

TECH-6: Curriculum Vitae (CV) for Proposed Professional Staff

1. **Proposed Position:** Team Leader
2. **Name of Firm:** Studio Ing. G. Pietrangeli s.r.l.
3. **Name of Staff:** Giorgio PIETRANGELI
4. **Date of Birth:** 29-04-1934 **Nationality:** Italian
5. **Education:** Master of Science, Civil & Hydraulic Engineering, University of Rome, 1960
6. **Membership of Professional Associations:**
Italian Consulting Engineers Register of Rome, n°4771 since 1961
7. **Other Training:**
Scientific Director of Lecturers on Dams and Hydropower Development, Continuing Professional Education (CPE), Italian Consulting Engineers Register of Rome, 2014/2015
Various technical specialization courses, among which:
 - Dams and Hydropower Development, Italian Consulting Engineers Register of Rome, 2014/2015
8. **Countries of Work Experience:** Albania, Algeria, Angola, Argentina, Bulgaria, Burundi, Cyprus, Colombia, R.D.Congo, Ecuador, Eritrea, Ethiopia, Georgia, Ghana, Greece, Honduras, Jordan, Kurdistan, Italy, Lebanon, Libya, Malawi, Mexico, Montenegro, Nigeria, Romania, Rwanda, Sierra Leone, Tanzania, Turkey, Uganda, Venezuela, Zambia, Zimbabwe.
9. **Languages:**

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent
Spanish	Fair	Good	Fair
Italian	Mother Tongue		
10. **Employment Record:**

From: 1964	To: date
Employer:	Studio Pietrangeli
Positions held:	Managing director, Project Director, Team Leader, Dam Expert
11. **Key Qualifications:**

Since 1964, when he founded Studio Pietrangeli, he has been directly responsible for the technical direction and overall management of all the firm's engineering services covering:

 - 155 Dams
 - 58 Hydroelectric Power Plants
 - 172 Hydraulic Tunnels and shafts
 - 500 km of waterways and water transfer
 - 32 Water Supply and Irrigation Schemes

He has implemented innovative solutions to complex engineering tasks including the firms' fast-track methodology adopted in several outstanding projects under construction.

He has been recently responsible, as team leader or project director, of the entire engineering for several huge hydropower projects such as Gibe III (1870 MW, including the world's highest RCC dam H = 240 m) or Grand Ethiopian Renaissance (6000 MW, including two huge dams on the Blue Nile) that he invented some years before.

The unique experience of Mr. G. Pietrangeli in the field of dams and hydropower engineering is briefly summarized here below indicating only some of the most relevant projects he has directed.

SP 8/7/y 15:15

Eliminato: -

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12. Detailed Tasks Assigned

13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned:

BATOKA GORGE Hydro-Electric Scheme

Year: 2014 – in progress

Location: Zambia and Zimbabwe

Client: Zambezi River Authority

Main project features: Batoka Gorge (IP = 1600 MW) is a hydropower plant located on the Zambezi River between Victoria Falls and the existing Lake Kariba. The project is a trans-boundary plant having the following basic features:

- Batoka Dam (RCC Arch-Gravity Dam, H = 181 m, Crest Length = 767 m, Concrete volume V = 4 Mm³)
- Spillway (Q= 20.000 m³/s, Radial gated on dam crest, No. 7 gates 14x13 m)
- Headrace Tunnels (No. 4 (2+2) , D = 8,9 m, L = 250---450 m)
- Penstock Shaft (No. 4, D = 7 m, L = 120 m)
- Power House (No. 2, underground type, No. 4x2 Francis Turbines, Q = 1000 m³/s, IP = 1600 MW)
- Transmission Lines (L = 200 km - 330 kV in Zambia, L=140 km 420 kV in Zimbabwe)

Position held: Team Leader

Activities performed: Pre-feasibility study (Confirmation of scheme layout), Feasibility Study, Tender Design, Tender Documents

MONTEDOGLIO Dam Rehabilitation

Year: 2013 – 2014

Location: Italy

Client: IMPREPAR S.p.A. (Impregilo Group)

Main project features: Montedoglio dam has suffered some damages at the spillway and dam body due to a large flood occurred in 2010.

SP has been appointed to carry out the assessment of the current conditions and the design of the refurbishment works to restore the complete functionality of the structures. The main characteristics of the project are the following:

- Reservoir (Total storage 168 Mm³)
- Main Dam (Earthfill type, H = 64.30 m, L = 566 m, Emb. Volume 2.7 Mm³)
- Secondary Dam (Earthfill type, H = 8.6 m, L = 288 m, Emb. Volume 0.04 Mm³)
- Spillway (Q=909 m³/s, side spillway ungated L=112 m + n° 2 gates L = 24 m)

Position held: Dam Expert

Activities performed: Assessment of the damages occurred, assessment of the conditions of the dam, survey, investigations, feasibility and final design of the rehabilitation works, supervision of construction of the rehabilitation works

LOWER DIAMPHWE Multipurpose Dam. Water Supply and Irrigation Scheme.

Year: 2013 – in progress

Location: Malawi

Client: Ministry of Water Development and Irrigation, Malawi

Main project features: Lower Diamphwe dam and associated structures (water supply and irrigation scheme) including the following works:

- Lower Diamphwe Dam (Rockfill type, H = 28 m, L = 450)
- Saddle Dam (Type = Rockfill with clay core, H = 6.6 m)
- Spillway (Overflowing type, Q = 1350 m³/s, L_sill = 218 m)
- Culverts (n°2, Q = 145 m³/s, L = 20 m)
- Water Intake (Water supply gate = 1.4 x 1.4 m, Irrigation gate = 0.8 x 0.8 m)
- Pipeline (L = 40 km, D = 1100 – 1500 mm)
- Irrigation Scheme (approx. A = 1,000 Ha)

Position held: Team Leader

Activities performed: Review and upgrade of feasibility studies, Detailed Design, tender documents

NAMAKHVANI HPP Cascade (Tvishi + Namakhvani + Zhoneti, IP_tot = 450 MW)

Year: 2012 – in progress

Location: Georgia

Client: JSC Namakhvani hpp Cascade

Main project features: The project envisages the construction under an EPC contract of three hydropower projects with the following basic features :

Tvishi:

- CVC gravity dam (H = 56.5 m, L = 100 m, $V_{res} = 13.1 \text{ Mm}^3$)
- Open air Power house (No. 2 Kaplan turbines, IP = 2x50 MW)

Namakhvani:

