



## **PENTAFLO HYDRO PVT. LTD.**

**Design, Manufacture, Trading, Supply, Erection and Commissioning  
of Hydro Power Project Machinery (Francis Turbine, Pelton Turbine,  
Kaplan Turbine, Cross Flow Turbine, Butterfly Valves,  
Spherical Valves, Hydro Turbine for Cooling Tower and its related Parts)**

### **COMPANY PROFILE**



**M/s PENTAFLO HYDRO PVT. LTD.**

**L-25, LGF, KALKAJI**

**NEW DELHI-110019**

**Phone: 011-40592760/61/62**

**[contact@pentafo.com](mailto:contact@pentafo.com)**

**[www.pentafo.com](http://www.pentafo.com)**



## **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 to adapt 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 a 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 the right integration of various components namely Mechanical, Electrical, Civil.
- PHPL explores all possible types and arrangement of turbines and selects 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 the 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 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



**Three Jet Pelton Turbine**

## **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**
- **Fixed Cone/Howell Bunger/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.



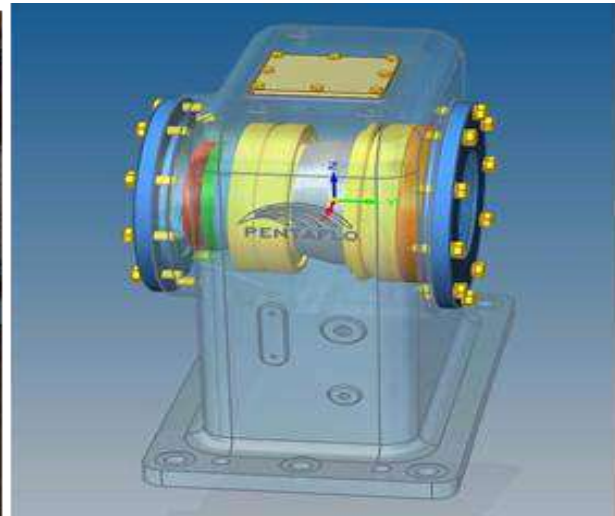
## **MODERNIZATION AND UPGRADING**

### **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. RABOM CHU HEP (1 x 7000 kW)

Horizontal Three Jet Pelton Turbine with Spherical Valve (650 NB).





**2. MEYONG CHU HEP (1 x 4000 kW)**

Horizontal Three Jet Pelton Turbine.



3. **KALEZ KHOLA HEP (1 x 3000 kW)**

Horizontal Francis Turbine with Butterfly Valve (700 NB).



**DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS**

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
1	<b>Nogli Last SHP, Himachal Pradesh</b>	Kamaksha Electrical Power Project Pvt. Ltd., Himachal Pradesh	2 x 1250 kW + 1 x 500 kW + 10% COL	Horizontal Francis Turbine	Under Execution
2	<b>Nazonga SHEP, Himachal Pradesh</b>	SSNR Projects Pvt. Ltd., Himachal Pradesh	2 x 450 kW + 10% COL	Horizontal Single Jet Pelton Turbine	Under Execution
3	<b>Kishanganga HEP, J&amp;K</b>	NHPC Ltd.	3 x 800 kW + 10% COL	Horizontal Francis Turbine	Commissioned in November 2024
4	<b>Pamkhrong MHS, Arunachal Pradesh</b>	Bomdila HP Division, DHPD, Arunachal Pradesh	1 x 500 kW + 10% COL	Horizontal Francis Turbine	Pre-Commissioning trial run complete 2
5	<b>Sirit MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Pre-Commissioning trial run complete 2024
6	<b>Tape MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 150 kW + 10% COL	Horizontal Francis Turbine	Pre-Commissioning trial run complete 2024
7	<b>Seh MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Supply Completed 2024
8	<b>Sibe MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 150 kW + 10% COL	Horizontal Francis Turbine	Supply Completed 2024
9	<b>Yapak Nallah MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	1 x 100 kW + 10% COL	Horizontal Francis Turbine	Supply Completed 2024
10	<b>Sessa SHEP, Arunachal Pradesh</b>	Bomdila HP Division, DHPD, Arunachal Pradesh	3 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in February 2024

**DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS**

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
11	<b>Raru MHP, Kargil</b>	KREDA	2 x 1000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in December 2023
12	<b>Mayong Chu HEP, Sikkim</b>	Kundan Hydro (Gangtok) Private Limited, Sikkim	1 x 4000 kW + 20% COL	Horizontal 3 Jet Pelton Turbine	Commissioned in June 2023
13	<b>Sethu Nala SHEP, Himachal Pradesh</b>	New Dhauladhar Techno Power Pvt. Ltd., Himachal Pradesh	2 x 500 kW + 15% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in June 2023
14	<b>Rabom Chu HEP, Sikkim</b>	Kundan Hydro (Gangtok) Private Limited, Sikkim	1 x 7000 kW + 10% COL	Horizontal 3 Jet Pelton Turbine	Commissioned in May 2023
15	<b>Kalez Khola HEP, Sikkim</b>	Kundan Hydro (Gangtok) Private Limited, Sikkim	1 x 3000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in February 2023
16	<b>Saiti Khola HPP, Nepal</b>	M/s Saidi Power Pvt. Ltd., Kaski, Nepal	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in September 2022
17	<b>Kush SHP, Arunachal Pradesh</b>	M/s Kakum Enterprises	2 x 1000 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Supply Completed
18	<b>Pagu SHP, Arunachal Pradesh</b>	M/s Rido Jenny Enterprises	2 x 1000 kW + 10% COL	Horizontal Francis Turbine	Supply Completed
19	<b>Khandi MHP, Kargil</b>	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Supply completed
20	<b>Sundrijal HPP, Nepal</b>	M/s Power Mech Industries Pvt. Ltd.	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in 2021



**DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS**

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
21	<b>Manihar HPP, Kullu, Himachal Pradesh</b>	M/s Bhuvneshwari Hydro Pvt. Ltd.	1 x 2000 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2021
22	<b>Upper Kallar MHP, Kerala</b>	M/s Hydro Megus Pvt. Ltd.	2 x 1000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in September 2021
23	<b>Yembung MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in January 2021
24	<b>Jail MHP, Himachal Pradesh</b>	M/s EPS Instrumentation Pvt. Ltd.	1 x 1200 kW + 20% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in December 2020
25	<b>Tallewal MHP, Punjab</b>	M/s Himalyan Renewable Energy Pvt. Ltd.	1 x 900 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in November 2020
26	<b>Nakkian SHP, Punjab</b>	M/s Atlantic Power Pvt. Ltd.	1 x 400 kW + 10% COL	Vertical Semi Kaplan Turbine	Commissioned in February 2020
27	<b>Balh Padhar MHP, Himachal Pradesh</b>	M/s USP Hydro Energy Ltd.	2 x 2000 kW + 10% COL	Horizontal Francis Turbine	Commissioned in September 2019
28	<b>Domkorong MHS, Arunachal Pradesh</b>	M/s Rido Jenny Enterprises	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2019
29	<b>Nuranang MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 500 kW + 10% COL	Horizontal Single Jet Pelton Turbine	Commissioned in October 2019
30	<b>Chillong MHP, Kargil</b>	KREDA	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in December 2018

**DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS**

<b>S. No.</b>	<b>Name of Project</b>	<b>Client</b>	<b>Project Capacity</b>	<b>Type of Turbine</b>	<b>Present Status</b>
31	<b>Sangrah MHP, Kargil</b>	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Commissioned in August 2018
32	<b>Bairas MHP, Kargil</b>	KREDA	2 x 750 kW + 10% COL	Horizontal Francis Turbine	Commissioned in November 2017
33	<b>Zhongdongrong MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in 2017
34	<b>Siri Korang MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in 2016
35	<b>Payu MHP, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 500 kW + 10% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in 2016
36	<b>Bibiwala MHP, Punjab</b>	SKR Hydro Power Generation Pvt. Ltd.	1 x 350 kW + 15% COL	Vertical Semi Kaplan Turbine	Commissioned in April 2016
37	<b>Ubharah MHP, Himachal Pradesh</b>	Shakti Hydroelectric Co. Pvt. Ltd., New Delhi	2 x 1200 kW + 20% COL	Horizontal 2 Jet Pelton Turbine	Commissioned in November 2014
38	<b>Suvarnamukhi MHS, Karnataka</b>	M/s Trimech Power, Bangalore	2 x 1250 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in October 2014
39	<b>Tunga LBC MHPP, Karnataka</b>	M/S Vasgi Power Pvt. Ltd., Bangalore	1 x 550 kW + 10% COL	Vertical Full Kaplan Turbine	Commissioned in June 2014
40	<b>Hamal MHP, Himachal Pradesh</b>	M/s Hamal Hydel Limited	2 x 1000 kW + 20%COL	Horizontal 2 Jet Pelton Turbine	Commissioned in February 2014

