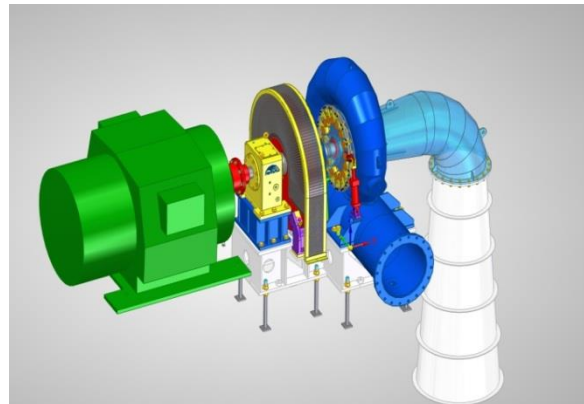
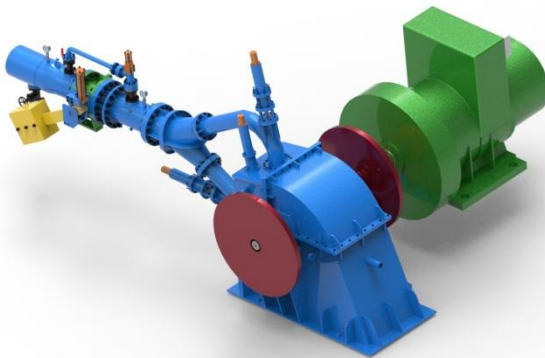




PENTAFLO HYDRO PVT. LTD.

**(Design, Manufacture, Supply, Erection and Commissioning
of Hydro Power Project Machinery)**

COMPANY PROFILE



M/s PENTAFLO HYDRO PVT. LTD.

L-25, LGF, KALKAJI

NEW DELHI-110019

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ABOUT

Pentaflo Hydro Private Limited, an EPC Company engaged in Design, Engineering, Manufacture, Supply, Erection, Testing and Commissioning of Small Hydro Electric Power Projects. Pentaflo Hydro Private Limited manufacturing operations commenced in 2003 and the company had expanded to cater to the needs of the national and international markets. A leading Micro/Small Hydro Turbine manufacturer in India. At the core of Pentaflo lies its capability in adapting technology. Pentaflo core capabilities are Design, Research and Development, Manufacturing, Quality Management and Project Management. In the process of development, the Pentaflo had put in place, a sound engineering base. Customer satisfaction and our commitment to deliver best have contributed to brand nomination of Pentaflo products for intensive capital projects. For better control on quality and delivery, the manufacturing facility has always been emphasized. Our manufacturing facility is equipped with extensive manufacturing and material handling capabilities, to create a high end and complimentary infrastructure.

We manufacture hydro turbines of capacity ranging from 10 kW to 10 MW. We are a team of qualified and experienced engineers in the field of “Small Hydroelectric Power Plant” equipments. We are Delhi based EPC Company, pioneer in detailed designing, engineering, material selection, manufacture, assembly, testing, erection and commissioning of electro-mechanical equipments for Small Hydro Power Projects.

We have in house design facility and are capable to provide you our specialized services for electro-mechanical equipments for setting up of Micro, Mini and Small Hydro Projects.

We have a manufacturing facility located at Faridabad, Haryana well equipped with Man, Machine and Materials.

We manufacture following types of Turbines & Valves:

1. Pelton Turbine
2. Francis Turbine
3. Kaplan Turbine
4. Cross-Flow Turbine
5. Micro Inverted Siphon Turbine
6. Spherical Valve
7. Butterfly Valve
8. Ring Jet Valve
9. Hydraulic Cylinder
10. Hydro Turbine for drive of Cooling Tower Fan

SERVICES OF PENTAFLO HYDRO PRIVATE LIMITED

➤ DESIGN AND ENGINEERING

- Selection of type of Turbine for the particular site is a key to any Hydro Project and requires right integration of various components namely Mechanical, Electrical, Civil.
- PHPL explore all possible types and arrangement of turbines and select the one which suits the best for the site conditions and the project data.
- A well experienced team of mechanical engineers and technocrats holding expertise in carrying out our manufacturing processes with proficiency. Owing to dedicated efforts of our R&D experts we manufacture our range of hydro turbines and associated products at international standards.
- Computational Fluid Dynamics (CFD) Analysis & Finite Element Method(FEM) of Turbines & Valves for reliability & safety.

➤ CONSULTANCY SERVICES

- We have a team of professionals having sound experience of hydro project industries. Our diligent and dynamic team is instrumental in providing our clients with transparency in dealings.

➤ REVERSE ENGINEERING

- Pentaflo's long experience in Hydro Turbine manufacturing and the acquired knowledge from operation and maintenance of Hydro Power Plants has made us competent enough for taking up the job of reverse engineering/refurbishment and up of all type of water turbines and associated equipments.

➤ AUTOMATION

- We provide services for design & engineering and supply of equipment for the automation of the existing plants which are not equipped for the same.

➤ OUR ENTIRE TEAM INCLUDES

- Engineers
- R & D Experts
- Technocrats
- Quality Controllers
- Procuring agents
- Field staff

PROMOTERS

1. **Mr. K.C. Arora:** He is Managing Director of PentaFlo Hydro Private Limited. He himself is M.E. in Rotodynamics Machine and B.E. in Mechanical Engineering. Before starting his own company, he has worked for 20+ years in reputed/leading companies of India. Throughout of 44 years of working experience, he has been involved in the Design and Engineering of Hydro Turbines and its auxiliaries & systems.
2. **Mr. K.M. Babu:** He is Director of PentaFlo Hydro Private Limited. An Engineer by profession, he has been working along with Mr. K.C. Arora since 1982. He is also indulged in Project Management of Hydro Electric Projects.

They together laid the foundation of **PentaFlo Hydro Private Limited**. With growth, motivation and dedication they started expanding their arms and added new members to family.

PELTON TURBINE

An Impulse turbine primarily used for High Head and Low Discharge.

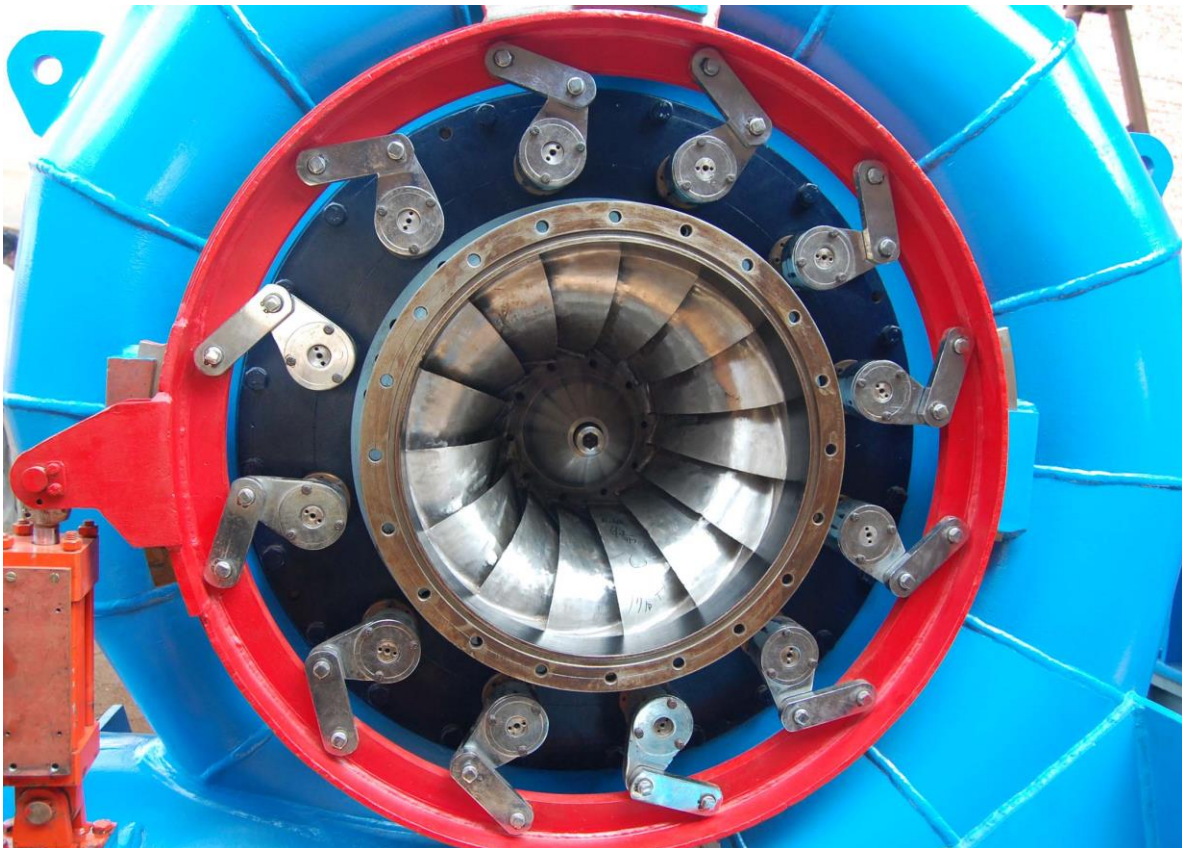
- Head ranges from 50 m to 600 m
- Turbine Output: 50 kW – 10 MW
- Horizontal shaft Pelton Turbines with 1, 2 or 3 jets
- Vertical Shaft Pelton Turbines with 4 to 6 jets
- Runner in Stainless steel is integrally cast
- Micro range Pelton, buckets are bolted to hub
- Deflectors are of ON/OFF type or regulating type



FRANCIS TURBINE

A Reaction turbine primarily used for Medium Head and High Discharge.