- Concrete arch dam (H = 111.0 m, L = 315 m, $V_{res} = 156 \text{ Mm}^3$)
- Open air Power house (No. 3 Francis turbines, IP = 3x85 MW)

Zhoneti:

- Rockfill dam with bituminous core (H = 31 m, L = 174 m, $V_{res} = 12.5 \text{ Mm}^3$)
- Open air Power house (No. 2 Kaplan turbines, IP = 2x50 MW)

Position held: Dam Expert

Activities performed: Review and Upgrade of Feasibility Study, Tender Documents, Consultancy for Tender, Assistance during procurement, Supervision of Construction

RUZIZI transmission lines and dams rehabilitation

Year: 2012 – 2014

Location: Congo, Burundi and Rwanda

Client: Organisation pour l'Énergie des pays des grand Lacs, Union Européenne

Main project features: The main components of the projects are :

- Kamanyola Station and National Dispatching Centre
- Cascade Coordination Centre
- Transmission Line (N°2, $L_{TOT} = 100 \text{ Km}$, 220 kV)
- Rehabilitation and upgrading of Ruzizi I and Ruzizi II
- Ruzizi I Gravity Dam (H=15m, L=195m), Outdoor PH (N°4 Kaplan, IP=29.8 MW)
- Ruzizi II Gravity Dam (H=14 m, L=85m), Outdoor PH (N°3 Francis, IP=44 MW)

Position held: Dam Expert

Activities performed: Feasibility Study, Final Design, Tender Documents, ESIA of Kamanyola Station, Transmission Lines, and Cascade Coordination Centre.

Investigations, Design and studies of rehabilitation works for the Dams

MITA HILLS dam refurbishment and upgrading

Year: 2011 – 2012

Location: Zambia

Client: Lunsenfwa Hydropower Company

Main project features: The upgrade of the existing Mita Hills dam (Earthfill/Rockfill, H = 40m, L=330m) includes what follows to increase the reservoir volume and for refurbishment:

- Current set-up / proposed set-up :
 - Reservoir ($V_{RES} = 680 \text{ Mm}^3$ / $V_{RES} = 850 \text{ Mm}^3$)
 - Spillway (N°2 gates 9x9 m, N°2 erodible fill embankments L = 20 m / N°2 gates 10x12 m, N°1 emergency fuse gate L = 40m)
- Intake Tower (H=80 m, N° 2 Radial Gates)

Position held: Dam Expert

Activities performed: Assessment of the Existing Plant, Pre-Feasibility Studies, Feasibility Design for the refurbishment and upgrading

RUMAKALI Hydroelectric Power Plant (IP = 525 MW)

Year: 2011 – 2013

Location: Tanzania

Client: Zarubezhstroy Ojsc; Beneficiary: Ministry of Energy and Minerals

Main project features: Hydroelectric Power Plant including the following works :

- Rumakali Dam (H= 90m, BFRD type)
- North Site main Dam (H = 63 m, BFRD type)
- East Site main Dam (H = 44 m, BFRD type)
- Underground Power House (WxLxH = 180 x 23 x 44 m, Design Head = 1,423 m, Q = 42 m³/s, N°4 Turbines Pelton)
- Transmission line (Voltage 220 Kv, Total Length = 70 Km)

Position held: Dam Expert

Activities performed: Conceptual Scheme, Feasibility Design, BOT Contract documents

GRAND ETHIOPIAN RENAISSANCE Hydroelectric Power Plant (IP = 6,000 MW)

Year: 2010 – in progress

Location: Ethiopia

Client: Salini Costruttori S.p.A.; Beneficiary : EEPKO

Main project features: The hydroelectric power plant (IP = 6,000 MW) includes:

- Reservoir ($V_{RES} = 63,000 \text{ Mm}^3$)
- Main dam (Gravity RCC type, H = 155 m, L = 1,780 m)
- Saddle dam (Rockfill dam type, H = 45 m, L = 4,800 m)
- Spillway (No. 6 gates 14x15.5 m, Q = 10,500 m³/s)
- Power Waterways (Penstocks No 15, L= 180 m, D = 8.5 m)
- Diversion culverts (N°4, L =210 m, D = 8 m, Diversion Flood = 3,000 m³/s)
- Powerhouses (No. 2, Outdoor, Q=1,550m³/s, Design Head=135 m, N°10+6 Francis Turbines, Energy production = 15700 GWh/year)
- Switchyard (No. 2, No. 15 bays 400 kV, No. 15+30 transf. 20/400 kV)
- Bridge (L =260 m, W = 10 m, Max span length = 72 m, Piers No 6)

Position held: Project Director from the conceptual scheme up to supervision of construction, Team leader for the design of the saddle dam

Activities performed: Feasibility study, Basic Design, Final Design (Level 1), Construction Design (Level 2), Supervision of Construction for the EPC Contractor

KIDUNDA dam for water supply, irrigation and hydropower (IP = 20 MW)

Year: 2010 – in progress

Location: Tanzania

Client: Dar es Salaam Water & Sewage Authority (DAWASA)

Main project features: Dam project for irrigation, water supply and hydropower purposes including the following works:

- Reservoir (C.A. = 78 Km², Live Storage = 280 Mm³)
- Dam (Bituminous Facing Rockfill Dam type, H=21 m, L= 860 m)
- Spillway (Gated type, L = 133 m, Gates N° 8, Q = 3,500 m³/s)
- Intake Tower (H = 25 m, Slide gates N° 4, 6x6 m)
- Outdoor Power House (IP = 20 MW, Kaplan turbines N° 2, E = 60 GWh/y)

Position held: Dam Expert

Activities performed: Topographical Survey and GIS of Dar es Salaam area, Feasibility study, Final Design, Environmental and Social Impact Assessment

KYOGA-NILE HPPs Cascade (Kamdini + Kibaa + Murchison, IP_tot = 6,010 MW)

Year: 2008 - 2009

Location: Uganda

Client: Salini Costruttori S.p.A.; Beneficiary: Ministry of Water and Environment

Main project features: The basic features of the cascade are the following.