**DETAILS OF MINI/SMALL HYDRO ELECTRIC PROJECTS**

S. No.	Name of Project	Client	Project Capacity	Type of Turbine	Present Status
41	<b>Kachopani MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 100 kW + 10% COL	Horizontal Francis Turbine	Commissioned in October 2013
42	<b>Longpani MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 200 kW + 10% COL	Horizontal Francis Turbine	Commissioned in April 2013
43	<b>Billing MHP, Himachal Pradesh</b>	HIMURJA	2 x 200 kW + 10% COL	Horizontal Francis Turbine	Commissioned in October 2012
44	<b>Gosssang MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in July 2012
45	<b>Dehar - II MHP, Himachal Pradesh</b>	M/s Saini Techno Constructs Pvt. Ltd.	2 x 750 kW + 20% COL	Horizontal Francis Turbine	Commissioned in May 2011
46	<b>Lower Baijnath Kuhl MHP, Himachal Pradesh</b>	M/s Changar Vidyut Kranti Pvt. Ltd.	2 x 500 kW + 10% COL	Horizontal Francis Turbine	Commissioned in August 2009
47	<b>Deopani HEP, Arunachal Pradesh</b>	Jalshakti Engineering Pvt. Ltd.	2 x 250 kW + 10% COL	Horizontal Francis Turbine	Commissioned in December 2008
48	<b>Mrujaara MHP, Karnataka</b>	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	<b>Thermax Limited</b>	Thermax Limited, Pune, Maharashtra	1 x 3 kW	Horizontal Pelton Turbine	Supply Completed
2	<b>Preet MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 25 kW + 10% COL	Horizontal Francis Turbine	Commissioned in February 2023
3	<b>Dichu Nallah MHS, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	1 x 100 kW + 10% COL	Horizontal Francis Turbine	Commissioned in February 2023
4	<b>Umtygar, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 20 kW + 10% COL	Horizontal Pelton Turbine	Supply Completed
5	<b>Umsning, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 15 kW + 20% COL	Vertical 4 Jet Pelton Turbine	Supply Completed
6	<b>Tasku, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 9 kW + 10% COL	Vertical 3 Jet Pelton Turbine	Supply Completed
7	<b>Tasku, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 6 kW + 10% COL	Vertical 4 Jet Pelton Turbine	Supply Completed
8	<b>SJNVL, Himachal Pradesh</b>	SJNVL, Himachal Pradesh	1 x 2 kW + 5% COL	Horizontal 2 Jet Pelton Turbine	Supply Completed
9	<b>Delhi Jal Board</b>	HNB Engineers Pvt. Ltd.	1 x 16 kW	Vertical Kaplan Turbine	Commissioned
10	<b>Anderson, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 5 kW	Horizontal 4 Jet Pelton Turbine	Commissioned