- Horizontal and Vertical Shaft Turbines.
- Head range from 12 m to 250 m.
- Turbine Output capacity ranges from 100 kW to 10 MW.
- For special cases up to 200 kW low head Francis turbine, we can offer flat belt pulley system as speed increaser also.



KAPLAN TURBINE

A Reaction turbine primarily used for Low Head and High Discharge.

- Horizontal and vertical shaft configuration.
- Head range from 2 m to 25 m
- For Ultra low head range from 2 m to 4 m, the turbine intake is by Siphon arrangement.
- Depending on the site conditions the following types are manufactured:
 - Fixed Runner blade and adjustable guide vanes.
 - Runner Blade adjustable and fixed guide vanes (Semi Kaplan).
 - Both runner blades and guide vanes adjustable (Full Kaplan).
- Turbine output ranges from 200 kW to 10 MW.



CROSS – FLOW TURBINE

- Cross flow Turbine from 2 kW to 150 kW.
- Head ranges from 4 m to 100 m.
- Runners are either of stainless steel or mild steel.
- Provided with self-closing type inlet butterfly valve to avoid runaway speed.



MICRO INVERTED SIPHON TURBINE

- Head ranges from 1.5 m to 6 m.
- Flow ranges from 0.1 cubic m to 4.0 cubic m.
- Turbine Output ranges from 2 kW to 120 kW.
- Best suited to sites where head and flow remains constant or with little variation in head.
- Requires very little civil work.



VALVES

- Turbine Main Inlet valve
 - **Spherical Valve**
 - **Butterfly Valve**
- **Ring Jet Valve (Special Type valve)**
- **Penstock Protection Valve.**
- Range of Manufacturing: 150 mm to 3000 mm.
- Operation (Hydraulically / Manually)
- Valves are fabricated or made of cast steel.



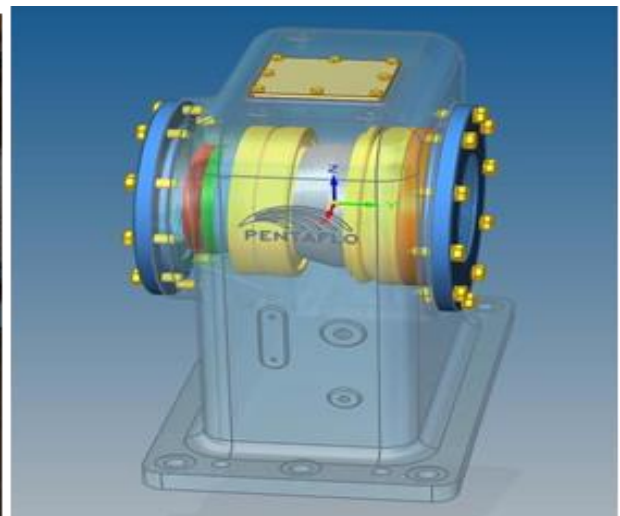
MODERNIZATION AND UPGRADING

Modernization

- New Materials and Surface Treatment for increased component life.
- Self-Lubricating Bearings.
- Modified Shaft Seals.
- Modern Control Equipment.
- New Digital Governor.
- Oil Pumping Units.

Upgrading

- Brakes.
- New Runner.
- Modified or new Guide Vanes.
- Modified or new Nozzle Assemblies.



RECENTLY COMMISSIONED HYRO ELECTRIC PROJECTS

1. JAIL HEP (1 x 1200 kW)

Horizontal Double Jet Pelton Turbine with Spherical Valve(350 NB).



2. MANIHAR HEP (1 x 2000 kW)

Horizontal Double Jet Pelton Turbine with Spherical Valve(450 NB).



3. **BALH PADHAR HEP (2 x 2000 kW)**

Horizontal Francis Turbine with Butterfly Valve(1200 NB).



DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
1	Mayong Chu HEP, Sikkim	Hanuman Ganga Hydro Projects Pvt. Ltd., Sikkim	1 x 4000 kW + 20% COL	Horizontal 3 Jet Pelton Turbine	Under Execution
2	Rabom Chu HEP, Sikkim	Hanuman Ganga Hydro Projects Pvt. Ltd., Sikkim	1 x 7000 kW + 10% COL	Horizontal 3 Jet Pelton Turbine	Under Execution
3	Kalez Khola HEP, Sikkim	Hanuman Ganga Hydro Projects Pvt. Ltd., Sikkim	1 x 3000 kW + 10% COL	Horizontal Francis Turbine	Under Execution
4	Kishan Ganga HEP, J&K	NHPC Ltd.	3 x 800 kW + 10% COL	Horizontal Francis Turbine	Under Execution
5	Sessa SHEP, Arunachal Pradesh	Bomdila HP Division, DHPD, Arunachal Pradesh	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Under Execution
6	Sethu Nala SHEP, Himachal Pradesh	New Dhauladhar Techno Power Pvt. Ltd., Himachal Pradesh	2 x 500 kW + 15% COL	Horizontal 2 Jet Pelton Turbine	Under Execution
7	Raru MHP, Kargil	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Under Execution
8	Saiti Khola HPP, Nepal	M/s Saidi Power Pvt. Ltd., Kaski, Nepal	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Under Execution
9	Kush SHP, Arunachal Pradesh	M/s Kakum Enterprises	2 x 1000 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Under Execution
10	Pagu SHP, Arunachal Pradesh	M/s Rido Jenny Enterprises	2 x 1000 kW + 10% COL	Horizontal Francis Turbine	Supply Completed

DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
11	Khandi MHP, Kargil	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Supply completed
12	Sundrijal HPP, Nepal	M/s Power Mech Industries Pvt. Ltd.	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in 2021
13	Manihar HPP, Kullu, Himachal Pradesh	M/s Bhuvneshwari Hydro Pvt. Ltd.	1 x 2000 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2021
14	Upper Kallar MHP, Kerala	M/s Hydro Megus Pvt. Ltd.	2 x 1000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in September 2021
15	Yembung MHS, Arunachal Pradesh	DHPD, Arunachal Pradesh	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in January 2021
16	Jail MHP, Himachal Pradesh	M/s EPS Instrumentation Pvt. Ltd.	1 x 1200 kW + 20% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in December 2020
17	Tallewal MHP, Punjab	M/s Himalyan Renewable Energy Pvt. Ltd.	1 x 900 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in November 2020
18	Nakkian SHP, Punjab	M/s Atlantic Power Pvt. Ltd.	1 x 400 kW + 10% COL	Vertical Semi Kaplan Turbine	Commissioned in February 2020
19	Balh Padhar MHP, Himachal Pradesh	M/s USP Hydro Energy Ltd.	2 x 2000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in September 2019
20	Domkorong MHS, Arunachal Pradesh	M/s Rido Jenny Enterprises	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2019

DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
21	Nuranang MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 500 kW + 10% COL	Horizontal Single Jet Pelton Turbine	Commissioned in October 2019
22	Chillong MHP, Kargil	KREDA	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in December 2018
23	Sangrah MHP, Kargil	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Commissioned in August 2018
24	Bairas MHP, Kargil	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Commissioned in November 2017
25	Zhongdongrong MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in 2017
26	Siri Korang MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in 2016
27	Payu MHP, Arunachal Pradesh	DHPD, Arunachal Pradesh	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in 2016
28	Bibiwala MHP, Punjab	SKR Hydro Power Generation Pvt. Ltd.	1 x 350 kW + 15% COL	Vertical Semi Kaplan Turbine	Commissioned in April 2016
29	Ubharah MHP, Himachal Pradesh	Shakti Hydroelectric Co. Pvt. Ltd., New Delhi	2 x 1200 kW + 20% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2014
30	Suvarnamukhi MHS, Karnataka	M/s Trimech Power, Bangalore	2 x 1250 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in October 2014

DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
31	Tunga LBC MHPP, Karnataka	M/S Vasgi Power Pvt. Ltd., Bangalore	1 x 550 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in June 2014
32	Hamal MHP, Himachal Pradesh	M/s Hamal Hydel Limited	2 x 1000 kW + 20%COL	Horizontal 2 Jet Pelton Turbine	Commissioned in February 2014
33	Kachopani MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 100 kW + 10% COL	Horizontal Francis Turbine	Commissioned in October 2013
34	Longpani MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 200 kW + 10% COL	Horizontal Francis Turbine	Commissioned in April 2013
35	Billing MHP, Himachal Pradesh	HIMURJA	2 x 200 kW + 10% COL	Horizontal Francis Turbine	Commissioned in October 2012
36	Gossang MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in July 2012
37	Dehar - II MHP, Himachal Pradesh	M/s Saini Techno Constructs Pvt. Ltd.	2 x 750 kW + 20% COL	Horizontal Francis Turbine	Commissioned in May 2011
38	Lower Baijnath Kuhl MHP, Himachal Pradesh	M/s Changar Vidyut Kranti Pvt. Ltd.	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in August 2009
39	Deopani HEP, Arunachal Pradesh	Jalshakti Engineering Pvt. Ltd.	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in December 2008
40	Mrujaara MHP, Karnataka	Mrujaara Power	1 x 750 kW + 10% COL	Vertical Semi Kaplan Turbine	Commissioned in October 2008

DETAILS OF MICRO HYDRO ELECTRIC PROJECTS

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
1	Preet MHS, Arunachal Pradesh	DHPD, Arunachal Pradesh	2 x 25 kW + 10% COL	Horizontal Francis Turbine	Under Execution
2	Dichu Nallah MHS, Arunachal Pradesh	DHPD, Arunachal Pradesh	1 x 100 kW + 10% COL	Horizontal Francis Turbine	Under Execution
3	Umtygar, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 20 kW + 10% COL	Horizontal Pelton Turbine	Supply Completed
4	Umsning, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 15 kW + 20% COL	Vertical 4 Jet Pelton Turbine	Supply Completed
5	Tasku, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 9 kW + 10% COL	Vertical 3 Jet Pelton Turbine	Supply Completed
6	Tasku, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 6 kW + 10% COL	Vertical 4 Jet Pelton Turbine	Supply Completed
7	SJNVL, Himachal Pradesh	SJNVL, Himachal Pradesh	1 x 2 kW + 5% COL	Horizontal 2 Jet Pelton Turbine	Supply Completed
8	Delhi Jal Board	HNB Engineers Pvt. Ltd.	1 x 16 kW	Vertical Kaplan Turbine	Commissioned
9	Anderson, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 5 kW	Horizontal 4 Jet Pelton Turbine	Commissioned