Kamdini (Karuma) is the 1st plant of the Kyoga-Nile HPPs cascade and includes :

- Rockfill Dam (H = 30 m, L = 480 m, $V_{res} = 68 \text{ Mm}^3$)
- Headrace Canals (L = 5.7 km, Bottom width ≈15 m)
- Tailrace Tunnels (N° 2, L = 4 km, D = 14 m)
- Underground PH (N°10 Francis turbines, IP = 1,260 MW, $H_{net} = 64 \text{ m}$)

Kibaa is the 2nd plant of the Kyoga-Nile cascade and includes :

- Rockfill Dam (H = 53 m, L = 2,150 m, $V_{RES} = 300 \text{ Mm}^3$)
 - Headrace Canals (L = 10 km, Bottom width = 14 m)
 - Tailrace Tunnels (N°2, L = 4.5 km, D = 14 m)
 - Underground PH (N°16 Francis turbines, IP = 2,600 MW, $H_{net} = 131 \text{ m}$)
- Murchison is the 3th plant of the Kyoga-Nile cascade and includes :
- Rockfill Dam (H = 44 m, L = 1,300m, $V_{RES} = 170 \text{ Mm}^3$)
 - Headrace Canal (Bottom Width = 14 m; L = 0.7 km)
 - Tailrace Tunnels (N° 2, L = 5.5 km, D= 14 m)
 - Underground PH (N° 14 Francis Turbines, IP = 2,150 MW, $H_{net} = 107 \text{ m}$)

Position held: Project Director

Activities performed: Pre-feasibility study, Feasibility study

MAMBILLA Hydroelectric Power Plant (IP = 4,000 MW)

Year: 2008 - 2009

Location: Nigeria

Client: Salini Costruttori S.p.A.

Main project features: The hydroelectric Power Plant includes the following works :

- Gembu Dam (RCC dam, H = 100 m, L = 515 m)
- Sumsum Dam (RCC dam, H = 35 m, L = 460 m)
- Nghu Dam (Rockfill dam, H = 95 m, L = 680 m)
- Water transfer Tunnel (L = 16 Km, D = 6 m)
- Headrace canal (L = 3.1 Km, Width = 15 m)
- Power Shaft (N° 16, D = 5.25 – 8.40 m, Total L = 1,000 m)
- Underground PHs (N°2, N°16 Turbines Pelton, Q = 88 m³/s, IP = 16x250 MW)

Position held: Team Leader and Dam Expert

Activities performed: Pre-Feasibility study, Feasibility study

TARA–MORACA Dam and Hydroelectric Power Plant (IP = 400 MW)

Year: 2008 - 2009

Location: Montenegro

Client: Deutsche Bank

Main project features: Tara-Moraca Dam and HPP (IP = 400 MW), including the following works :

- Tara arch dam (H = 80 m)
- Canal (L = 14 km)
- Shaft (H = 700 m)
- Underground Power House (N°4 Turbines Pelton, IP = 400 MW)

Position held: Team Leader

Activities performed: Due diligence of the existing projects, pre-feasibility of alternative

GIBE V Hydroelectric Power Plant (IP = 660 MW)

Year: 2008 - 2009

Location: Ethiopia

Client: Salini Costruttori S.p.A.; Beneficiary : EEPKO

Main project features: Gibe V (IP = 660 MW) is the 5th stage of the Gibe-Omo cascade and includes the following works :

- RCC Gravity Dam (H = 78 m, L = 580 m)
- Gated Spillway (N°10 gates, Dimensions 12x19 m)
- River Diversions Works (N°2 culverts, D= 12 m, L=240 m)
- Cofferdam (Rockfill, H = 20 m, L = 240 m)
- Outdoor Power House (N° 10 Francis turbines, IP = 10x66 MW)

Position held: Project director and Chief dam engineer

Activities performed: Reconnaissance Project, Feasibility Study

GIBE IV Hydroelectric Power Plant (IP = 1,480 MW)

Year: 2008 - 2009

Location: Ethiopia

Client: Salini Costruttori S.p.A., Beneficiary : EEPCO

Main project features: Gibe IV (IP = 1,480 MW) is the 4th stage of the Gibe-Omo cascade and includes the following works :

- RCC Gravity Dam (H = 165 m, L = 725)
- Gated Spillway (N°9 radial gates, Dimen. 12x19, Q = 22,000 m³/s)
- Power Waterways (No 2, L = 0.8 km, D = 12 m)
- D/S Rockfill Cofferdam (H = 27 m, L = 117 m)
- Outdoor Power House (N°8x185 MW Francis turbines)

Position held: Project Director, Dam designer

Activities performed: Reconnaissance Project, Feasibility Study

ETHIOPIA - KENYA INTERCONNECTION

Year: 2006 - 2007

Location: Ethiopia, Kenya

Client: Salini Costruttori S.p.A.; Beneficiary: EEPCO

Main project features: Interconnection line (mixed AC/DC) including :

- Voltage = 400 kV
- Peak Load = 1,400 MW
- L = 1,150 Km

Position held: Project director, Designer

Activities performed: Feasibility studies

GIBE III Hydroelectric Power Plant (IP = 1,870 MW)

Year: 2005 – in progress

Location: Ethiopia

Client: Salini Costruttori S.p.A., Beneficiary : Ethiopian Electric Power Corporation

Main project features: Gibe III (IP = 1,870 MW) is the 3rd stage of the Gibe-Omo cascade and will become the world's highest RCC dam. The project includes the following works :

- Reservoir ($V_{RES}=14,700 \text{ Mm}^3$)
- RCC Gravity Dam (H=235 m, $L_{CREST}=620 \text{ m}$, $V_{RCC} = 6.5 \text{ Mm}^3$)
- Spillway (at dam crest, No. 7 gates 14x17.5 m, Q = 18,600 m³/s)
- Middle outlet (in the dam body, No.2, Q = 1600 m³/s, L=100 m, D=5m)
- Rockfill Cofferdam (H = 50 m, L = 205 m, Zig-Zag PVC membrane)
- Main Diversion Tunnels (No. 2, L = 1.1 km, D = 14 m)
- Preliminary Diversion Tunnel (No. 1, L = 1.1 km, D = 7 m)
- Power Waterways (No 2, L = 1.0 km, D = 11 m)
- Surge Shaft (No. 2, D = 20 m, H = 60 m)
- Outdoor Power House (N°10x187 MW Francis turbines, Design Head = 211 m, Q = 950 m³/s, Dimensions = 220 x 34 x 46 m)
- Switchyard (No. 5 line bays 400 kV, No. 5 transformers 15/400 kV)

Position held: Project Director during the entire project and Team leader from the conceptual scheme to the basic design

Activities performed: Reconnaissance design, Investigations, Feasibility Study, Basic Design, Final Design, Construction Design, Technical Supervision during Construction

BUSALLETTA Dam Upgrade

Year: 2005 - 2008

Location: Italy

Client: Mediterranea delle acque S.p.a.

