

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

1. **Proposed Position:**

2. **Name of Firm:** Studio Ing. G. Pietrangeli s.r.l.

3. **Name of Staff:** **Giuseppe PITTALIS**

4. **Date of Birth:** 21-05-1978 **Nationality:** Italian

5. **Education:** MSc in Civil & Environmental Engineering, University of Rome "La Sapienza", 2004

6. **Membership of Professional Associations:**

Italian Consulting Engineers Register of Rome, n°A25328 since 2004

Committee of the Italian Commission (ITCOLD), since 2014 to present

7. **Other Training:**

Adjunct Professor, Master in Geotechnical Engineering, University of Rome, 2014/15

Various technical specialization courses, among which:

- Dams and Hydropower Development, Italian Consulting Engineers Register of Rome, 2014/2015

8. **Countries of Work Experience:** Ecuador, Ethiopia, Italy, Nigeria, Uganda, Malawi, Zambia.

9. **Languages:**

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent
Spanish	Good	Good	Good
Italian	Mother Tongue		

10. **Employment Record:**

From: 2003 To: date
Employer: Studio Ing. G. Pietrangeli s.r.l.
Positions held:

From: 2003 To: 2005
Employer: GTA s.r.l.
Positions held: Civil Engineer

11. **Detailed Tasks Assigned**

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

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

Year: 2010 – in progress

Location: Ethiopia

Client: SaliniCostruttori S.p.A.; Beneficiary : EEPCO

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)
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- Powerhouses (No. 2, Outdoor, $Q=1,550\text{m}^3/\text{s}$, 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:

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

LUFUBU HPPs Cascade

Year: 2013 – in progress

Location: Zambia

Client: LPC Lufubu Power Company Ltd.

Main project features: LUFUBU HPP Cascade envisages the construction of three hydropower plants on the Lufubu River with a total installed capacity of 325 MW (energy annual production 1336 GWh/y). The Main Works are the following:

LUFUBU 1 – IP = 130 MW

- Reservoir (Total volume = 400 Mm^3)
- Dam (RCC type, H = 65 m, Crest L = 2530 m)
- Headrace Canal (L = 2.4 km)
- Penstock (L = 2.7 km D = 4.2 m)
- Power house (Open air type, 2 Francis Turbines IP = 2X65 MW)
- Transmission line (132 kV, L = 50 km)

LUFUBU 2 – IP = 100 MW

- Reservoir (Total volume = 58 Mm^3)
- Dam (RCC type, H = 17 m, Crest L = 625 m)
- Headrace canal (L = 6.6 km)
- Penstock (L = 0.6 km D = 3.8 m)
- Power house (Open air type, 2 Francis Turbines: IP = 2X50 MW)

LUFUBU 3 – IP = 95 MW

- Reservoir (Total volume = 121 Mm^3)
- Dam (RCC type, H = 33 m, Crest L= 960 m)
- Headrace Canal (Length = 8 km)
- Penstock (L = 1.5 km D = 4.5 m)
- Power house (Open air type, 2 Francis Turbines IP = 2X47.5 MW)
- Transmission line (330 kV, L = 220 km)

Position held:

Activities performed: Conceptual scheme, Feasibility, Final/Detailed Design and tender documents, Environmental and Social Impact Assessment, Supervision of construction

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 Mm^3)
- Main Dam (Earthfill type, H = 64.30 m, L = 566 m, Emb. Volume 2.7 Mm^3)
- Secondary Dam (Earthfill type, H = 8.6 m, L = 288 m, Emb. Volume 0.04 Mm^3)
- Spillway ($Q=909\text{ m}^3/\text{s}$, side spillway ungated L=112 m + n° 2 gates L = 24 m)

Position held:

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

ULU JELAI – Hpp (IP = 382 MW)

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Year: 2013 – 2014

Location: Malaysia

Client: Salini S.p.A.

Main project features: This project includes the Ulu Jelai Hydroelectric Power plant.

The basic features are the following:

- Susu Dam (H = 80 m, RCC type)
- Surge Shaft Upper portion (H = 40 m, D = 19 m)
- Diversion tunnel (L = 207 m, D = 6.5 m, H = 6.5 – 7.3 m)
- Rockfill Cofferdam (H = 14 m, L = 26 m)
- Water transfer tunnels (L = 26 km)

Position held:

Activities performed: Consultancy for Construction design related to: Surge shaft, Diversion tunnel and Cofferdam

GUAYLLABAMBA HPPs: Cuenca alta (310MW), Cuenca media y baja (1,160MW)

Year: 2012 – 2013

Location: Ecuador

Client: Instituto Nacional de Preinversión

Main project features: The Cuenca Alta includes San Pedro HPP (50 MW) :

- Gravity Dam (H = 50 m, L = 100 m, V = 50.000 m³)
 - Underground power house (No.2 Francis turbines, Rated Power 50 MW)
- together with the downstream plant Calderón+Cubi (260 MW):
- Gravity Dam (H = 115 m, L = 192 m, V = 320.000 m³)
 - Underground power house (No.4 Pelton turbines, IP = 260 MW)

The “Cuenca media y baja” includes : Chespi (468 MW), Chontal (194 MW), Chirapi (157,5 MW), Manduriacu (60 MW), Tortugo (201 MW), Tigre (80 MW)

Position held:

Activities performed: Cuenca Alta: Investigations, Prefeasibility study; Cuenca Media y baja: Optimization of existing projects, Master Plan

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:

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

CHESPI Hydropower Plant (IP = 468 MW)

Year: 2009 - 2012

Location: Ecuador

Client: Hidroequinoccio HEQ S.A.