DETAILS OF MICRO HYDRO ELECTRIC PROJECTS

10	Anderson, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 5 kW	Horizontal 2 Jet Pelton Turbine	Commissioned
11	Anderson, Meghalaya	Anderson Tea Estate, Meghalaya	1 x 30 kW	Horizontal Pelton Turbine	Commissioned
12	Anderson, Meghalaya	Anderson Tea Estate, Meghalaya	2 x 25 kW	Horizontal Pelton Turbine	Commissioned

DETAILS OF CROSS FLOW TURBINE

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
1	Lift Irrigation Project, Himachal Pradesh	Boom Systems Pvt. Ltd., Faridabad	2 x 50 kW	Design, manufacturing & supply of 2 Nos. Cross-flow Turbine of 52 kW each, to be coupled to a centrifugal pump through belt pulley arrangement.	Commissioned
2	Sidhartha Medium Irrigation Project	Universal Electric Engineers	2 x 123 kW	Design, manufacturing & supply of 2 Nos. Cross-flow Turbine of 123 kW each, to be coupled to a centrifugal pump through belt pulley arrangement.	Commissioned
3	Liti-2 Micro Hydro Project	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
4	Karmi-3 Micro Hydro Project	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
5	Kunwari Micro Hydro Project	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
6	Sarma Kanol Micro Hydro Project	M/s Bagnath Enterprises	2 x 50 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
7	Baregaon MHP, Uttranchal	M/s Bagnath Enterprises	1 x 25 kW	Design, Manufacturing & Supply of Cross- flow Turbines	Commissioned
8	Ashapani MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 30 kW	Design, Manufacturing & Supply of Cross- flow Turbines	Commissioned

DETAILS OF CROSS FLOW TURBINE

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
9	Karwati Nallah MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
10	Thimbogre Micro HEP, Meghalaya	M/s WGHCRMS, Tura	1 x 5 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
11	Gangotri MHP, Uttarakhand	M/s Sam Enterprises	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
12	Dooteriah MHP, Darjelling	Dooteriah & Kalej Valley Tea Estates Pvt. Ltd., Darjelling	1 x 100 kW + 20% COL	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
13	HNB	HNB Engineers Pvt. Ltd.	1 x 5 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
14	Taksing	Nav Bharat Enterprise	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
15	Ayong	Naga Green Energy	1 x 10 kW	Design, Manufacturing & Supply of Cross-Flow Turbines with PMG and ELC	Commissioned
16	Bagroor, Himachal Pradesh	HP Irrigation and PH Deptt. (through M/s Universal Electric Engineers)	2 x 120 kW + 20% COL	Design, Manufacturing & Supply of Cross-Flow Turbines with double shaft (shaft on both side). One side is coupled to a centrifugal pump and other side to a synchronous generator through speed increasing gear box complete with panels.	Supply completed

DETAILS OF CONSULTANCY WORK

S. No.	Name of Project	Client	Project Capacity	Type / Make of Turbine
1	2 x 1500 KW Babehalli MHP	Gill Power Generation Co. (P) Ltd., Batala, Punjab	Evaluation / review of drawings, QAP and specification of Electro-Mechanical equipment. Inspection and testing of equipment at manufacturer's workshop. Co-ordination with Hydro mechanical consultant for design and detailed engineering, Checking the alignment of Turbine at site and to witness testing & commissioning.	Vertical Full Kaplan Turbine Manufactured by VA Tech, Faridabad.
2	1 x 50 kW Turbine Model	M/s Beicco Lawrie Ltd., (a Govt. of India Undertaking) Kolkata,	Market survey, selection of suitable Turbine, Design, Vendor development and testing the Turbine at a Govt. approved lab to check efficiency / performance of the Turbine. A Cross-Flow type prototype Turbine of 50KW rating has been designed, manufactured and tested in a very sophisticated hydro laboratory at Maulana Azad College of Technology, Bhopal. The results are very satisfactory.	Cross-Flow Turbine.
3	2 x 3500 kW Ullankal MHP	M/s Energy Development Company Ltd., (EDCL) Faridabad	Reverse engineering and completion of design & engineering of remaining parts of Turbine. Inspection & Testing of Turbine components. The Turbine was originally designed and supplied by CKD Blansko, Czech Republic in 1996.	S' Type Tubular Full Kaplan Turbine. Manufactured by DLF, Faridabad
4	3 x 6000 kW Shamili MHP	Boom Systems Pvt. Ltd., Faridabad	Re-designing of Turbine static components like Stay Ring, Runner Casing, Dismantling Joint, Intermediate Piece & Draft Tube to suit site condition. Inspection & Testing of Turbine components to be manufactured in India.	S' Type Tubular Full Kaplan Turbine. Manufactured by Gugler Hydroenergy, Austria
5	3 x 10 MW Bhilangana MHP	M/s Bhilangana Hydro Power Ltd.	Review Engineering - Mechanical Consultancy	Horizontal Francis Turbine - Manufactured by M/s Voith Seimens
6	1 x 1500 kW Iggalur Barrage MHS	M/s HPP Energy Private Limited	Design and Engineering of Vertical Full Kaplan Turbine	Vertical Full Kaplan Turbine

DETAILS OF CONSULTANCY WORK

S. No.	Name of Project	Client	Project Capacity	Type / Make of Turbine
7	1 x 4500 kW Ganderwal MHP	M/s Gogoal Hydro Pvt. Ltd.	Market survey, selection of suitable Turbine, Design, Vendor development and testing the Turbine at a Govt. approved lab to check efficiency / performance of the Turbine.	Horizontal Francis Turbine
8	3 x 500 kW Changli Khurd MHP	M/s Salasar Hydro Urja Pvt. Ltd.	Design and Engineering of Vertical Full Kaplan Turbine	Vertical Full Kaplan Turbine
9	2 x 4950 kW Rajpur Hydro HEP	Kundan Energy, New Delhi	Design & Engineering of Horizontal Francis Turbine	Horizontal Francis Turbine
10	Mohammadpur HEP	M/s HPP Energy Private Limited	Design & Engineering of Pelton Runner	Horizontal Pelton Turbine
11	2 x 800 kW Ropar HEP	M/s HPP Energy Private Limited	Design and Engineering of Vertical Full Kaplan Turbine	Vertical Full Kaplan Turbine
12	2 x 500 kW Suspa Bukhari MHP	M/s HPP Energy Private Limited	Design, Engineering and Supply of Pelton Runner	Horizontal Pelton Turbine
13	2 x 1000 kW Chandikhola MHP	M/s HPP Energy Private Limited	Design, Engineering and Supply of Pelton Runner	Horizontal Pelton Turbine

DETAILS OF RENOVATION & MAINTENANCE WORK

S. No.	Name of Project	Client	Project Capacity	Details
1	Narangwal MHP	Punjab Genco Ltd., Punjab	2 x 750 kW	Dismantling of complete unit and replacing Runner internal components, Turbine Guide Bearing & re-commissioning of unit
2	Tugal MHP	Punjab Genco Ltd., Punjab	2 x 750 kW	Dismantling of complete unit and replacing Runner internal components, Turbine Guide Bearing & re-commissioning of unit
3	Dalla MHP	Punjab Genco Ltd., Punjab	2 x 500 kW	Supply of critical spares like Runner internal components, Guide Bearing, Servomotor components, etc.
4	Chettipetta MHP	APGENCO, Andhra Pradesh	2 x 500 kW	Supply of critical spares like Rotary Union, Guide Bearing, Servomotor components, etc.
5	Solang HEP	A Power Himalayas Limited, Himachal Pradesh	3 x 500 kW	Modification/refurbishment/repair of various parts of Turbine (Unit-II) viz. OPU, BFV, Turbine Cover, Guide Vanes
6	Majalgaon HEP	Executive Engineer, Vidarbha HEP Division, Akola, Maharashtra	3 x 750 kW	Design, manufacture, supply, erection, testing & commissioning of digital governors along with work of overhauling and servicing of Hydraulic Power Pack.
7	Solang HEP	A Power Himalayas Limited, Himachal Pradesh	3 x 500 kW	Modification/refurbishment/repair of various parts of Turbine (Unit-I) viz. OPU, BFV, Turbine Cover, Guide Vanes
8	Hanuman Ganga HEP	A Power Himalayas Limited (Uttaranchal)	3 x 1500 kW	Manufacturing & supply of 01 no. spare Francis Runner
9	Hanuman Ganga HEP	A Power Himalayas Limited (Uttaranchal)	3 x 1500 kW	Manufacturing & supply of Turbine Cover & Guide Vane Bush