Main project features: Upgrade of the existing Busalletta dam, for water supply, increasing of the dam height and reservoir volumes. The project includes what follows :

- Current set-up / proposed set-up :
 - Reservoir ($V_{RES} = 5 \text{ Mm}^3$ / $V_{RES} = 6.5 \text{ Mm}^3$)
 - Dam (Concrete gravity dam, $H = 50 \text{ m}$ / $H = 53 \text{ m}$)
 - Spillway (Ogee Overflow / Gated spillway with No. 5 flap gates, Dim. $2.1 \times 12 \text{ m}$)

Position held: Dam Expert

Activities performed: Pre-feasibility and Feasibility study

CUMBIDANOVU Dam

Year: 2004 - 2005

Location: Italy

Client: Impresa Nino Ferrari, Beneficiary: Consorzio di Bonifica della Sardegna Centrale

Main project features: Dam for irrigation and water supply including :

- Concrete Gravity dam ($H=72 \text{ m}$, $L = 264 \text{ m}$, $V = 0.3 \text{ Mm}^3$)

Position held: Dam Foundation Expert

Activities performed: Review of the entire existing final design, Construction design of the dam, slope stabilization works, etc.

GIBE II Hydroelectric Power Plant (IP = 420 MW)

Year: 2003 - 2010

Location: Ethiopia

Client: Salini Costruttori S.p.A., Beneficiary : EEPKO

Main project features: Gibe II (IP = 420 MW) is the 2nd project of the Gibe-Omo cascade, making us of the waters regulated by the upstream Gilgel Gibe dam, and includes the following works:

- Concrete Gravity Dam ($H=49\text{m}$, $L=140\text{m}$, $V_{RES} = 1.9 \text{ M}^3/\text{s}$)
- Spillway (at dam crest, $Q = 2325 \text{ m}^3/\text{s}$)
- Intake ($L = 24 \text{ m}$, $H = 33 \text{ m}$, No. 2 roller gates)
- Power Tunnels ($L = 26 \text{ km}$, $D = 6 \text{ m}$, $Q = 101 \text{ m}^3/\text{s}$)
- Penstocks (No 2, $L = 1.2 \text{ km}$, $D = 2.4 \text{ m}$)
- Surge Shaft ($H=94 \text{ m}$, $D = 18 \text{ m}$)
- Power House (Outdoor, No. $4 \times 105 \text{ MW}$ Pelton turbines, Design Head = 510 m , $Q_{des} = 110 \text{ m}^3/\text{s}$, Dim. $120 \times 25 \times 36 \text{ m}$)
- Switchyard (No. 2 line bays 400 kV , No. 4 transformers $400/15 \text{ kV}$)
- Access Roads (No. 3, $L = 30 + 35 + 5.5 \text{ km}$)

Position held: Project Director, Dam expert

Activities performed: Reconnaissance design, Investigations, Basic Design, Final Design (Level 1 design) and Construction Design (Level 2 design) , Technical Assistance during Construction

RIO MANNU Gravity Dam for Water Supply and Irrigation

Year: 2003 - 2006

Location: Italy

Client: Consorzio di Bonifica della Sardegna Centrale

Main project features: Dam for water supply and irrigation to be built in two phases, including the following works :

- Phase 1: Gravity Dam ($H = 19 \text{ m}$, $V_{RES} = 400.000 \text{ m}^3$)
- Phase 2: Gravity Dam ($H = 28 \text{ m}$, $V_{RES} = 2.000.000 \text{ m}^3$)
- Spillway ($Q = 685 \text{ m}^3/\text{s}$, $L = 84 \text{ m}$)
- Outlet works ($Q = 36 \text{ m}^3/\text{s}$, No. 2 gates = roller + sliding)

Position held: Dam Designer

Activities performed: Preliminary, Final design and Detailed design

SANTU MIALI Hpp (IP = 27 MW) – Refurbishment and Upgrade

Year: 2003 - 2010

Location: Italy

Client: Sardinia Water Authority (Ente Acque della Sardegna ENAS)

Main project features: Refurbishment and upgrade of the Santu Miali hydropower plant, including:

- Reservoir (Daily regulated Vol. = 1.4 Mm^3)
- Headrace Tunnel (L = 750 m, D = 4.25 m)
- Surge Shaft (H = 33.5 m, D = 8.20 m)
- Underground Power House (Dimensions 34x16x31 m, No. 1 Francis Turbine, 27.5 MW)
- Main Transformer (N°1, Nominal voltage = 9 / 150 kV, Rated power = 320 MVA)

Position held: Hydraulic expert

Activities performed: Preliminary design, Final design and Tender documents , Supervision of works (up to installation of the EM equipment)

UVINI Hpp (IP = 15.8 MW) - Refurbishment and Upgrading

Year: 2003 - 2010

Location: Italy

Client: Ente Autonomo del Flumendosa (EAF)

Main project features: Refurbishment of the Uvini hydropower plant:

- Reservoir (Total Reservoir Vol. = 320 Mm^3)
- Penstock (Diameter = 4.50 m)
- Underground Power House (D (circular plan) = 17 m, H = 29.4 m)
- Electromechanical Works: N° 2 Turbines (Kaplan + Francis), Total IP = 15.8 MW
- Main Transformers (N° 2)

Kaplan: No-load ratio = 9 / 70 kV, Rated power = 17.5 MVA

Francis: No-load ratio = 0.4 / 15 kV, Rated power = 1.6 MVA

Position held: Hydraulic Expert, Team Leader for Final Design and Supervision of Construction

Activities performed: Preliminary design, Final design and Tender documents , Supervision of works (up to installation of the EM equipment)

ARCICHIARO Hydroelectric Power Plant (IP = 5 MW)

Year: 2002 - 2006

Location: Italy

Client: Vitaliani & Randich S.p.A. (IPP)

Main project features: Hydropower plant using the waters of the existing Arcichiaro dam. Major works are :

- Gutters ($Q = 15 \text{ m}^3/\text{s}$, L = 3.3 km and D = 1.2 - 1.5 m, L = 5 km and W = 1 m)
- Tunnel (L = 1 km, H = 3.7 m, W = 4 m)
- Power house (Dim. = 30 x 10 m, $Q_{\text{MAX}} = 2.3 \text{ m}^3/\text{s}$, IP = 5 MW)
- Electrical line (L = 5.5 km)

Position held: Project Director

Activities performed: Preliminary Design

ARDA CASCADE Hydroelectric Power Plant

Year: 2001 - 2002

Location: Bulgaria

Client: Enel Power S.p.A.

