 64 m), a transformer cavern (length 183 m, width 20 m, height 27 m), a high sophisticated surge tank structure with upper and lower double ring chambers and a 8.5 km long tailrace tunnel. As Head of Civil Engineering Department and Deputy Project Director responsible for:

- Management and coordination of the Civil Engineering Department. Development of a management system for the Civil Engineering Department including organization structure, task description, team work and reporting.
- Construction supervision, contract administration (German Construction Contract Procedures - VOB) and claim management of initial civil construction activities including construction of a 2 km long pilot tunnel including comprehensive geotechnical investigation program inside the future powerhouse and transformer caverns. In addition, various underground grouting and sealing systems were tested thoroughly.
- Management and co-ordination of the project phases preliminary design and plan approval procedure.
- Co-ordination and review of the civil design including RCC dam, rockfill dams, concrete structures of powerhouse and intakes and underground works. Responsible for the decision making regarding the design and orientation of the underground caverns and surge tank structure.

- Detailed discussions with manufacturers of tunnel boring machines, raise boring machines, down-reaming machines and shaft drilling machines (Herrenknecht, Robbins, Wirth) regarding type of machines, design, exploration and time scheduling for the underground works.
- Preparation of the conditions of contract for the civil lots.
- Project cost estimates for the civil works.
- Liaison with authorities, cities and communities, consulting engineers, official experts and the main shareholders RWE Power AG and EnBW Kraftwerke AG.
- Tendering strategy and pre-tendering discussions with potential civil contractors.

*Schluchseewerk AG – Energy Company, Germany - Head of Civil Engineering Department, Deputy Project Director (Chief Executive Employee)*

**2001 – 2010 Fichtner GmbH & Co. KG, Germany – Consulting Engineers**

**11/2007 - 09/2010 Fichtner Kenya/East Africa**

Involved in/responsible for, amongst other things, feasibility studies, pre-qualifications, drawing up bids, project acquisition and contract negotiation for various projects in East Africa, e.g. Chemoga-Yeda Hydroelectric Plant (total 440 MW), Ethiopia, value approximately US\$ 500 Mio.

*Fichtner Representative Kenya/East Africa, Hydropower Expert*

**2007 - 2010 Tana Hydropower Station, Kenya**

The project is a run-of-river hydropower plant and consists of a new powerhouse with 4 vertical-axis Francis turbines (total 25 MW), generators, all requisite auxiliary equipment to deliver electrical energy to the national grid, tailrace channel, service building, transformer yard, switchyards, substations and three 100 m long penstock steel liners. The headworks area consist of the rehabilitation of the existing structures, in particular, the Maragua River barrage, Merila River barrage, headrace tunnels and surge tank (value approximately € 44 Mio). As Employer's Representative, Project Manager/Chief Resident Engineer responsible for:

- All aspects of the implementation, supervision and administration of this EPC/Turnkey contract under the FIDIC Conditions of Contract for EPC/Turnkey Projects including claim management, planning, scheduling (Primavera) and cost controlling on behalf of the employer.
- Site supervision of all concrete works including design review, development of concrete trial and mix designs, quality control, powerhouse interface coordination and dam instrumentation.
- Site supervision and quality control of the penstock steel liners and hydraulic steel structures.
- Management of multi-disciplinary and multi-national site supervision team.

*Kenya Electricity Generating Company Ltd., Nairobi, Kenya - Employer's Representative, Project Manager/Chief Resident Engineer*

**2008 - 2009      West Nile Rural Electrification Company Ltd., Kampala, Uganda - Hydropower Expert/Technical and Contractual Advisor**

Technical and contractual advisor on the Nyagak Hydro Power Plant (FIDIC Conditions of Contract for EPC/Turnkey Projects)

**2009 - 2010      Ruzizi III Hydroelectric Project, Ruanda, Burundi and Democratic Republic of Congo**

Planning and scheduling advisor on the feasibility study of the Ruzizi III Hydroelectric Project (total 145 MW) in Ruanda and Democratic Republic of Congo.

*EGL Energy - Hydropower Expert/ Planning and Scheduling Advisor*

**2001 - 2007      Middle Marsyangdi Hydropower Project, Nepal**

The project (value € 280 Mio.) is a run-of-river hydropower plant and consists of a 62 m high concrete gravity dam, an earthfill closure dam, three large underground desanding caverns (length 100 m, width 15 m, height 26 m, each), a 5.5 km long power tunnel and 40 km of transmission line. The powerhouse area consists of a surface powerhouse with 2 Francis turbines each of 36 MW, two 3 – phase synchronic generators, service building, transformer yard, switchyard, valve chamber, surge tank and 450 m long penstock steel liner. Responsible for:

- Head of planning & scheduling department

- Co-ordination of all site activities related to 7 Contracts i.e. civil, electrical, mechanical, hydraulic steel structures, switchyard, and switchgear and transmission line.
  - Preparation and monitoring of construction programmed/work progress using Primavera, Suretrak and MS Project software.
  - Head of cost controlling department
  - Preparation and monitoring of project cost control, cash flow, cost estimates, price escalation and disbursement schedules.
  - Liaison with client and financing agency KfW concerning project budgeting and cost control.
  - Assessment and determination of time related claims for the civil works and other lots.
  - Head of environmental management and health & safety department.
  - Preparation and editing of project reports (quarterly, monthly and weekly).
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- **06/2006 - 11/2007** Resident Engineer Powerhouse Area, responsible for site supervision and co-ordination of all Contractors related to the powerhouse area i.e. civil and architectural finishing works (FIDIC-Red Book), and electrical, mechanical, hydraulic steel structure, switchgear, transmission line (all FIDIC-Yellow Book).
  - **01/2005 - 05/2006** Resident Engineer Headworks/Dam side, responsible for site supervision and co-ordination of the civil and underground works (FIDIC-Red Book) related to the headworks area such as construction of river diversion structures, spillway and intake structures, intake tunnels and desanding caverns.

*Nepal Electricity Authority, Kathmandu, Nepal - Deputy Chief Resident Engineer, Resident Engineer Powerhouse, Resident Engineer Headworks/Dam side*

**1999 – 200      Züblin International GmbH, Stuttgart, Germany - Assistant Area Manager Asia**

Involved in project implementation for various projects abroad e.g. Xiaolangdi Multipurpose Dam/China and Gilgel Gibbe Dam/Ethiopia. Drawing up bids and pre-qualifications e.g. Batang Igan Bridge/Malaysia, Middle Marsyangdi Dam/Nepal, New Naga Hammadi Barrier/Egypt.

**2001 – 2000      Central Bank Colombo, Sri Lanka - Claims Engineer**

Extension and rehabilitation of a 9-storey turnkey development, valued at € 22 Mio, in Sri Lanka. Responsible for preparation of time related claims.

**2001              Bayer Zhongxi Agrochemical Plant Project, Shanghai, China - Chief Resident Engineer**

The agrochemical plant project consists of a production hall, warehouse, drum store, retention pond, solvent tank yard and accompanying infrastructure, with an overall construction area of approximately 11000 m<sup>2</sup>. Responsible for:

- Site supervision of all aspects of execution of the concrete works and management and co-ordination of the subcontractors with a workforce of over 120 workers including planning, scheduling (Primavera) and cost controlling.
- Contract administration (FIDIC-Green Book) including preparation of variation orders and finalization of subcontract agreements for all trades related to the project.

**2001              WOCO-Tongyong Rubber Engineering, Wuxi, China - Design Manager**

The rubber production plant project consists of an approximately 6000 m<sup>2</sup> large steel-frame production hall with integrated offices and technical rooms. Responsible for:

- Management and co-ordination of preliminary design and detailed design (including M&E, HVAC and low voltage/high voltage systems) with the client, local design institute and local authorities.
- Preparation of master time schedule, cost controlling system, site installation layout and preparation of subcontracts agreements for earth-, civil- and steelworks.
- Contract administration (FIDIC-Green Book).

**2000              1st Silicon Semiconductor, Kuching, Malaysia - Chief Planning and Scheduling Engineer**



The project consists of the construction of a silicon-chip fabrication building, an administration building and a utility building including all associated infrastructure facilities such as chemical processing plants and cooling towers. The total project value was around € 1 billion, whereby Züblin's contract value amounted to around € 100 Mio. Responsible for:

- Planning, work preparation and co-ordination of all trades related to the contract.
- Monitoring and up-dating of the master time schedule (in Primavera with over 4500 activities).

**1997 –1998 St Elisabeth Hospital, Lela, Indonesia – Site Manager**

Semester for practical experience abroad in Indonesia. Responsible for the implementation and site supervision of the 4<sup>th</sup> construction phase including completion of the construction works and project closure with final billing.

**1994 –1995 St Elisabeth Hospital, Lela, Indonesia – Site Manager**

The project consists of a large turnkey hospital complex with over 20 independent buildings including laboratory, administration buildings, staff quarters and utility buildings. Responsible for design review, implementation and site supervision of all aspects of construction of the 2<sup>nd</sup> construction phase with a workforce of over 150 qualified workers including billing of instalment of the project.

**1992 Ed. Züblin AG, Germany – Civil Engineering Contractor**

**SSB office/housing complex, Germany**

The project consists of a large multi-storey turnkey office/housing complex. Responsible for supervision of the concrete works including associated shuttering and reinforcement works and quality control.

## **INTERNATIONAL RECOGNITIONS**

**2016 Certificate of Merit, the Minister of Construction, Socialist Republic of Vietnam**



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In recognition of excellent contributions to the construction of Lai Chau HPP in 2015 as Project Manager/ Chief Resident Engineer of the Supervision Consultant.

**2015 Certificate of Merit, the Minister of Trade and Industry, Socialist Republic of Vietnam**

In recognition of valuable contributions to the construction of Lai Chau HPP from 2013-2014 as Project Manager/ Chief Resident Engineer of the Supervision Consultant.

**2000 Carl Duisberg Gesellschaft Award, Germany**

In recognition of outstanding diploma thesis that dealt with earthquake resistant design of residential buildings in Indonesia.