DETAILS OF RENOVATION & MAINTENANCE WORK

S. No.	Name of Project	Client	Project Capacity	Details
10	Meenvallom HEP, Kerala	Steel Industries of Kerala Ltd.	2 x 1500 kW	Design, manufacture, supply, erection, testing & commissioning of Electronic Governing System with Hydraulic Power Pack & spares for 2 Jet Pelton Turbine
11	Mantsonyane MHP, LESOTHO	Chadha Power, c/o Lesotho Electric Company	1 x 2000 kW	Design, manufacture, supply, erection, testing & commissioning of Electronic Governing System with Hydraulic Power Pack & spares for Francis Turbine
12	Taraila HEP, Himachal Pradesh	Ginni Global Limited, New Delhi	2 x 2500 kW	Re-design, manufacture, supply, erection & testing of Shaft Seal Assembly, Modification of OPU, repair & refurbishment of Runner, Turbine Cover, Guide Vanes etc.
13	5 Nos. MHPs on Sidhwan Canal, Punjab	Winsome Yarns Ltd., Chandigarh	5 x 700 kW	Re-designing and replacing Kaplan Runner internal components in all the 5 projects
14	Gunsola MHP, Uttarakhand	Supertech Enterprises, Meerut	2 x 1500 kW	Welding, grinding, machining & dynamic balancing of Francis Runner and realignment of TG Set at site
15	Panwai HEP, Himachal Pradesh	Kirloskar Brothers Ltd, Pune	2 x 2000 kW	Design, Manufacture and Supply of Needle & Deflector Servo Motors for Double Jet Pelton Turbines
16	Lower Lagyap MHP, Sikkim	M/s S K Aggarwal	2 x 6000 kW	Re-Design, Manufacture, Supply, Erection & Testing of 02 Nos. Pelton Runners and Hydraulic Gate Hoist
17	Kitpi, Arunachal Pradesh	Concept Engineering	1 x 1500 kW	Re-Design, Manufacture, Supply, Erection & Testing of 01 No. Pelton Runners.
18	Kitpi, Arunachal Pradesh	HPD, Arunachal Pradesh	1 x 1500 kW	Re-Design, Manufacture, Supply, Erection & Testing of 01 No. Pelton Runners and Set of Needle, deflector and mouth piece.

DETAILS OF RENOVATION & MAINTENANCE WORK

S. No.	Name of Project	Client	Project Capacity	Details
19	Billing, Himachal Pradesh	Himachal Pradesh	2 x 200 kW	Replacement of Bearings. Also re-commissioning of TG set, Panels, OPU & Governor.
20	Serai MHP, Himachal Pradesh	Pinnacle Hydro Energy Pvt. Ltd., Himachal Pradesh	1 x 2000 kW	Supply of Pelton Runner(Forged) with hard coating, mouth piece, needle , deflector and refurbishment of Pelton Runner.
21	Nuranang MHP, Arunachal Pradesh	M/s Beicco Lawrie Ltd., Kolkata	3 x 2000 kW	Manufacturing & Supply of new Pelton Runner, repairing of mouth piece, deflector and servomotor.
22	Brahmganga HEP, Himachal Pradesh	Harison Hydel Construction Co. Pvt. Ltd., Himachal Pradesh	2 x 2500 kW	Reverse Engineering, Design, Manufacturing, Testing and Supply of Pelton Runner
23	Manglay, Sikkim	C.C. Enterprise, Kolkata	2 x 1000 kW	Repairing of Francis Runner and Guide Wheel.
24	Ganderwal MHP	M/s Gogoal Hydro Pvt. Ltd., New Delhi	1 x 4500 kW	Supply of Francis Turbine with New Runner
25	Kuhl, Himachal Pradesh	Changer Vidyut Kranti Pvt. Ltd., Himachal Pradesh	2 x 500 kW	Repairing of Top Cover, Pivot Ring, Guide vane and supply of Labyrinth Ring.
26	Mayong Chu, Sikkim	Hanuman Ganga Hydro Projects Pvt. Ltd., Sikkim	2 x 2000 kW	Reverse Engineering, Re-Design, Refurbishment and supply of 03 Nos. Pelton Runner, 02 Nos. Spherical Valve, 02 Nos. Gate Valve, 04 Nos. of Nozzle Distributor Assembly and 04 Set each of Needle, Deflector and Mouth Piece.

DETAILS OF RECENT MAIN INLET VALVE					
S. No.	Name of Project	Type of MIV	Size (mm)	Quantity	Present Status
1	Kishanganga MHP, J&K	Butterfly Valve	1200 NB	03 Nos.	Under Manufacturing
2	Kalez Khola MHP, Sikkim	Butterfly Valve	700 NB	01 No.	Under Manufacturing
3	Sethu Nala MHP, Himachal Pradesh	Butterfly Valve	350 NB	02 Nos.	Under Manufacturing
4	Pashdan Irrigation and HPP, Afghanistan	Butterfly Valve	1500 NB	01 No.	Supplied
5	Pashdan Irrigation and HPP, Afghanistan	Butterfly Valve	1100 NB	01 No.	Supplied
6	Balh Padhar MHP, Himachal Pradesh	Butterfly Valve	1200 NB	02 Nos.	Supplied
7	Upper Kallar MHP, Kerala	Butterfly Valve	800 NB	02 Nos.	Supplied
8	Kush MHP, Arunachal Pradesh	Butterfly Valve	450 NB	02 Nos.	Supplied
9	Saitikhola MHP, Nepal	Butterfly Valve	350 NB	02Nos.	Supplied
10	Sessa MHP, Arunachal Pradesh	Butterfly Valve	300 NB	02 Nos.	Supplied

DETAILS OF RECENT MAIN INLET VALVE

S. No.	Name of Project	Type of MIV	Size (mm)	Quantity	Present Status
11	Rabom Chu MHP, Sikkim	Spherical Valve	650 NB	01 No.	Under Manufacturing
12	Batkulan MHP, J&K	Spherical Valve	600 NB	02 Nos.	Supplied
13	Manihar MHP, Himachal Pradesh	Spherical Valve	450 NB	02 Nos.	Supplied
14	Jail MHP, Himachal Pradesh	Spherical Valve	350 NB	02 Nos.	Supplied
15	Sundarijal MHP, Nepal	Spherical Valve	300 NB	02 Nos.	Supplied
16	Nuranang MHP, Arunachal Pradesh	Spherical Valve	250 NB	02 Nos.	Supplied

DETAILS OF RING JET VALVE(SPECIAL TYPE VALVE)				
S. No.	Name of Project	Size (mm)	Quantity	Present Status
1	Pashdan Irrigation and HPP, Afghanistan	760 NB	01 No.	Under Manufacturing

DETAILS OF RECENT PENSTOCK PROTECTION VALVE				
S. No.	Name of Project	Size (mm)	Quantity	Present Status
1	Kishanganga MHP, J&K	1300 NB	01 No.	Under Manufacturing
2	Upper Kallar MHP, Kerala	1200 NB	01 No.	Supplied

DETAILS OF HYDRAULIC GATE HOIST EXECUTED (HYDRO-MECHANICAL EQUIPMENT)

S. No.	Name of Project	Client	No. of Hoists	Hoist Capacity	Present Status / Year of Commissioning
1	MBL Stage-III 3 MW HEP - Main Canal Regulating Gates, Punjab	Gill Acqua Hydro Power Gen. Co. Pvt. Ltd.	5 Sets	13 Tonne	October, 2016
2	MBL Stage-II 6 MW HEP - Main Canal Regulating Gates, Punjab	Gill Acqua Hydro Power Gen. Co. Pvt. Ltd.	5 Sets	13 Tonne	October, 2016
3	Poohla – 600 kW- on Bathinda Br. Canal, Punjab	Atlantic Power Pvt. Ltd.	2 Sets	10 Tonne	June, 2014
4	Sidhwan - 700 kW Main Canal Regulating Gates – Ludhiana, Punjab	HPP Mecamidi	5 Sets	4.5 Tonne	January, 2014
5	Bharowal - Main Canal Regulating Gates, Punjab	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	January, 2013
6	Raowal - Main Canal Regulating Gates, Punjab	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	August, 2011
7	Isewal - Main Canal Regulating Gates, Punjab	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	June, 2011
8	Mansian - Main Canal Regulating Gates, Punjab	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	September, 2010
9	Terkiana - Canal Regulating Gates, Punjab	Atlantic Power Pvt. Ltd.	1 Set	8 Tonne	July, 2010
10	Gogripur - Main Canal Regulating Gates, Karnal, Haryana	P&R Infra Projects Ltd.	3 Sets	10 Tonne	July, 2010