Main project features: The Arda cascade includes three existing hydropower plants (IP= 106 + 60 + 103 MW) and three proposed hydropower plants: Madan (IP = 47 MW), Sarnitsa (IP = 69 MW) and Ardino (56 MW + Mini hydro 2 MW).

The feasibility study of Ardino HPP includes:

- RCC Arch-Gravity dam (H=110 m, L=365 m)
- Spillway ($Q = 2,500 \text{ m}^3/\text{s}$, No.6 flap gates 6x 6 m)
- Outdoor Power House (No. 2 Francis turbines 2x28 MW)
- No. 1 mini hydro (IP = 2 MW, E = 12.4 GWh/y)

Position held: Team leader

Activities performed: Review of all feasibility studies, in collaboration with Enel Power, Feasibility study of Ardino Hpp (including design of dam and appurtenances)

KALIVAC Hydroelectric Power Plant (IP = 108 MW)

Year: 2000 - 2001

Location: Albania

Client: Enel Power S.p.A.

Main project features: Hydropower Plant (IP = 108 MW) including the following works:

- Concrete Gravity Dam (H=80 m, L=375m, $V_{RES}=350 \text{ Mm}^3$)
- River Diversion ($Q = 2,500 \text{ m}^3/\text{s}$)
- Spillway ($Q = 4500 \text{ m}^3/\text{s}$, N° 15 flap gates 5.5 x 12.5 m)
- Outlet (N°2, $Q_{MAX}=540 \text{ m}^3/\text{s}$)
- Intake (N°2, $Q_{MAX}=285 \text{ m}^3/\text{s}$)
- Outdoor Power House (N°2 Kaplan + N°1 Francis turbines)

Position held: Team Leader and Dam Designer for the RCC gravity dam alternative

Activities performed: Investigations, Preliminary design, Final design of the civil works

DANKEL Multi Purpose Project including water transfer, hydro (IP = 500 MW), port

Year: 1997 - 2000

Location: Eritrea

Client: Salini Costruttori S.p.A.; Beneficiary: Government of Eritrea

Main project features: Dankel Multipurpose Project includes:

- External port (Red Sea) and Internal port
- Canal A (L = 30 km, W = 15-50 m, H = 9 m, navigable)
- Sariga Rockfill Dam (L = 1.5 km, H = 18 m)
- Canal B (L = 23 km, W = 30-60 m, H = 9 m, navigable)
- Mendah Concrete Dam (L = 300 m, H = 22 m)
- Hydropower plant (IP = 500 MW, E = 1000 GWh)

Position held: Team Leader, Dam expert

Activities performed: Investigations, Master plan (preliminary project), Feasibility Study

ADDIS – JIMA Road Rehabilitation

Year: 1996 - 1999

Location: Ethiopia

Client: Ethiopian Roads Authority

Main project features: Rehabilitation of Addis Ababa-Jima Road, Lot 1 + Lot 2 includes:

- Lot 1: Addis Ababa – Gibe River (L = 175 km N° 3 Bridges)
- Lot 2: Gibe River – Jima (L = 145 km)

Position held: Civil works expert

Activities performed: Investigations and Survey, Final and Detailed Design, Tender Documents, Tender Evaluation

DIRE DAM Water Supply

Year: 1996 - 1998

Location: Ethiopia

Client: Salini Costruttori S.p.A.; Beneficiary: Addis Ababa Water and Sewerage Authority

Main project features: Dam for water supply to Addis Ababa includes the following works :

- Dam (Earth Dam type, L=1,980m, H=46m, $V_{RES}=19 \text{ Mm}^3$, $Q=500 \text{ m}^3/\text{s}$)
- Canal (L = 200 m, W = 40 m)
- Intake Tower (H = 48.6 m, Steel Footbridge L = 150 m)
- Pipeline (Pipe Diameter = 700 mm, L = 10 km)

Position held: Team Leader

Activities performed: General review of the design, Dam stability analysis, Final design

of intake works, spillway, valve chamber and footbridge

BWARI Water Supply

Year: 1995 - 2002

Location: Nigeria

Client: Sarin Iniziative Industriali Spa

Main project features: Pipeline for the drinking water supply of Abuja's District includes:

- Pumping Station (Pumps N° 6, $Q = 310 \text{ l/s}$, $H = 95 \text{ m}$)
- Main Pipeline ($D = 600 \text{ mm}$, $L = 12.500 \text{ m}$, N° 5 Control Cabine)
- Distribution Pipeline ($D = 150\text{-}300 \text{ mm}$, $L = 4.65 \text{ m}$, N° 50 Use points)
- Storage Tank ($V = 12.500 \text{ m}^3$)

Position held: Project Director

Activities performed: Feasibility study, Survey, Final and construction design, Supervision of construction for the contractor

GILGEL GIBE Hydroelectric Power Plant (IP = 200 MW)

Year: 1995 - 2003

Location: Ethiopia

Client: Enel Power S.p.A., Beneficiary : EEPCCO

Main project features: Gilgel Gibe (IP = 200 MW) is the 1st hydropower plant of the Gibe-Omo Cascade. The main works of the project include:

- Rockfill Dam ($H = 40 \text{ m}$, $L = 1,600 \text{ m}$, $V_{RES} = 850 \text{ Mm}^3$)
- Bottom outlet ($L = 220 \text{ m}$, $D = 1.5 \text{ m}$, $Q = 25 \text{ m}^3/\text{s}$)
- Spillway ($L = 48 \text{ m}$, $Q = 2,250 \text{ m}^3/\text{s}$, Gates: N°4 flap $12 \times 8.5 \text{ m}$)
- Power Tunnel ($L = 8.8 \text{ km}$, $D = 5.5 \text{ m}$)
- Surge Shaft ($H = 110 \text{ m}$, $D = 14 \text{ m}$)
- Underground Power House (Dimensions $83 \times 22.5 \times 41 \text{ m}$, No. 3 Francis turbines IP = $3 \times 66,7 \text{ MW}$, $Q_{des} = 100 \text{ m}^3/\text{s}$, Design head = 220 m)

Position held: Chief dam engineer, Team leader

Activities performed: Feasibility study, final design, tender documents, tender supervision, Supervision of construction

PORTO ROMANO

Year: 1995 - 2001

Location: Italy

Client: Yacht Club Tevere

Main project features: Yacht Harbour for the city of Rome along the Tevere River, about 1 km from the river mouth. The main features of the project are as follows :

- Marina for 197 berth points (boats from 10 to 25 m of length)
- Basin (Area = 26600 m^2 , Excavation = 122.500 m^3)
- Yacht Club with restaurant and sport center
- Naval Yard with slipway & boat depot