**DETAILS OF MICRO HYDRO ELECTRIC PROJECTS**

<b>S. No.</b>	<b>Name of Project</b>	<b>Client</b>	<b>Project Capacity</b>	<b>Type of Turbine</b>	<b>Present Status</b>
11	<b>Anderson, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 5 kW	Horizontal 2 Jet Pelton Turbine	Commissioned
12	<b>Anderson, Meghalaya</b>	Anderson Tea Estate, Meghalaya	1 x 30 kW	Horizontal Pelton Turbine	Commissioned
13	<b>Anderson, Meghalaya</b>	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	<b>Lift Irrigation Project, Himachal Pradesh</b>	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	<b>Sidhartha Medium Irrigation Project</b>	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	<b>Liti-2 Micro Hydro Project</b>	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
4	<b>Karmi-3 Micro Hydro Project</b>	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
5	<b>Kunwari Micro Hydro Project</b>	M/s Bagnath Enterprises	2 x 25 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
6	<b>Sarma Kanol Micro Hydro Project</b>	M/s Bagnath Enterprises	2 x 50 kW	Design, Manufacture & Supply of Cross-flow Turbine	Commissioned
7	<b>Baregaon MHP, Uttranchal</b>	M/s Bagnath Enterprises	1 x 25 kW	Design, Manufacturing & Supply of Cross- flow Turbines	Commissioned
8	<b>Ashapani MHP, Arunachal Pradesh</b>	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	<b>Karwati Nallah MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
10	<b>Thimbogre Micro HEP, Meghalaya</b>	M/s WGHCRRMS, Tura	1 x 5 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
11	<b>Gangotri MHP, Uttarakhand</b>	M/s Sam Enterprises	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
12	<b>Dooteriah MHP, Darjelling</b>	Dooteriah & Kalej Valley Tea Estates Pvt. Ltd., Darjelling	1 x 100 kW + 20% COL	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
13	<b>HNB</b>	HNB Engineers Pvt. Ltd.	1 x 5 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
14	<b>Taksing</b>	Nav Bharat Enterprise	2 x 50 kW	Design, Manufacturing & Supply of Cross-Flow Turbines.	Commissioned
15	<b>Ayong</b>	Naga Green Energy	1 x 10 kW	Design, Manufacturing & Supply of Cross-Flow Turbines with PMG and ELC	Commissioned
16	<b>Bagroor, Himachal Pradesh</b>	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	<b>2 x 1500 KW Babehalli MHP</b>	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	<b>1 x 50 kW Turbine Model</b>	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	<b>2 x 3500 kW Ullankal MHP</b>	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	<b>3 x 6000 kW Shamili MHP</b>	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	<b>3 x 10 MW Bhilangana MHP</b>	M/s Bhilangana Hydro Power Ltd.	Review Engineering - Mechanical Consultancy	Horizontal Francis Turbine - Manufactured by M/s Voith Seimens
6	<b>1 x 1500 kW Iggalur Barrage MHS</b>	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	<b>1 x 4500 kW Ganderwal MHP</b>	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	<b>3 x 500 kW Changli Khurd MHP</b>	M/s Salasar Hydro Urja Pvt. Ltd.	Design and Engineering of Vertical Full Kaplan Turbine	Vertical Full Kaplan Turbine
9	<b>2 x 4950 kW Rajpur Hydro HEP</b>	Kundan Energy, New Delhi	Design & Engineering of Horizontal Francis Turbine	Horizontal Francis Turbine
10	<b>Mohammadpur HEP</b>	M/s HPP Energy Private Limited	Design & Engineering of Pelton Runner	Horizontal Pelton Turbine
11	<b>2 x 800 kW Ropar HEP</b>	M/s HPP Energy Private Limited	Design and Engineering of Vertical Full Kaplan Turbine	Vertical Full Kaplan Turbine
12	<b>2 x 500 kW Suspa Bukhari MHP</b>	M/s HPP Energy Private Limited	Design, Engineering and Supply of Pelton Runner	Horizontal Pelton Turbine
13	<b>2 x 1000 kW Chandikhola MHP</b>	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	<b>Narangwal MHP</b>	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	<b>Tugal MHP</b>	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	<b>Dalla MHP</b>	Punjab Genco Ltd., Punjab	2 x 500 kW	Supply of critical spares like Runner internal components, Guide Bearing, Servomotor components, etc.
4	<b>Chettipetta MHP</b>	APGENCO, Andhra Pradesh	2 x 500 kW	Supply of critical spares like Rotary Union, Guide Bearing, Servomotor components, etc.
5	<b>Solang HEP</b>	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	<b>Majalgaon HEP</b>	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	<b>Solang HEP</b>	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	<b>Hanuman Ganga HEP</b>	A Power Himalayas Limited (Uttaranchal)	3 x 1500 kW	Manufacturing & supply of 01 no. spare Francis Runner
9	<b>Hanuman Ganga HEP</b>	A Power Himalayas Limited (Uttaranchal)	3 x 1500 kW	Manufacturing & supply of Turbine Cover & Guide Vane Bush

**DETAILS OF RENOVATION & MAINTENANCE WORK**

<b>S. No.</b>	<b>Name of Project</b>	<b>Client</b>	<b>Project Capacity</b>	<b>Details</b>
10	<b>Meenvalloom HEP, Kerala</b>	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	<b>Mantsonyane MHP, LESOTHO</b>	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	<b>Taraila HEP, Himachal Pradesh</b>	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	<b>5 Nos. MHPs on Sidhwan Canal, Punjab</b>	Winsome Yarns Ltd., Chandigarh	5 x 700 kW	Re-designing and replacing Kaplan Runner internal components in all the 5 projects
14	<b>Gunsola MHP, Uttarakhand</b>	Supertech Enterprises, Meerut	2 x 1500 kW	Welding, grinding, machining & dynamic balancing of Francis Runner and realignment of TG Set at site
15	<b>Panwai HEP, Himachal Pradesh</b>	Kirloskar Brothers Ltd, Pune	2 x 2000 kW	Design, Manufacture and Supply of Needle & Deflector Servo Motors for Double Jet Pelton Turbines
16	<b>Lower Lagyap MHP, Sikkim</b>	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	<b>Kitpi, Arunachal Pradesh</b>	Concept Engineering	1 x 1500 kW	Re-Design, Manufacture, Supply, Erection & Testing of 01 No. Pelton Runners.
18	<b>Kitpi, Arunachal Pradesh</b>	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**