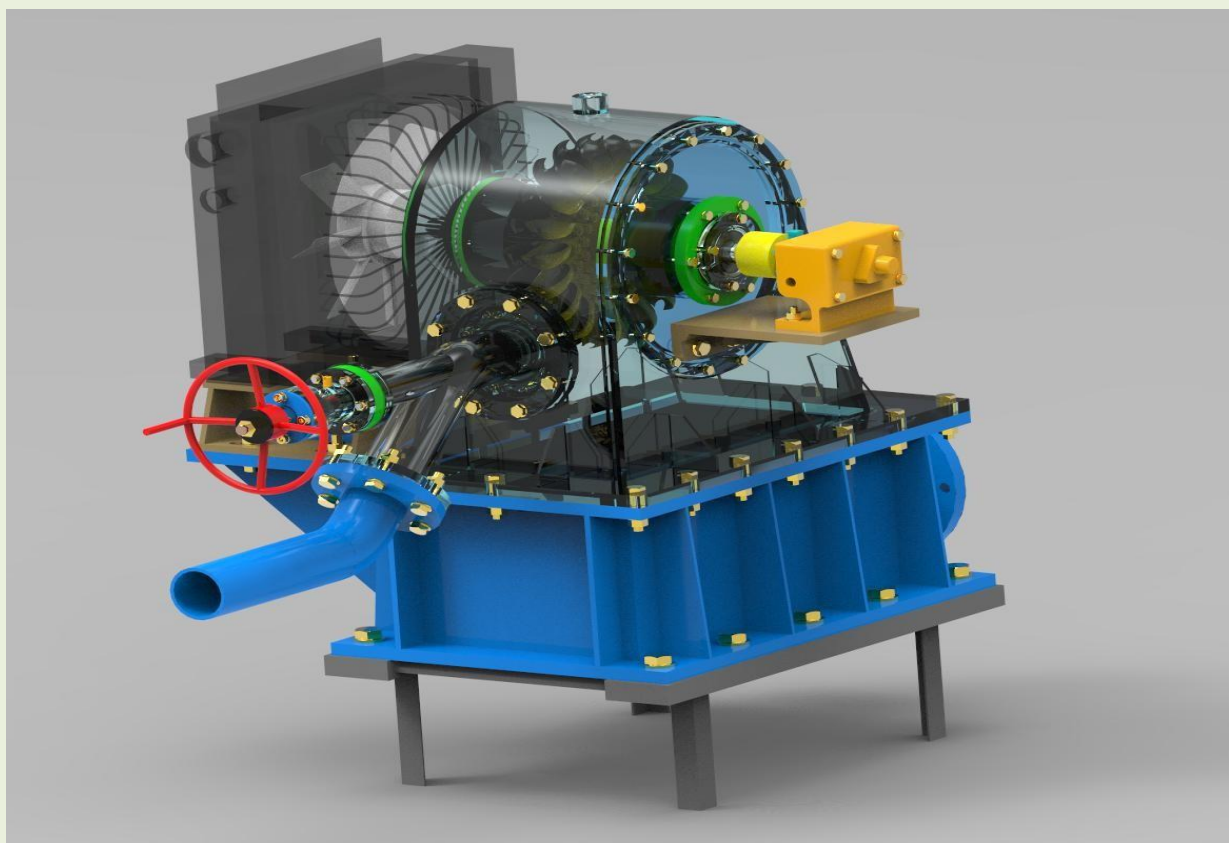
DETAILS OF HYDRAULIC GATE HOIST EXECUTED (HYDRO-MECHANICAL EQUIPMENT)

S. No.	Name of Project	Client	No. of Hoists	Hoist Capacity	Present Status / Year of Commissioning
11	Sudhar - Main Canal Regulating Gates, Punjab	Abohar Hydro Power	3 Sets	9.6 Tonne	May, 2010
12	Gholian - Main Canal Regulating Gates, Punjab	Abohar Hydro Power	3 Sets	8.4 Tonne	May, 2009
13	Channowal - Main Canal Regulating Gates, Punjab	Abohar Hydro Power	3 Sets	7.2 Tonne	June, 2009
14	Barewal - Main Canal Regulating Gates, Punjab	Winsome Yarns Ltd., Chandigarh	4 Sets	6.5 Tonne	March, 2009
15	Sidhana - Main Canal Regulating Gates, Punjab	Aqua Power	3 Sets	8 Tonne	March, 2007
16	Sahoke - Main Canal Regulating Gates, Punjab	Kotla Hydro	2 Sets	7 Tonne	December, 2006
17	Babanpur - Main Canal Regulating Gates, Punjab	Kotla Hydro	4 Sets	4 Tonne	November, 2004

PELTON TURBINE



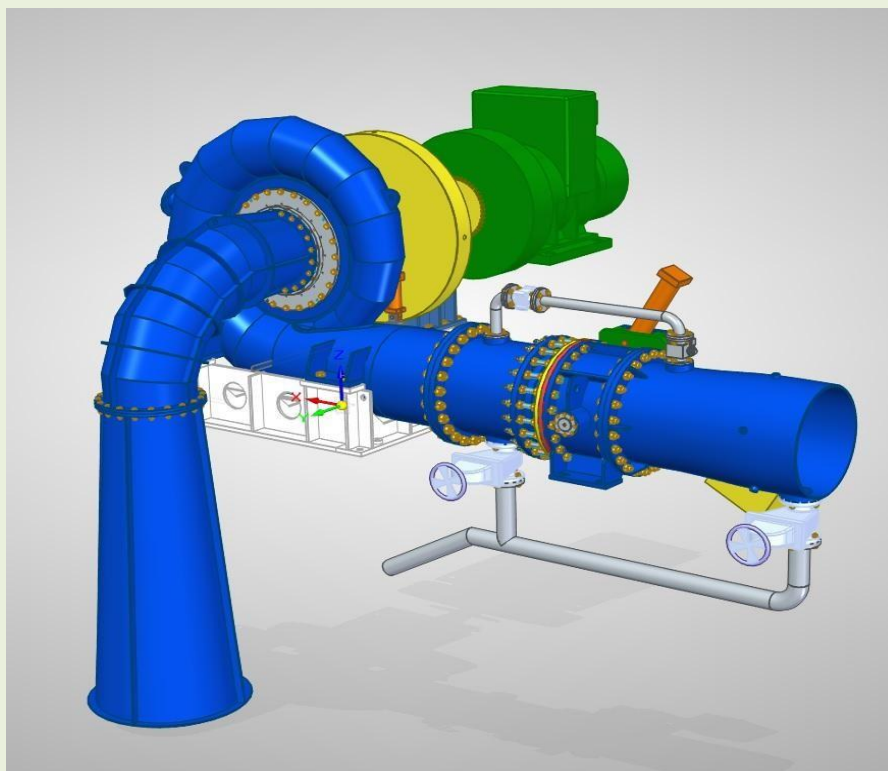
Pelton Runner



FRANCIS TURBINE



Francis Turbine Assembly



Francis Turbine Assembly



Francis Runner

KAPLAN TURBINE



Kaplan Turbine Assembly

CROSSFLOW TURBINE



HYDRAULIC GATE HOIST



COMMISSIONING **CERTIFICATES**

A. POWER HIMALAYAS LIMITED

Corporate Office : Regency Complex, River View Road, Paonta Sahib, H.P. - 173 025 Tel.: +91-1704-223431 Fax : +91-1704-222645
Solang Power House, Solang, P.O. Palchan, Manali - 175 103, H.P. (India) Tel. +91-1902-256444, 256156 E-mail : aphregency@yahoo.co.in



Ref. No.: APHL/Solang/2011-12/-I

Date: 5th July 2011

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, (formerly Pentaflo Hydro Engineers) New Delhi, had successfully carried out overhauling, renovation / repairing of Turbine and associated equipment of the **Second Unit of our 3x500KW Solang MHP** located in Solang Valley of Himachal Pradesh.

The scope of work were including dismantling of Francis Turbine, re-designing of equipments, repairing of equipments at their Delhi works, re-assembly and re-commissioning of the Second unit.

Renovation work details.

Purchase Order No. / Date : 01.02.2007
Date of completion : September 2007

Scope of work

1. Replacing of SS wear rings and repairing of Turbine Top Cover & Bottom Ring.
2. Changing of BFV Electric operator with new Hydraulic Operator with counter weight for self closing.
3. Refurbishment of BFV including replacement of seal seat, Bearings, Seals, etc.
4. Installation of new Hydraulic Actuator for MIV By-pass system.
5. Repairing of Francis Runner including SS overlay of eroded area, machining, grinding and dynamic balancing.
6. Repairing of Guide Vanes including SS overlay of eroded area, machining, grinding.
7. Modification of OPU.
8. Installation of new Hydraulic Brake on Flywheel.

The unit was successfully commissioned in October 2007 and in satisfactory operation till date. We are very satisfied with the performance of the equipment and support of Pentaflo and wish them success in their entire future endeavor.

Yours faithfully,

For A. Power Himalayas Limited


(Director)

A. POWER HIMALAYAS LIMITED

Corporate Office : Regency Complex, River View Road, Paonta Sahib, H.P. - 173 025 Tel.: +91-1704-223431 Fax : +91-1704-222645
Solang Power House, Solang, P.O. Palchan, Manali - 175 103. H.P. (India) Tel. : +91-1902-256444, 256156 E-mail : aphregency@yahoo.co.in



Ref. No.: APHL/Solang/2011-12/-2

Date: 10th July 2011

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, (formerly Pentaflo Hydro Engineers) New Delhi, had successfully carried out overhauling, renovation / repairing of Turbine and associated equipment of the **First Unit of our 3x500KW Solang MHP** located in Solang Valley of Himachal Pradesh.

The scope of work were including dismantling of Francis Turbine, re-designing of equipments, repairing of equipments at their Delhi works, re-assembly and re-commissioning of the Second unit.

Renovation work details.

Purchase Order No. / Date : APH/Solang/Unit-1/2008/1 Date 11.02.2008
Date of completion : May 2008

Scope of work

1. Replacing of SS wear rings and repairing of Turbine Top Cover & Bottom Ring.
2. Changing of BFV Electric operator with new Hydraulic Operator with counter weight for self closing.
3. Refurbishment of BFV including replacement of seal seat, Bearings, Seals, etc.
4. Installation of new Hydraulic Actuator for MIV By-pass system.
5. Repairing of Francis Runner including SS overlay of eroded area, machining, grinding and dynamic balancing.
6. Repairing of Guide Vanes including SS overlay of eroded area, machining, grinding.
7. Modification of OPU.
8. Installation of new Hydraulic Brake on Flywheel.

The unit was successfully commissioned in June 2008 and in satisfactory operation till date. We are very satisfied with the performance of the equipment and support of Pentaflo and wish them success in their entire future endeavor.

Yours faithfully,

For A. Power Himalayas Limited


(Director)



MRUJAARA POWER PLANT MRUJAARA MICRO HYDEL SCHEME

Mrujaara is the symbol of Mrudu Jaala Rachane

A.N.K. Road, 2nd Cross, Venkatesh Nagar, Jail Road, Shimoga - 577 201.
Mobile no. : 94483 19927, Office: 08182-645328, Power Plant No. 08189-294516,



Ref. No.: MMP/PHPL/01/2011-12

Date: 4th January 2012

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that, M/S Pentafllo Hydro Pvt. Ltd, (formerly Pentafllo Hydro Machines) New Delhi, had successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-Mechanical Equipment for our 1x750KW Mrujaara MHP near Agaradahally, Bhadravathi Taluk, Shomoga District, Kamataka.