Position held: Chief Engineer

Activities performed: Preliminary Design, Supervision of Investigations, Final Design, Tender Documents, Supervision of the Works

BOSA Dam Refurbishment and Upgrading

Year: 1994 – 2009

Location: Italy

Client: Sardinia Autonomous Region, Ministry of Public Works Dam Division

Main project features: Change in destination of use of the existing Bosa Dam for drinking water supply and irrigation. The project includes the installation of regulating gates on the existing unregulated bottom outlet together with the refurbishment of the dam. Main works are:

- Bottom outlet gates (No. 4, roller + sliding, HxW = 5 x 3.5 m)
- Dam abutments stabilization
- Dam monitoring System

Position held: Project Director and Dam Expert

Activities performed: Investigations, Preliminary, Final design, Supervision of the works

U.S. Navy Residential Complex

Year: 1994 - 1996

Location: Italy

Client: U.S. Navy

Main project features:

Residential complex and infrastructures covering 28 ha of land at S. Michele sul Liscia:

- Houses, Multifunction buildings, School, Roads, Sport center, Gardens.

Residential complex and its infrastructures covering 22 ha of land at Fondi:

- 21 villas having a total of 53 apartments, pedestrian underpassage, roads, sport center, equestrian facilities and gardens

Position held: Project Director

Activities performed: Preliminary and Final design

LIMONLU Hydroelectric Power Plants (IP = 50 / 76 MW)

Year: 1993 - 2000

Location: Turkey

Client: TGT Electric Power Construction, Ministry of Energy & Natural Resources

Main project features: Limonlu hydropower cascade comprises No. 4 plants on the Lamas River to be built in two phases (Phase 1 = 50 MW, Phase 2 = 26 MW). The works of the first phase include:

- Weir (H = 8 m, L = 40 m)
- Power Tunnels (5 km, D=3 m)
- Surge Tank (H = 16 m, D = 12 m)
- Penstocks (2 No., L tot = 3 km; D=2-1 m)
- Power Houses (2 No., Francis turbines, IP = 20 + 30 MW)
- HV Transmission Line (154 kV; L = 1.2 km)

Position held: Project Director

Activities performed: Feasibility Study, Site Investigations, Final Design, Tender Documents of the Phase 1 (50 MW). Preliminary design for Phase 2 (26 MW)

BEIRUT Water Supply Rehabilitation

Year: 1992 – 1996

Location: Lebanon

Client: Council for development and reconstruction-Beirut

Main project features: Rehabilitation of Beirut water supply after the war including the following works:

- No. 19 Reservoirs
- Pipeline (main : L = 40 km, D = 250..1200 mm; secondary : L = 400 km)
- No. 2 Treatment Plants

Position held: Project Director

Activities performed: Investigations, Feasibility and Final design, Supervision of Construction

COSOLEACAQUE – TUXTLA GUTIERREZ Road

Year: 1992

Location: Mexico

Client: Department of Constructions & Transport - Mexico City

Main project features:

- Motor way (No 4 Lanes, L =210 km, W = 12+12 m)
- Special bridge, crossing Nezahualcoyotl reservoir (L = 9.3 km)

- Suspension bridge, crossing Ocozacoatlá river (Span=0.8 km, Viad.=8.4 km)

Position held: Project Director

Activities performed: Feasibility study

BUSALLETTA Dam Upgrade and Refurbishment

Year: 1991 – 2002

Location: Italy

Client: Acquedotto Nicolay S.p.A., Genoa

Main project features: Upgrade and refurbishment of the outlet works of the existing Busalletta dam, for water supply, including :

- Refurbished Outlet Tunnel ($Q = 50 \text{ m}^3/\text{s}$, $L = 211 \text{ m}$, $D = 2.4 \text{ m}$)
- Upgraded energy dissipator ($Q = 50 \text{ m}^3/\text{s}$, ski jump type)
- Outlet Canal ($L = 40$, $W = 15 \text{ m}$)

Position held: Project Director, Dam expert

Activities performed: Preliminary, Final design and supervision of construction of the refurbishment and upgrade of the outlet works, Dam break studies

WALA and MUJIB dams for multipurpose uses

Year: 1991 - 1995

Location: Jordan

Client: Ministry of Water and Irrigation

Main project features: The project includes two reservoirs for multipurpose uses (water supply, industrial and irrigation) composed of :

- Wadi Wala dam (RCC, $H = 49 \text{ m}$, $L = 300 \text{ m}$, $V = 0.185 \text{ Mm}^3$)
- Wadi Mujib (RCC, $H = 62$, $L = 660$, $V = 0.75 \text{ Mm}^3$)

Position held: Team leader

Activities performed: Review of feasibility, Final design

LUSAKA Water Supply

Year: 1989 - 1992

Location: Zambia

Client: Lusaka Urban District Council - Republic of Zambia

Main project features: Water supply pipeline for the city of Lusaka. Emergency health works in the area of Matero, industrial area and township. The main works include :

- Wells (No. 8 rehabilitated, $Q \leq 400 \text{ m}^3/\text{h}$, No.4 new)
- Rehabilitation of pumping plant (No 2 stations)
- Pipeline A - (Type GRP, $D = 600 \text{ mm}$, $L = 0.5 \text{ km}$) ; B - (Type GRP, $L = 5.1 \text{ km}$)
- Reservoirs (No. 2, $V = 30,000 \text{ m}^3$, $V = 11,000 \text{ m}^3$)
- Water treatment plant
- Pipeline ($Q = 190\text{-}507 \text{ l/s}$, $D = 200\text{-}250 \text{ mm}$, $L = 30 \text{ km}$)

Position held: Team leader

Activities performed: Investigations and Topographical surveys, Final Design

BIFERNO dams system for irrigation

Year: 1988 - 1998

Location: Italy

Client: Ente Risorse Idriche del Molise (ERIM)

Main project features: The Biferno Irrigation Project included the following 3 dams and irrigations works.