<b>S. No.</b>	<b>Name of Project</b>	<b>Client</b>	<b>Project Capacity</b>	<b>Details</b>
19	<b>Billing, Himachal Pradesh</b>	Himachal Pradesh	2 x 200 kW	Replacement of Bearings. Also, re-commissioning of TG set, Panels, OPU & Governor.
20	<b>Serai MHP, Himachal Pradesh</b>	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	<b>Nuranang MHP, Arunachal Pradesh</b>	M/s Beicco Lawrie Ltd., Kolkata	3 x 2000 kW	Manufacturing & Supply of new Pelton Runner, repairing of mouth piece, deflector and servomotor.
22	<b>Brahmganga HEP, Himachal Pradesh</b>	Harison Hydel Construction Co. Pvt. Ltd., Himachal Pradesh	2 x 2500 kW	Reverse Engineering, Design, Manufacturing, Testing and Supply of Pelton Runner
23	<b>Manglay, Sikkim</b>	C.C. Enterprise, Kolkata	2 x 1000 kW	Repairing of Francis Runner and Guide Wheel.
24	<b>Ganderwal MHP</b>	M/s Gogoal Hydro Pvt. Ltd., New Delhi	1 x 4500 kW	Supply of Francis Turbine with New Runner
25	<b>Kuhl, Himachal Pradesh</b>	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	<b>Mayong Chu, Sikkim</b>	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.
27	<b>Siri Korang MHP, Arunachal Pradesh</b>	DHPD, Arunachal Pradesh	2 x 250 kW	Replacement of Entire TG Set

**DETAILS OF RECENT MAIN INLET VALVE**

<b>S. No.</b>	<b>Name of Project</b>	<b>Type of MIV</b>	<b>Size (mm)</b>	<b>Quantity</b>	<b>Present Status</b>
1	<b>Kishanganga MHP, J&amp;K</b>	Butterfly Valve	1200 NB	03 Nos.	Commissioned
2	<b>Kalez Khola MHP, Sikkim</b>	Butterfly Valve	700 NB	01 No.	Commissioned
3	<b>Sethu Nala MHP, Himachal Pradesh</b>	Butterfly Valve	350 NB	02 Nos.	Commissioned
4	<b>Pashdan Irrigation and HPP, Afghanistan</b>	Butterfly Valve	1500 NB	01 No.	Supplied
5	<b>Pashdan Irrigation and HPP, Afghanistan</b>	Butterfly Valve	1100 NB	01 No.	Supplied
6	<b>Balh Padhar MHP, Himachal Pradesh</b>	Butterfly Valve	1200 NB	02 Nos.	Commissioned
7	<b>Upper Kallar MHP, Kerala</b>	Butterfly Valve	800 NB	02 Nos.	Commissioned
8	<b>Kush MHP, Arunachal Pradesh</b>	Butterfly Valve	450 NB	02 Nos.	Supplied
9	<b>Saiti khola MHP, Nepal</b>	Butterfly Valve	350 NB	02Nos.	Commissioned
10	<b>Sessa MHP, Arunachal Pradesh</b>	Butterfly Valve	300 NB	02 Nos.	Commissioned

**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.	Commissioned
12	Batkulan MHP, J&K	Spherical Valve	600 NB	02 Nos.	Supplied
13	Mavar MHP	Spherical Valve	450 NB	02 Nos.	Supplied
14	Manihar MHP, Himachal Pradesh	Spherical Valve	450 NB	02 Nos.	Commissioned
15	Kala Nao Top MHP	Spherical Valve	350 NB	02 Nos.	Supplied
16	Jail MHP, Himachal Pradesh	Spherical Valve	350 NB	02 Nos.	Commissioned
17	Sundarijal MHP, Nepal	Spherical Valve	300 NB	02 Nos.	Commissioned
18	Nuranang MHP, Arunachal Pradesh	Spherical Valve	250 NB	02 Nos.	Commissioned