The project was commissioned on 28th October 2008 for commercial operation. We are satisfied with the performance of the equipment supplied by Pentafllo and the generation is according to the site parameters. M/S Pentafllo has been providing us the necessary technical support for the operation & maintenance of the TG set.

Make of major Equipment.

1. **Turbine:** M/S Pentafllo Hydro Pvt. Ltd.
2. **Generator:** M/S Kirloskar Electric Company Limited, Bangalore
3. **Transformer :** M/S Kirloskar Electric Company Limited, Bangalore
4. **Power Pack :** M/s Parker, Mumbai

We are very satisfied with the performance and support of Pentafllo and wish them success in their entire future endeavor.

Thanking you,



Your's faithfully

For MRUJAARA POWER PLANT

(M. RUDRESH)

Chief Executive Engineer & Managing Partner



CHANGER VIDYUT KRANTI PVT. LTD.

Head Off. & Correspondence Address :

Chankyapur, Ghuggar, Palampur - 176061, Distt. Kangra (H.P.)

Regd. Off. : E - 105, Rail Vihar, Sector - 4

Mansa Devi Complex, Panchkula (Haryana)

Site Off. : Vill. Sehal, Teh. Baijnath, Distt. Kangra (H.P.)

M. : +91 94181 58899, +91 94184 58211, +91 94184 52507

Email : cvkp2009@gmail.com

Ref. No.: CVKPL/

Date: 4th January 2012

TO WHOMSOEVER IT MAY CONCERN **(POST COMMISSIONING CERTIFICATE)**

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, (formerly Pentaflo Hydro Machines) New Delhi, had successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-Mechanical Equipment for our 2x500KW Lower Baijnath Kuhl Mini Hydro Electric Project near Baijnath in Distt Kagra of Himachal Pradesh

The project was commissioned on 15th August, 2009, for commercial operation. We are satisfied with the performance of the equipment supplied by Pentaflo. M/S Pentaflo has been providing us the necessary technical support for the operation & maintenance of the TG set.

The site data is

Rated Net head	: 60.00 M
Design Flow	: 1.015 m ³ /s
Type of turbines	: Horizontal Francis
Rated Power	: 535 kW
Rated speed	: 1000 rpm
Number of units	: 2

The plant has completed 28 month of Operation and the performance of units and condition of equipment is quite satisfactory.

We are very satisfied with the performance of the equipment and support of Pentaflo and wish them success in their entire future endeavor.

Yours faithfully,

For Changer Vidyut Kranti Pvt Ltd.


(Kailash Sharma)
Managing Director)



SAINI TECHNO CONSTRUCTS PVT. LTD.

236, Bajri Company, Burmah Shell Road, Pathankot -145001 (Pb.)

LL. 0186 2222442, Telefax : 0186 2220003, Cell : 98764 91199, 99150 12564, E-mail : sainitechno_ptk@rediffmail.com

Ref. No. :

Date :

Ref. No.: STCPL/2015-16/01

Date: 4th January 2016

TO WHOMSOEVER IT MAY CONCERN **(PERFORMANCE CERTIFICATE)**

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi, had successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-Mechanical Equipment for our **2x750KW Dehar-II Mini Hydro Electric Project** at Lahar Village, Tikkri P.O, Sihunta Sub Tehsil, Chamba Distt., Himachal Pradesh

Technical specifications of Units:

1. **Turbine** : Horizontal Shaft Francis Turbine, Rated Net head : 84.00 M, Runner Dia.:460 mm, Speed : 1000 RPM
2. **Generators**: Horizontal Synchronous Generator, 750KW with 20% continuous over load, Generation Voltage : 3.3KV, Power Factor : 0.85 lag.
(make of Generator : Kirloskar Electric Co., Bangalore)
3. **Power Transformer**: 2500KVA, 3.3/33KV, ONAN, Connection: STAR/DELTA.
(Make : Areva, Allahabad)

Both units were commissioned on 3rd May, 2011, for commercial operation and units are in continuous operation since commissioning.

We are satisfied with the performance of the equipment supplied by Pentaflo and they have been providing us the necessary technical support for the operation & maintenance of the TG set.

Yours faithfully,

For Saini Techno Constructs (P) Ltd.


Ashwam Saini
(Managing Director)

Site Office : Dehar II, Small Hydro Electric Project (1.5 MW)
Vill. Lahar, P.O. Tikkri, Tehsil Sihunta,
Distt. Chamba (H.P.) Tel. : 098171-26888, 098177-40989



HNB ENGINEERS PVT. LTD.

Engineers & Turnkey Contractors



ISO 9001 : 2000

Regd. Office : 'Henabh Centre', 1326, Shukrawar Peth, Off. Bajirao Road, PUNE : 411 002 (INDIA).
Tel. : 24473299 (5 lines) 24474696 (Voice Mail) Fax : 0091-20-24473185,
E-Mail : hnb@hnb.in Web Site : www.hnb.in

HNBEPL/892/HO

22/12/2011

TO WHOSOEVER IT MAY CONCERN

This is certified that, M/s Pentaflor Hydro Pvt. Ltd., New Delhi, have successfully completed the design, manufacturing, supply, erection, testing and commissioning of 2x6 kW micro hydro units at 30 MLD Sewage Treatment Plant, Akurdi in Pune in the state of Maharashtra.

The technical specifications of the units are as follows :

- | | | | |
|----|--------------------|---|---|
| 1. | Head and Discharge | : | 6 meter and 165 LPS |
| 2. | Turbine | : | 2 units Cross Flow type coupled to generator through Gear Box |
| 3. | Generator | : | Induction motor, 7.5 kW, 1000 rpm, 6 poles, 3 phase |

The power generated is being fed into the main LT line of 415 Volt, 3 Phase of the plant, thereby, reducing the total plant electricity consumption which otherwise would have been wasted. M/s Pentaflor have supplied and erected all the equipments as per the contract well within the delivery schedule and the project has been commissioned in a record period of 3 months from the date of LOI. The units have been commissioned on 07/11/2011.

The overall performance of the equipment supplied and erected by Pentaflor is good and meets our expectations.

We are satisfied with the performance of Pentaflor and wish them success in their all future endeavor.

FOR HNB ENGINEERS PVT. LTD.,

**H.N. BHAT
MANAGING DIRECTOR**

Regd.



(H.P. Govt. Energy Development Agency)
Urja Bhawan, Kasumpti, Shimla,-171009.

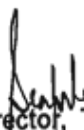
No. HIMURJA (F-7)/ E&M Billing-1/ 9-10- 11622

Dated:- 28-11-12

TO WHOMSOEVER IT MAY CONCERN
Reg. 2 x 200 k W Billing Project

This is to certify that M/s PENTAFLO HYDRO PVT. LTD. have Designed, Manufactured, supplied, erected and commissioned two Nos Horizontal Francis Turbines of 200 k W capacities each along with Governors, Main Inlet Valve, Generators and LT Switchgears. The project has been successfully commissioned on 4th Oct. 2012.

It is further certified that M/s PentaFlo Hydro Pvt. Ltd. have performed the delivery, erection and commissioning. Both the units have been commissioned and have been put to commercial operation.


Director,

HIMURJA, Urja Bhawan,
Kasumpti, Shimla-171009.



HAMAL HYDEL LIMITED

Correspondence cum Working Address :

92/10, Devi Nagar, Paonta Sahib, Distt. Sirmour (H.P.)-173025

E-mail : hamal.hydel@yahoo.com

Ref. No.: HHL/PHPL/13-14/

Date: April 9, 2014

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed the project of supplying all the electro-mechanical equipment, erection, testing and commissioning of 02 nos. Horizontal Pelton Turbines of 1000 kW (20% COL) capacity each along with Generators, transformers, Switchyard & Substation equipment and all other Powerhouse auxiliaries on Turnkey basis for our Hamal Hydel Ltd. project at village- Nakora Pul, Nerwa, The.- Choppal, Dist.- Shimla (H.P.)

The technical specifications of the units are as follows:

Turbine:

Horizontal double jet Pelton Turbine

Rated Net Head: 174 m

Speed: 600 rpm

Butterfly valve (BFV): 500 NB (hydraulically operated)

Generators:

Horizontal synchronous generator: 1000 kW + 20% COL, 3300 V

Rotational speed: 600 rpm

Power factor: 0.8 lag

Frequency: 50 Hz

Pentaflo have supplied and erected all electro-mechanical equipment as per the contract well within the delivery schedule. Both the units have been commissioned on 25th February 2014.

The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.

Achal Dev Sharma
(Managing Director)
Hamal Hydel Ltd.

Ref. No.: RSPPL/PHPL/2014-15/

Date: 20th November 2014

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi, have successfully completed the design, manufacture, supply, erection, testing and commissioning of Electromechanical Equipments including Switchyard equipments, Control Panels, Intake Gate with Hydraulic Hoist, etc. for **2 x 1000 KW Suvarnamukhi MHS near Karagaudanadoddi Village, Kanakapura, Ramanagaram Dist., Karnataka.**

The project was commissioned on 26th October 2014 and we are satisfied with the performance of the equipment supplied by Pentaflo and the generation is according to the site parameters. M/S Pentaflo has been providing us the necessary technical support for the operation & maintenance of the TG set.

Technical specification of the Units are as follows:

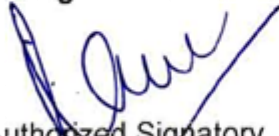
1. **Turbine:** Vertical Full Kaplan Turbine with Steel Spiral Casing.
(Runner Dia. :1700mm)
2. **Generators:** Vertical Synchronous Generators, 1250KW, 3.3KV, 750RPM

We are very satisfied with the performance and support of Pentaflo and wish them success in their entire future endeavor.