Main project features: Chespi hydroelectric project (IP = 468 MW) includes the following works:

- Reservoir (Live Storage = 2.3 Mm³)
 - Arch dam (H = 68 m, L = 144 m, V = 45,000 m³)
 - Penstock (L = 1,000 m, D = 4-3.4 m)
 - Headrace tunnel (L = 18.3 Km, D = 5.4 m)
 - Tailrace tunnel (L = 6.3 Km, D = 6.4 m)
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- Surge Shaft (H = 123 m, D = 15 m)
- Underground Power House (No. 4x117 MW Pelton turbines)

Position held:

Activities performed: Investigations, Preliminary, Final and Detailed Design, Tender Documents

GIBE V Hydroelectric Power Plant (IP = 660 MW)

Year: 2008 - 2009

Location: Ethiopia

Client: SaliniCostruttori S.p.A.; Beneficiary : EEPCO

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:

Activities performed: Reconnaissance Project, Feasibility Study

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

Year: 2008 - 2009

Location: Ethiopia

Client: SaliniCostruttori 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:

Activities performed: Reconnaissance Project, Feasibility Study

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

Year: 2008 - 2009

Location: Uganda

Client: SaliniCostruttori 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 Mm³)
- 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}=64m)

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

- Rockfill Dam (H = 53 m, L = 2,150 m, V_{RES} = 300 Mm³)
- 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}=131m)

Murchison is the 3th plant of the Kyoga-Nile cascade and includes :

- Rockfill Dam (H = 44 m, L = 1,300m, V_{RES} = 170 Mm³)
- 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}=107m)

Position held:

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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:

Activities performed: Pre-Feasibility study, Feasibility study

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

Year: 2005 – in progress

Location: Ethiopia

Client: SaliniCostruttoriS.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 Mm³)
- RCC Gravity Dam (H=235 m, L_{CREST}=620 m, V_{RCC} = 6.5 Mm³)
- 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:

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

BELES Multi-Purpose Project (IP = 460 MW)

Year: 2005 - 2008

Location: Ethiopia

Client: SaliniCostruttoriS.p.A., Beneficiary: EEPKO

Main project features: Beles is a Multi-Purpose Project on Lake Tana for Hydroelectric purposes and irrigation. The main works of the project include :

- The use of the natural Lake Tana as reservoir (Total Storage = 32,270 Mm³)
- Intake (No. 5+2 bays, W = 43 m, Q = 160 m³/s)
- Headrace tunnel (L = 11 km, D = 8 m)
- Surge Shaft (L = 91 m, D = 18 m)
- Penstock Shaft (L = 286 m, D = 6.5 m)
- Underground Power House (Dimensions = 82x17x38 m, No. 4 Francis turbines, Design Head = 332 m, Design flow = 160 m³/s, IP = 4x115 MW)
- Transformer cavern (Dimensions 41x13x10 m, No. 4 OFWF transformers, 400/15 kVA)
- Tailrace tunnel (L = 7 km, D = 8 m)

Position held:

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Activities performed: Feasibility study, Basic Design, Final design, Construction design, Consultancy during construction

GIBE II Hydroelectric Power Plant (IP = 420 MW)

Year: 2003 - 2010

Location: Ethiopia

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

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

- Concrete Gravity Dam (H=49m, L=140m, $V_{RES} = 1.9 \text{ M}^3/\text{s}$)
- Spillway (at dam crest, $Q = 2325 \text{ m}^3/\text{s}$)
- Intake (L = 24 m, H = 33 m, No. 2 roller gates)
- Power Tunnels (L = 26 km, D = 6 m, $Q = 101 \text{ m}^3/\text{s}$)
- Penstocks (No 2, L = 1.2 km, D = 2.4 m)
- Surge Shaft (H = 94 m, D = 18 m)
- Power House (Outdoor, No. 4x105 MW Pelton turbines, Design Head = 510 m, $Q_{des} = 110 \text{ m}^3/\text{s}$, Dim. 120 x 25 x 36 m)
- Switchyard (No. 2 line bays 400 kV, No. 4 transformers 400/15 kV)
- Access Roads (No. 3, L = 30 + 35 + 5.5 km)

Position held:

Activities performed: Feasibility study, Final Design and Construction Design Consultancy during Construction

Publications:

- Slope Stability Monitoring: An Ethiopian Case Study (Gibe III Power House), A. Cagiano, G. Pittalis, V. Millesi, 2013
- Powering on with hydro designs, International Water Power & Dam Construction, A. Pietrangeli, A. Brasca, S. Galantino, G. Pittalis, January 2013

13. 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: _____