**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.	Commissioned
2	Upper Kallar MHP, Kerala	1200 NB	01 No.	Commissioned

**DETAILS OF FIXED CONE / HOWELL BUNGER / 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.	Supply Completed



**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	<b>MBL Stage-III 3 MW HEP - Main Canal Regulating Gates, Punjab</b>	Gill Acqua Hydro Power Gen. Co. Pvt. Ltd.	5 Sets	13 Tonne	October, 2016
2	<b>MBL Stage-II 6 MW HEP - Main Canal Regulating Gates, Punjab</b>	Gill Acqua Hydro Power Gen. Co. Pvt. Ltd.	5 Sets	13 Tonne	October, 2016
3	<b>Poohla – 600 kW- on Bathinda Br. Canal, Punjab</b>	Atlantic Power Pvt. Ltd.	2 Sets	10 Tonne	June, 2014
4	<b>Sidhwan - 700 kW Main Canal Regulating Gates – Ludhiana, Punjab</b>	HPP Mecamidi	5 Sets	4.5 Tonne	January, 2014
5	<b>Bharowal - Main Canal Regulating Gates, Punjab</b>	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	January, 2013
6	<b>Raowal - Main Canal Regulating Gates, Punjab</b>	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	August, 2011
7	<b>Isewal - Main Canal Regulating Gates, Punjab</b>	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	June, 2011
8	<b>Mansian - Main Canal Regulating Gates, Punjab</b>	Winsome Yarns Ltd., Chandigarh	3 Sets	6.5 Tonne	September, 2010
9	<b>Terkiana - Canal Regulating Gates, Punjab</b>	Atlantic Power Pvt. Ltd.	1 Set	8 Tonne	July, 2010
10	<b>Gogripur - Main Canal Regulating Gates, Karnal, Haryana</b>	P&R Infra Projects Ltd.	3 Sets	10 Tonne	July, 2010



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

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

# COMMISSIONING CERTIFICATES

35/3, H Block, Connaught Place,  
New Delhi-110001  
www.kundangroup.com  
+91 11-8909-8660  
info@kundanenergy.com



Ref. No.: KHGPL-MEY/PHPL/2023-24/01  
Date: July 12, 2023

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed execution of Electro-mechanical Equipment for **1 x 4000 KW Meyong Chu Hydro Power Project, North Sikkim, Sikkim – 737120**, with of work including Design & Engineering of complete E&M Equipment and manufacturing, testing and supply of 03 Jet Pelton Turbine Assembly of 4000 kW capacity.

**The Technical specifications of the units are as follows:**

**Turbine:**

Type of Turbine	:	03 Jet Horizontal Pelton Turbine
Rated output	:	4000 kW + 20% COL
Rated Design (Net) Head	:	318.40 M
Design Flow (Discharge)	:	1.44 M <sup>3</sup> /Sec.
Turbine Speed	:	750 RPM

The project was successfully commissioned on 07/06/2023 and is now running at 4000 KW +20% COL. The overall performances of the equipment supplied by Pentaflo are satisfactory and meet all our expectations. We wish them success in their entire future endeavor.

Yours Faithfully,

M/s Kundan Hydro (Gangtok) Pvt. Ltd.

Director



The Power Department, Government of Sikkim

**KUNDAN HYDRO (GANGTOK) PRIVATE LIMITED**

Branch Office: H-35/3 Connaught Circus, Connaught Place, New Delhi 110001

Mob: 9311300410/9711000410 | Email: info@kundanenergy.com | CIN: U40300DL2020PTC361266

35/3, H Block, Connaught Place,  
New Delhi-110001  
www.kundangroup.com  
+91 11-6909-8888  
Info@kundanenergy.com



**Ref. No.: KHGPL-RC/PHPL/2023-24/02**  
**Date: May 31<sup>st</sup>, 2023**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that, M/s Pentaflo Hydro Pvt. Ltd. New Delhi, have successfully completed execution of Electro-mechanical Equipment for **1 x 7000 KW Rabom Chu Hydro Power Project, Munsithang, Rabom, Chungthang, North Sikkim, Sikkim – 737120**, with of work including Design & Engineering of complete E&M Equipment and manufacturing, testing and supply of 03 Jet Pelton Turbine Assembly of 7000 kW capacity including 650NB Spherical Inlet Valve.