Yours faithfully,

For and on behalf of

Rising Sun Power Private Limited


Authorized Signatory





VASGI POWER PROJECTS PRIVATE LIMITED

Ref. No.: VPPPL/PHPL/2014-115/

Date: 9th September 2014

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi, had successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-Mechanical Equipment for our **1x550KW Tunga LBC MHS, Near Gajanur Dam, Village Gajanur, Dist. Shimoga, KARNATAKA.**

The project was commissioned on 17th June 2014 and we are satisfied with the performance of the equipment supplied by Pentaflo and the generation is according to the site parameters. M/S Pentaflo has been providing us the necessary technical support for the operation & maintenance of the TG set.

Technical specification of the Units are as follows:

1. **Turbine:** Vertical Full Kaplan Turbine with Runner Dia. : 2000 mm
2. **Generators:** Vertical Synchronous Generators, 550KW, 415V, 750RPM

We are very satisfied with the performance and support of M/s Pentaflo and wish them success in their entire future endeavor.

Yours faithfully,

For VASGI POWER PROJECTS PVT. LTD.

Manjula Suresh
(Ms.MANJULA SURESH)

(Director)





**SHAKTI HYDROELECTRIC COMPANY
PRIVATE LIMITED**

Regd. Office : C-567, 1st Floor, Defence Colony, New Delhi-110024

Phone : 011-40581604

Regn.: U40101DL2000PTC106969

Ref. No.: SHECPL/PHPL/UBH-CC/14-15/

March 19, 2015

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentalto Hydro Pvt. Ltd. New Delhi, have designed, manufactured, supplied, erected & successfully commissioned 02 nos. Horizontal Pelton Turbines with 1200 kW capacities each along with Main Inlet Butterfly Valves, Generators, Control Panels, Transformer, Switchyard & Substation equipment and other Powerhouse auxiliaries at our UBHARAH SHP near Hunera, village- Awan, Teh.- Bhatiyat, Dist.- Chamba (H.P.)

Specifications major components are as under:

Turbine : Horizontal double jet Pelton Turbine, Rated Head, 266 m. Speed 750 rpm
MIV : Butterfly valve 500 NB (hydraulically operated)
Generators : Hor. Synchronous generator: 1200 kW with 20% C.O.L., 3300 V, 750 rpm
Transformer : 4000KVA, 3.3/33KV, ONAN, OIL COOL

The project has been commissioned on 18th November 2014 and both units have been put to commercial operation.

It is further certified that M/S Pentalto Hydro Pvt. Ltd. have performed the delivery, erection & commissioning of the project as per our target. We wish them success in their entire future endeavor.

For Shakti Hydro Electric Company Pvt. Ltd.


S. Sankaran
(Managing Director)



PROJECT SITE : • Chachiot 3.5 MW SHEP, V.P.O. - Shalla, Chachiot, Distt.-Mandi (H.P.) 175028
Phone : 01907-255244, Email : Chachiotstsite@gmail.com
• Ubharah 2.40 MW SHEP, Village Kahri, P.O. Awan, Tehsil Bhatiyat, Dist. Chamba, H.P.
Mobile : 09817037383 E-mail : ubharahsite@rediffmail.com



anderson tea estate

Regd. Office : "ANDERS" Mission Compound,
Shillong - 793 002
Meghalaya, India
E-mail : andersonteaestate@yahoo.com

Ref. No.: ANDERSON/PHPL/15-16/

Date: September 12, 2015

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed the all electro-mechanical equipment design, manufacturing, supply, erection, testing and commissioning of 02 nos. Horizontal Pelton Turbines of 25 kW capacity with Generator for our Anderson Tea Estate, Shilong, Meghalaya -793002

The technical specifications of the units are as follows:

Turbine:

Rating: (2 x 25 kW)

Type: Horizontal Single Jet Pelton Turbine

Rated Net Head: 60.00 Mtrs

Speed: 750 RPM

Butterfly valve (BFV): 200 NB (hydraulically operated)

Gearbox:

Input Speed: 750 RPM

Output Speed: 1500 RPM

Type of Gear: Single helical – Single Stage

Generators:

Horizontal synchronous generator: 25 kW, 415 V

Rotational speed: 1500 rpm

Power factor: 0.85 lag

Frequency: 50 Hz

Electronic Load Controller

Variable Load bank (4- 20 mA control input)


25 kW, 415 V, 03 phase

Air Heater

DEIF (Denmark) make Controller

The Project has been commissioned on 18th July 2015 for Generation. The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.


Nathanael Newmai
Anderson Tea Estate

MANAGER
ANDERSON TEA ESTATE



HNB ENGINEERS PVT. LTD.

Engineers & Turnkey Contractors



ISO 9001 : 2008

Regd. Office : 'Henabh Centre', 1326, Shukrawar Peth, Off. Bajirao Road, PUNE : 411 002 (INDIA).
Tel. : 24473299 (5 lines) 24474696 (Voice Mail) Fax : 0091-20-24473185,
E-Mail : hnbc@hnbc.in Web Site : www.hnbc.in

CIN:U29299PN2005PTC020745

September 15, 2015

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflor Hydro Pvt. Ltd. New Delhi, have successfully completed the design, manufacturing, supply, erection, testing and commissioning of 1 x 16 kW micro hydro units at 9 MGD Delhi Jal Board Sewage Treatment Plant Chilla site in Ashok Nagar, New Delhi.

The Technical specifications of the units are as follows :

- | | | |
|-----------------------|---|--|
| 1. Head and Discharge | : | 5.7 meters and 466 LPS |
| 2. Turbine | : | Vertical full Kaplan type couple to
Generator through flexible coupling |
| 3. Generator | : | Induction Motor, 18 kW, 1000 RPM,
06 Pole, 03 phase |

The power generator is being fed in to the main LT line of 415 V, 03 phase of the plant, thereby, reducing the total plant electricity consumption which otherwise would have been wasted. M/s Pentaflor had supplied and erected all the equipments as per the contract well within the delivery schedule and the project has been commissioned on 26/07/2015.

The overall performance of the equipment supplied and erected by Pentaflor is satisfactory and meets our expectations.

We are satisfied with the performance of Pentaflor and wish them success in their all future endeavor.

FOR HNB ENGINEERS PVT. LTD

**H. N. BHAT
MANAGING DIRECTOR**





SKR HYDRO POWER GENERATORS PRIVATE LTD.

Admin Off : S.C.O. 20, Time Tower City, Dhuri-Patiala Bye Pass, Sangrur-148 001 (Pb.)
Cell : (91) 95691-00006, E-mail : chamandeepnatt@gmail.com

Ref. No. 08

Date 15/06/2016

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi, have successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-mechanical equipments including Switchyard equipments, Control Panels, Hydraulic Gate Hoist, etcon turnkey basis for **1 x 350 KW Bibiwala MHP, Near Bibiwala Village, Nathana Road, Bhatinda in Punjab.**

The project was commissioned on 10th April 2016 and we are satisfied with the performance of the equipment supplied by Pentaflo and the generation is according to the site parameters. M/s Pentaflo has been providing us the necessary technical support for the operation & maintenance of the TG set.

Technical specification of the Units are as follows:

- 1. Turbine:** Vertical Semi Kaplan Turbine with Vacuum Valve
(Runner Dia. : 2400 mm),
- 2. Generator:** Vertical Induction Generator – 350 KW + 15% COL, 415 V,
0.85 PF, 750 RPM
- 3. Power Transformer:** 550 kVA, 415 V/ 11 kV, Ynd11

We are very satisfied with the performance and support of Pentaflo and wish them success in their entire future endeavor.

Yours Faithfully

SKR Hydro Power Generators Pvt. Ltd.

CHAMANDEEP SINGH



Gill Acqua Hydro Power Generation Company Private Limited

Flat No. 504-505, Kusal Bazar Building 32-33, Nehru Place, New Delhi – 110019
Tel: 011-26442852

CIN:U40101PB2007PTC033758

Ref. No.: GAHPGCPL-PHPL/MBL-II/16-17/

Date: 08/03/2017

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed the all services such as design, manufacturing, supply, erection, testing and commissioning of 05 Sets Hydraulic Hoist for Canal Gates of 13 tonnes capacity each of 6 MW MBL Stage – II HEP at RD 20500 on Madhopur Beas Link Canal near Pathankot, District – Gurdaspur, Punjab.

The technical specifications of the units are as follows:

HOIST CYLINDER:

Bore	:	150 mm
Rod diameter	:	100 mm
Stroke	:	3250 mm
Capacity	:	13000 kg @ 160 bar Max.

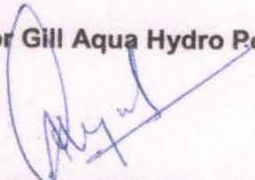
OPERATING POWER PACK:

Motor capacity	:	10 hp, 3 Phase, 415 V, 1450 rpm
Oil Tank	:	240 lts
Max. Pressure	:	160 bar
Gate closing time	:	1 min. 17 sec.
Gate opening time (up to FSL)	:	18 sec.

The Hydraulic Hoist has been commissioned on 04 October, 2016 for operation. The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.

for Gill Aqua Hydro Power


Authorized Signatory

Registered Office

Lane-3, Green Field Colony, AnandPur Road, Pathankot, District: Pathankot, Punjab-145001, India

Government Of Jammu & Kashmir
Ladakh Autonomous Hill Development Council Kargil
Kargil Renewable Energy Development Agency (KREDA)

Tel-Fax: 01985-232316
Email: kredakargil@gmail.com
Website: www.kredakargil.com



M/s Pentaflo Hydro Pvt Ltd,
L-25, LGF, Kalkaji- 110019
New-Delhi


Dear Sir,

We are pleased to convey our appreciation for the excellent work done by your unit in execution of 2x750kW Sangrah small Hydro Project at Kargil. This project involved design, engineering, supply, erection and commissioning of Electro-Mechanical equipment which your company have successfully completed. The project was successfully commissioned on 9th August 2018 and the project is in satisfactory operation till date.