Rio Grande Dam:

- Rockfill Dam ($H = 40 \text{ m}$, $L = 505 \text{ m}$, $V = 1.1 \text{ Mm}^3$)
- Spillway ($L=90 \text{ m}$, $Q = 370 \text{ m}^3/\text{s}$)
- Irrigation works ($A = 2600 \text{ Ha}$)

Colle D'Anchise Dam:

- Gravity dam ($H=29\text{m}$, $L=175\text{m}$, $V=0.075\text{Mm}^3$)

- Mini Hydro (No. 2, IP = 110 and 280 kW)

San Massimo Dam:

- Rockfill dam (H= 55 m, L = 310 m, V = 1.3 Mm³)
- Spillway (L=160 m, Q = 970 m³ /s)

Position held: Project Director

Activities performed: Preliminary design, Feasibility study, Environmental and Social Impact Assessment

TANA BELES Multipurpose Project - part II

(CHARA CHARA DAM, BELES 1515 HPP – IP=270 MW, ROADS)

Year: 1986 - 1990

Location: Ethiopia

Client: Italian Ministry of Foreign Affairs; Beneficiary: Ethiopian Ministry of Agriculture

Main project features: Multipurpose project including the following main works: Chara-Chara Dam :

- Concrete Gravity (H= 10 m, L=772 m, V = 0.01 Mm³)
- Spillway (Q = 2,100 m³/s)
- Diversion Canals (L = 1,400 m)

Beles 1515 Hydropower (IP = 270 MW) :

- Surge Shaft (H = 70 m; D = 6 m)
- Vertical Penstock (L = 207 m; D = 4.5 m)
- Tailrace Tunnel (L = 1.8 km; D = 6.5 m)
- Underground Power House (3x110MW Francis Turbines, E = 1,860 GWh/y);
- Transformers (N°3, 120 MVA);
- 230 kV double circuit transmission line (63 km);

Roads

- Access road (L_{tot} = 91 Km, W=6m)
- Bridges including bridge over Gilgel Abay

Position held: Team leader

Activities performed: Preliminary studies, Environmental and Social Impact Assessment, Investigations, Feasibility study of all the works;

Final Design and Tender Documents for Chara-Chara Dam, appurtenances, access roads, project center

TANA BELES Multipurpose Project – part I

Year: 1986 - 1992

Location: Ethiopia

Client: Italian Ministry of Foreign Affairs; Beneficiary: Ethiopian Ministry of Agriculture

Main project features: Multipurpose Project for the development of Beles Valley including :

- Little Beles gravity dam (H=35 m, L=125 m, V_{RES}=3.5 Mm³) for water supply
- Water treatment plant (Q=4500 m³/d)
- Concrete gravity weir (H=22 m) for Irrigation purpose
- Water supply network (L=245 km, DN 100...400 mm, PFRV)
- Road network (L=225 km) and bridges (N°=27)
- Land reclamation for Agricultural Area (A = 23,000 Ha)
- Hospital, villages, pipe factory

Position held: Project Director, Team leader from the Master plan to Preliminary design

Activities performed: Investigations, Master plan, Preliminary and Final design, Supervision of the works

KABWE Urban Water Supply scheme

Year: 1984 - 1990

Location: Zambia

Client: AQUATER (Italy) for Kabwe Urban District Council

Main project features: Kabwe urban water supply scheme – Reservoir storage capacity of 12 Mm³:

- Concrete Gravity Overflow Dam (H = 20 m, L = 580 m)
- Outlet, Intake Works and Pumping Stations
- Treatment Plant (Q = 40,000 m³/day)
- Main Pipework in GRP (L = 21 km, D = 750-950 mm)

Position held: Team Leader

Activities performed: Investigations, Preliminary and Final Design, Consultancy during Construction

URIBANTE - DORADAS Hydroelectric Scheme (IP = 300 MW)

Year: 1981 - 1983

Location: Venezuela

Client: CONINTUR Joint Venture: Astaldi, Cogefar, Local Contractor

Main project features: Hydroelectric Project with IP = 300 MW, including:

- Rockfill dam (H = 140 m, L = 560 m, V = 9.3 Mm³)
- Power tunnels (L = 8 km, A = 22 m²)
- Penstocks (L = 360 m, D = 3m)
- Powerhouse (outdoor, H = 392 m, No. 2 pelton turbines IP = 2x150 MW)

Position held: Team Leader

Activities performed: Overall revision of the final design, Consultancy for the selection and the optimization of the underground excavation and support techniques

BUMBUNA Hydroelectric Power Plant (IP = 50 - 275 MW)

Year: 1975 – in progress

Location: Sierra Leone

Client: Ministry of Energy & Power, Republic of Sierra Leone

Main project features: Hydroelectric Plant to be constructed in 5 phases, with 275 MW in final phase. The plant currently operating, having IP = 50 MW, includes :

- Rockfill dam (H = 88m, L = 44 m, V_{RES} = 410 Mm³)
- Multi-purpose water tunnels (No. = 2, L = 2x620 m, D = 9m)
- Spillway (No. 2 morning glory, Q = 3000 m³/s)
- Outdoor Power house (No. 2 Francis turbines, IP = 2 x 25 MW)
- Transmission line (161 kV, L = 205 km)

Position held: Project Director and Dam Expert

Activities performed: Prefeasibility, Feasibility and Final Design, Assessment, Final design revision and update, Supervision of Works, Monitoring and assistance during operation (Plant on Line since 2010)

RIO GRANDE Pumped Storage Plant (IP = 750 MW)

Year: 1973 - 1985

Location: Argentina

Client: Panedile Argentina S.A.I.C.F. e I., Società Italiana per Condotte d'Acqua S.p.A. - Rome

Main project features: Pumped Storage Plant (IP = 750 MW) including :

- Main dam, zoned earth fill (H=104 m, L=410m, V=3.6 Mm³)
- Saddle dam, zoned earth fill (H = 50 m, L = 1,475 m, V = 1.6 Mm³)
- Spillway (Q = 2100 m³/s)
- Surge shaft (H = 62 m, A = 1000 m²)
- Underground Power House (N°4 reversible Francis turbines IP = 4x187.5 MW, turbine Q = 500 m³/s, pumping Q = 312 m³/s)

Position held: Team Leader

Activities performed: General consultancy and supervision of the entire scheme with full technical responsibilities, approval of all projects, supervision of construction, special studies; Construction design of all works excluding embankments, EM equipment

CASTEDDU Dams for Irrigation

Year: 1972 - 1983

Location: Italy

Client: Cixerri – Iglesias Land Reclamation Authority, Cagliari

Main project features: Dams for Irrigation including:

- Main Rockfill Dam - Medau Zirimilis Dam (H=60 m, L=500m)
- Secondary Rockfill Dam - Carru Segau Dam (H=16 m, L=1,220 m)
- Concrete Diversion Weir - Rio Sa Schina (H=11m, L=55m)
- Concrete Diversion Weir - Rio Mannu (H=6.2 m, L=19m)
- Intake Tunnel (L = 1,381 m, D = 2.70 m, Q = 24 m³/s)
- Spillway (Q= 681 m³/s); Auxiliary Spillway (Q= 157 m³/s)