**The Technical specifications of the units are as follows:**

**Turbine:**

Type of Turbine	:	03 Jet Horizontal Pelton Turbine
Rated output	:	7000 kW + 10% COL
Rated Design (Net) Head	:	335 M
Design Flow (Discharge)	:	2.45 M <sup>3</sup> /Sec.
Turbine Speed	:	600 RPM

**Main Inlet Valve:**

Type	:	Spherical Ball Valve
Size	:	650 NB
Operation	:	Hydraulically operated
Head	:	335 M
Pressure	:	PN 40

The project was successfully commissioned on 03/05/2023 and the overall performances of the equipment supplied by Pentaflo are satisfactory and meet all our expectations. We wish them success in their entire future endeavor.

Yours Faithfully,

**M/s Kundan Hydro (Gangtok) Pvt. Ltd.**



The Power Department, Government of Sikkim

**KUNDAN HYDRO (GANGTOK) PRIVATE LIMITED**

Branch Office: H-35/3 Connaught Circus, Connaught Place, New Delhi 110001

Mob: 9311300410/9711000410 | Email: Info@kundanenergy.com | CIN: U40300DL2020PTC361286

35/3, H Block, Connaught Place,  
New Delhi-110001  
www.kundangroup.com  
+91 11-6909-6666  
Info@kundanenergy.com



Ref. No. KHGPL-KK/PHPL/2023-24/01  
Date: May 31st, 2023

### TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentafo Hydro Pvt. Ltd. New Delhi, have successfully completed execution of Electro-mechanical Equipment for **1 x 3000 KW Kalez Khola Hydro Power Project, Kalez Khola, West Sikkim, Sikkim – 737113**, with of work including Design & Engineering of complete E&M Equipment and manufacturing, testing and supply of Francis Turbine Assembly of 3000 kW capacity including 700NB Butterfly valve.

#### The Technical specifications of the project

##### Turbine:

Type of Turbine	:	Horizontal Francis Turbine
Rated output	:	3000 kW + 10% COL
Rated Design (Net) Head	:	170 M
Design Flow (Discharge)	:	2.36 M <sup>3</sup> /Sec.
Turbine Speed	:	1000 RPM

##### Main Inlet Valve:

Type	:	Butterfly Valve
Size	:	700 NB
Operation	:	Hydraulically operated
Head	:	170 M
Pressure	:	PN 25
MIV By-pass System	:	50NB Slide Valve

The project was successfully commissioned on 04/02/2023 and the overall performances of the equipment supplied by Pentafo are satisfactory and meet all our expectations. We wish them success in their entire future endeavor.

Yours Faithfully,

M/s Kundan Hydro (Gangtok) Pvt. Ltd.

  
  
Director

The Power Department, Government of Sikkim

 **KUNDAN HYDRO (GANGTOK) PRIVATE LIMITED**

Branch Office: H-35/3 Connaught Circus, Connaught Place, New Delhi 110001

Mob: 9311300410/9711000410 | Email: Info@kundanenergy.com | CIN: U40300DL2020PTC361266

# A. POWER HIMALAYAS LIMITED

Corporate Office - Regency Complex, River View Road, Patna Sahib, H.P. - 173 025 Tel: +91-1704-223431 Fax: +91-1704-222645  
Solang Power House, Solang, P.O. Patchan, Manali - 175 101, H.P. (India) Tel: +91-1902-256446, 256150, E-mail: apthregency@yahoo.co.in



Ref. No.: APHL/Solang/2011-12/-1

Date: 5<sup>th</sup> 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, Faisla Sahib, H.P. - 171 025 Tel.: +91-1704-223431 Fax: +91-1704-322643  
Solang Power House, Solang, P.O. Pathan, Manali - 175 103 H.P. (India) Tel. +91-1902-355444, 250192 E-mail: aphygenc@yahoocx.in



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

Date: 10<sup>th</sup> 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, 2<sup>nd</sup> Cross, Venkatesh Nagar, Jail Road, Shimoga - 577 201.  
Mobile no. : 94483 19927, Office: 08182-645328, Power Plant No. 08189-294516,

Ref. No.: MMP/PHPL/D1/2011-12

Date: 4<sup>th</sup> January 2012

### TO WHOMSOEVER IT MAY CONCERN:

This is to certify that, M/S Pentafo Hydro Pvt. Ltd. (formerly Pentafo 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, Karnataka.

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

#### Make of major Equipment

1. Turbine: M/S Pentafo 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 Pentafo and wish them success in their entire future endeavor.