We would like to put on our sincere appreciation for Pentaflo team for their dedicated effort and also for their in-depth understanding of the system.

We wish them good luck and our best wishes for all their new Projects.

NO: KREDA/EXP-C/2018/182
Dated: 09-10-2018


Project Director/CEO,
KREDA-Kargil.

Government Of Jammu & Kashmir
Ladakh Autonomous Hill Development Council Kargil
Kargil Renewable Energy Development Agency (KREDA)

Tel-Fax: 01985-232316
Email: kredakargil@gmail.com
Website: www.kredakargil.com



M/s Pentaflo Hydro Pvt Ltd,
L-25, LGF, Kalkaji- 110019
New-Delhi

Dear Sir,

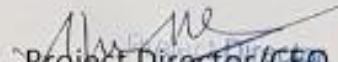
We are pleased to convey our appreciation for the excellent work done by your unit in execution of 2x750kW Bairass Drass small Hydro Project at Kargil. This project involved design, engineering, supply, erection and commissioning of Electro-Mechanical equipment which your company have successfully completed. The project was successfully commissioned on 20th of November 2017 and the project is in satisfactory operation till date.

We would like to put on our sincere appreciation for Pentaflo team for their dedicated effort and also for their in-depth understanding of the system.

We wish them good luck and our best wishes for all their new Projects.

NO: KREDA/EXP-C/2017/95

Dated: 09-10-2018


Project Director/CEO,
KREDA, Kargil.



USP Hydro Energy Ltd.

Regd. Office : Highway Building, Main Bazzar, Ner Chowk, Distt. Mandi (H.P.)-175008
Tele/Fax : 01905-243253, (M) 98160-42240, 98160-23681, Email : usp_hydro2002@yahoo.in, usphydro2002@gmail.com

Ref. No.: USP/PHPL/19-20/

Date: October 7, 2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have designed, manufactured, supplied, erected and successfully commissioned 02 nos. Turbine Generating Sets of 2000 kW (20% COL) capacity each, with complete Electro-mechanical Equipment on Turnkey Basis on 27th September 2019.

The Generating sets including Horizontal Francis Turbines directly coupled to Syn. Generators, through Flexible Coupling, Power Transformers, Control Panels, Switchyard & Substation equipment and other Powerhouse auxiliaries at 2x2000 KWBalhPadhar Hydro Electric Project, village- Balh, Post - Balh, The - Padhar, Dist. – Mandi (H.P.)

The technical specifications of the units are as follows:

Turbine:

Horizontal Francis Turbine
Rated Net Head: 50M
Discharge: 4.750 M³/Sec.
Speed: 600 rpm
Butterfly valve (BFV): 1200NB (Hydraulically operated)

Generators:

Horizontal synchronous generator: 2000 kW + 20% COL, 3300 V
Rotational speed: 600 rpm
Power factor: 0.85 lag
Frequency: 50 Hz



USP Hydro Energy Ltd.

Regd. Office : Highway Building, Main Bazaar, Ner Chowk, Distt. Mandi (H.P.)-175008
Tele/Fax : 01905-243253, (M) 98160-42240, 98160-23681, Email : usp_hydro2002@yahoo.in, usphydro2002@gmail.com

Pentaflo have supplied and erected all electro-mechanical equipment as per the contract well within the delivery schedule and performance of both units are satisfactory.

The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.

For USP Hydro Energy Limited

Chairman-cum-Managing Director
Achal Dev Sharma
(Managing Director)

USP Hydro Energy Ltd.



GOVERNMENT OF ARUNACHAL PRADESH
OFFICE OF THE EXECUTIVE ENGINEER:: BOMDILA HYDRO POWER DIVISION-II
DEPARTMENT OF HYDRO POWER DEVELOPMENT
BOMDILA, WEST KAMENG DISTRICT.
E-mail : eehipdenm-bdl-arn@nic.in

NO.BHPD-II/DHPD/ E-27/2020-21/168.

Dated Bomdila the 23rd June 2020.

"TO WHOMSOEVER IT MAY CONCERN"

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed the Electro-Mechanical equipment design, manufacturing, supply, erection, testing and commissioning of 02 (Two) nos. Horizontal Pelton Turbines of 500 kW Capacity each along with Generators, Governor, OPU and all other Power House auxiliaries on Turnkey basis for our Domkhorong Mini Hydel Project at village-Kalaktang, Dist- West Kamang, Arunachal Pradesh.

The technical specifications of the units are as follows: -

Turbine:

Horizontal double jet Pelton Turbine.

Rated Net Head: 147 M

Speed: 600 rpm.

Generators:

Horizontal Synchronous generator: 500 kW + 10% COL, 3300 V

Rotational speed: 600 rpm.

Power factor: 0.8 lag

Frequency: 50 Hz

Pentaflo have supplied and erected all electro-mechanical equipment as per the contract within the delivery schedule. Both the units have been commissioned on 23rd November 2019.

The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavour.

Executive Engineer,
Bomdila Hydro Power Division-II,
Department of Hydro Power Development,
Bomdila, West Kameng,
Arunachal Pradesh.

23-Jun-2020



Atlantic Power Private Limited.

H.No. 131, Amravati Enclave, Panchkula - 134105

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi, have successfully completed the design, manufacture, supply, erection and commissioning of **1 x 350 KW NakkianHEP, Village - Nakkian, Near Kiratpur Sahib, PO – Kotla Power House, Tehsil – Anandpur Sahib, Punjab.**

The project was commissioned on 19th February 2020. M/s Pentaflo has been providing us the necessary technical support for the operation & maintenance of the TG set.

Technical specification of the Units are as follows:

- 1.Turbine:** Vertical Semi Kaplan Turbine
(Runner Dia. :1800 mm),
- 2.Generator:** Vertical Induction Generator – 400 KW, 415 V, 0.85 PF, 750 RPM

Yours Faithfully

Atlantic Power Pvt. Ltd.

For Atlantic Power Private Limited

Avtar Gill
(Managing Director)

Director



Harisons Hydel Construction Co. Pvt. Ltd.

Akhara Bazar, Kullu (H.P.) -175 101

Tel./Fax. : 01902-225045 (O) Mobile : 98160-24893

e.mail : hhcpl_kullu@yahoo.co.in

Ref. No.HHCC/PHPL/2020-21/31

Dated...05.07.2020...

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd., New Delhi, have successfully completed the reverse Engineering, Design, Manufacturing, testing and supply of Pelton Runner for our **Brahmganga Hydro Electric Project 2x2.5MW** (Plus 20% overloading) at Manikaran, Teh.- Bhuntar, Dist.- Kullu, Himachal Pradesh.

The Technical Specifications of the Pelton Runner.

- a. Name of the Project - 2x2500 KW Brahmganga HEP.
- b. Project Developer - M/S Harisons Hydel Construction Co. Pvt. Ltd., Kullu
- c. Order No. - HHCC/2018/225 Dated 14.03.2018
- d. Turbine Manufacturer (OEM)- **VA TECH HYDRO, Faridabad**
- e. Rated Net Head - 229.30 m
- f. Runner Diameter - 1000 mm PCD
- g. Number of Buckets - 19
- h. Bucket width - 335 mm

The new Runner has been installed and the unit with new runner supplied by M/s Pentaflo has been put to operation. The unit is now generating 3000 KW safely with this new Runner.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.

Yours Faithfully,

For Harison Hydel Construction Co. Pvt. Ltd.

Ghanshyam Sood

(Director Executive)

Power House :

Brahmganga Hydro Electric Project (2 x 2.5 MW) Vill. & P.O. Manikaran, Tehsil & Distt. Kullu (H.P.) Ph. : 98050-70835, 98178-02546



FlowGen Renewable Energy Pvt. Ltd.

REGD. OFFICE : 137, PRITAM NAGAR, TEH. BATTIYATA, SHAHPUR, DISTT. KANGRA (H.P.)- 176001

TEL : +91-9876928727, +91 9459219022 FAX : +91 191 24811300

EMAIL : karan.d70@gmail.com

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/S Pentaflo Hydro Pvt. Ltd, New Delhi/Faridabad, have successfully completed the design, manufacture, supply, erection, testing and commissioning of Electro-mechanical equipments including Switchyard equipment's, Control Panels etc. on turnkey basis for 1 x 1200 KW Jail SHP, Near Village, PO Office Jari Tehsil Bhuntar, Distt Kullu, Himanchal Pradesh-175005

Technical specification of the Units are as follows:

1. **Turbine:** Horizontal 2 Jet Pelton Turbine
Rated Net Head: 400 M
Discharge: 0.368 M³/Sec. at 100% Load
Speed: 1000 RPM
2. **Main Inlet Valve:**
Type: Spherical Valve
Size: 350 NB
Operation: Hydraulically operated
Head: 400 M
Pressure: 40 kg/cm²
2. **Generator:**
Horizontal synchronous generator: 1200 kW + 20% COL, 3300 V
Rotational speed: 1000 RPM
Power Factor: 0.85 lag
Frequency: 50 Hz
3. **Power Transformer:**
Type: Power Transformer
Rating: 2750 kVA, Step up, OLTC Type with RTCC Panel, 3.3 kV/ 33 kV, Ynd11

Pentaflo have supplied and erected all electro-mechanical equipment as per the contract well within the delivery schedule. Project has been commissioned on 11/12/2020.

The overall performances of the equipment supplied by Pentaflo are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflo and wish them success in their entire future endeavor.

Yours Faithfully

M/s FlowGen Renewable Energy Pvt.Ltd.