Position held: Team Leader and Chief dam engineer

Activities performed: Supervision and Interpretation of Site Investigations, Final design

ASSINO Dam and Irrigation

Year: 1970 – 1976

Location: Italy

Client: Land Reclamation Irrigation and Development Authority - Arezzo

Main project features: Multiple Dams for irrigation uses, including:

- Rockfill dam (H = 61 m, L = 143 m, V = 0.36 Mm³)
- Rockfill dam (H = 59 m, L = 181 m, V = 0.37 Mm³)
- Irrigation scheme (Area = 5000 Ha, pipeline L = 384 km, D = 80/1200 mm)

Position held: Dam Designer

Activities performed: Investigations, Feasibility, Final Design and tender documents

ALTO TEMO Dam

Year: 1969 - 1974

Location: Italy

Client: Nurra Land Reclamation Authority – Sassari

Main project features: Water storage for irrigation purposes in the area of Sassari. The major works include:

- Reservoir (Storage capacity = 90 Mm³)
- Overflow buttress dam (H=60 m, L=200m, V=121,000m³)
- Ancillary works

Position held: Project Director and Dam Expert

Activities performed: Final design, Supervision of construction

ARCICHIARO Dam for Multipurpose uses

Year: 1969 – 2001

Location: Italy

Client: Ente Risorse Idriche del Molise (ERIM)

Main project features: Reservoir for multipurpose uses including:

- Rockfill Dam (H = 89.3 m, L = 270 m, V_{RES} = 11.1 Mm³)
- Concrete Weir (H= 29 m)
- Spillway (L = 85 m, Q = 447 m³/s)
- Penstock (L=3.2 km)
- Access road (L=3.1 Km, Lane Width = 7.0 m, N°2 Bridges)

Position held: Team Leader

Activities performed: Preliminary, Final and Detailed Design, Supervision of construction

GIURGIU RAZMIRESTI Irrigation Plant

Year: 1968

Location: Romania

Client: Romania Agricultural Advisory Board

Main project features: Irrigation plant with the following characteristics:

- Irrigated areas ($H_a = 155.000$)
- Pumping stations (No. 26, $Q = 65 \text{ m}^3/\text{s}$)
- Pipelines ($L = 22.5 \text{ km}$)
- Ancillary works

Position held: Team Leader

Activities performed: Coordination and supervision of all the design of civil and hydraulic works.

LEGADADI Addis Ababa Urban Water Supply Scheme

Year: 1966 - 1970

Location: Ethiopia

Client: Salini Costruttori S.p.A.; Beneficiary: Addis Ababa Municipality

Main project features: Addis Ababa urban water supply scheme with a storage capacity of 40 Mm^3 and the following basic features:

- Main Dam - Concrete Buttress ($H = 46 \text{ m}$, $L = 450 \text{ m}$)
- Spillway (Max Design Flood = $1,250 \text{ m}^3/\text{s}$)
- Intake, Outlet and Ancillary Works
- Secondary Rockfill Dam ($H = 20 \text{ m}$, $L = 600 \text{ m}$)
- Water Treatment Plant ($Q = 50,000 \text{ m}^3/\text{day}$)
- Steel Pipeline ($\Phi 900 \text{ mm}$, $L = 24 \text{ km}$)
- Reinforced Concrete Storage Tank (Capacity = $20,000 \text{ m}^3$)

Position held: Team Leader

Activities performed: Feasibility study of the water supply, Supervision of investigations, Preliminary, Final and Detailed Design, Supervision of Construction on behalf of the Contractor

BUSALLETTA Dam

Year: 1965 – 1986

Location: Italy

Client: Acquedotto Nicolay S.p.A., Genoa

Main project features: Reservoir for the urban water supply of the city of Genoa including the following works:

- Reservoir ($V_{\text{RES}} = 5 \text{ Mm}^3$)
- Dam (Concrete Gravity dam, $H = 50 \text{ m}$, $L = 222 \text{ m}$, $V_{\text{con}} = 155.000 \text{ m}^3$)
- Spillway (Dam crest, $Q_{\text{des}} = 230 \text{ m}^3/\text{s}$)
- Outlet Tunnel ($Q = 50 \text{ m}^3/\text{s}$, $L = 211 \text{ m}$, $D = 2.4 \text{ m}$)

Position held: Team Leader

Activities performed: Supervision of investigations, Preliminary and Final design, Supervision of construction (with full technical responsibility), Consultancy during trial impounding and operation.

BOSA Dam

Year: 1965 – 1968

Location: Italy

Client: Sardinia Autonomous Region, Ministry of Public Works Dam Division

Main project features: Reservoir for flood control of the Temo River for protection of the town of Bosa:

- Arch Gravity Dam ($H = 57 \text{ m}$, $L = 325 \text{ m}$, $V_{\text{RES}} = 30 \text{ Mm}^3$)
- Bottom outlet tunnel ($D = 6 \text{ m}$, $L = 280 \text{ m}$, $Q = 600 \text{ m}^3/\text{s}$)
- Intermediate Outlet Tunnel ($D = 5 \text{ m}$, $L = 360 \text{ m}$)
- Spillway (Type - shaft, $D = 5 \text{ m}$)

Position held: Dam specialist

Activities performed: Final design (in collaboration with Prof. Lamberto Canali)

TECH-6: Curriculum Vitae (CV) for Proposed Professional Staff

Recent Publications:

- Censini G., Pietrangeli G. (2013). *Seismic tomography: A Vital Tool in the Preliminary Investigation Stage of any Hydropower Plant. Examples of Two Large Projects in Ethiopia: Gibe III and Grand Ethiopian Renaissance Projects.*
- Pietrangeli G., Beltrami G.M., Millesi V. (2013). *Characterization of Blue-Nile (Abbay) conveyance at Ethiopian/Sudanese border.*
- Pietrangeli G., Cacciarini A., Calabrese M. (2013). *Geomechanical Characterization of Residual Soils for Foundation Design of a Bituminous Faced Rockfill Dam.*
- Pietrangeli G., Pietrangeli A., Scuero A., Vaschetti G. (2009). *Gibe III: A zigzag geomembrane core for a 50 m high rockfill cofferdam in Ethiopia.*

14. Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

[Signature of staff member or authorized representative of the staff] Date: _____
Day/Month/Year

Full name of authorized representative: _____