Thanking you,



Your's faithfully

For MRUJAARA POWER PLANT

*(M. RUDRESH)*  
(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, Raii 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: 4<sup>th</sup> 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 15<sup>th</sup> 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 <sup>3</sup> /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: 4<sup>th</sup> 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 Dist., 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 3<sup>rd</sup> 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.

  
Ashwani Saini  
(Managing Director)

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



# HNB ENGINEERS PVT. LTD.



ISO 9001 : 2000

Engineers & Turnkey Contractors

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@hnbc.in Web Site : www.hnbc.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:- 29-11-12

**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 4<sup>th</sup> 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](mailto: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 25<sup>th</sup> 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: 20<sup>th</sup> 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 26<sup>th</sup> 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:**

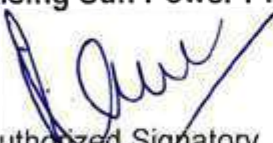
1. **Turbine:** Vertical Full Kaplan Turbine with Steel Spiral Casing.  
(Runner Dia. :1700mm)
2. **Generators:** Vertical Synchronous Generators, 1250KW, 3.3KV, 750RPM

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: 9<sup>th</sup> 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 17<sup>th</sup> 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/PIIPL/UBH-CC/14-15/

March 19, 2015

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that, M/s Pentafo 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 Humera, 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% CGL; 3300 V, 750 rpm  
Transformer : 4000KVA, 3.3/33KV, ONAN, OILC

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

It is further certified that M/S Pentafo 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. Sankaranarayanan  
(Managing Director)  


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





**anderson tea estate**

Regd. Office

"ANDERS" Mission Compound,

Shilong - 793 002

Meghalaya, India

E-mail

andersonteestate@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: 80.00 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 18<sup>th</sup> 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. Bajrao Road, PUNE : 411 002 (INDIA).  
Tel. : 24473299 (5 lines) 24474696 (Voice Mail) Fax : 0091-20-24473185,  
E-Mail : hnbco@hnbco.in Web Site : www.hnbco.in

CIN:U29299PN2005PTC020745

September 15, 2015

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentaflo 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<br>Generator through flexible coupling |
| 3. Generator          | : | Induction Motor, 18 kW, 1000 RPM,<br>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 Pentaflo 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 Pentaflo is satisfactory and meets our expectations.

We are satisfied with the performance of Pentaflo 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, NearBibiwala Village, Nathana Road,Bhatinda in Punjab.

The project was commissioned on 10<sup>th</sup>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/sPentaflo 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, 750RPM
- 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

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.

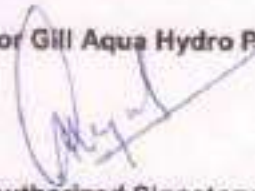
**OPERATING POWER PACK:**

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

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

Tel-Fax: 01985-232216  
Email: kredakargil@gmail.com  
Website: www.kredakargil.com



M/s Pentafluo 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 9<sup>th</sup> August 2018 and the project is in satisfactory operation till date.

We would like to put on our sincere appreciation for Pentafluo 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 20<sup>th</sup> 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 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

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

Date: October 7, 2019

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that, M/s Pentafluo 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 27<sup>th</sup> 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 KW Balh Padhar 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 M<sup>3</sup>/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, 98160-23881, Email : usp\_hydro2002@yahoo.in, usphydro2002@gmail.com

Pentaflor 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 Pentaflor are very good and meet all our expectations.

We are very satisfied with the performance of Pentaflor 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 - eehp@iam-bdl-arun@nic.in

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

Dated Bomdila the 23<sup>rd</sup> 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 Domkhorung Mini Hydrel 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 23<sup>rd</sup> 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.



*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 19<sup>th</sup> 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 Hydrel Construction Co. Pvt. Ltd.

Akhara Bazar, Kullu (H.P.) -175 101  
Tel./Fax. : 01902-226046 (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 Hydrel 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 Hydrel Construction Co. Pvt. Ltd.

**Ghanshyam Sood**

**(Director Executive)**



# FlowGen Renewable Energy Pvt. Ltd.

REGD. OFFICE - 137, PRITAM NAGAR, TEH. BATTIYATA, SHAHPUR, DISTT. KANGRA (N.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 Pentafo 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 M<sup>3</sup>/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/cm<sup>2</sup>
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

Pentafo 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 Pentafo are very good and meet all our expectations.

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

Yours Faithfully

M/s FlowGen Renewable Energy Pvt.Ltd.

(Sudish Rai)

