

CASE STUDY REF: 009

MICRO HYDRO POWER PLANT ON FALL AS LOW AS JUST 1 METER



Location:

The project is at Tail race of an existing 16 MW hydro power plant of KSEB, located at Poringalkuthu Left Bank Extension on Chalakkudy river basin in Thrissur district of Kerala.

About the project:

The 16 MW hydro power plant releases its water through a tail race channel to the Chalakkudy river. A one-meter fall at the tail race was maintained to avoid head loss during high flood season in the river. KSEB wanted to harness this head to generate additional energy for captive use of the plant & offices and at the same time validate technology for low head power generation with a view to tap this energy source available in plenty through out the state.

KSEB had reservation concerning the available technology for such low head and were not fully convinced whether any technology will successfully meet their expectation. Keeping in mind possible failure due to scepticism on technology to be used, KSEB had kept a very low budget.

Project Details	
Project	PORINGALKUTHU MICRO HYDRO ELECTRIC PROJECT
Owner	KERALA STATE ELECTRICITY BOARD LIMITED
EPC Contractor	JASH ENGINEERING LTD
Contract No.	4/CECC/2015-16
Date	06.07.2015

Product Details	
No of Turbines	1 no
Net Head	1 mtr
Flow	1.65 m ³ /sec
Rated Power	11 kW
Runner Diameter	2100 mm
Bladed Length	2680 mm

The Solution!

Jash offered Archimedes Screw Turbine technology for power generation. As this was a technology demonstrator project, a compact and aesthetic design incorporating weir with flow control gates to ensure intake limited flow required for operation.



ARCHIMEDES SCREW TURBINE:

Order was placed on Jash on 06th July 2015. Equipment such as Cast-Iron sluice gate to control flow, hydraulic fail-safe gate for immediate closure to stop turbine operation, Archimedes turbine to generate power and electrical panel to monitor and upload the power to the existing hydropower plant were indigenously manufactured at Jash plant.

The whole Project was completed within 7 months including monsoon period of 3 months and project was commissioned on 06-02-2016. Since commissioning, the project is running nonstop with minimal maintenance and generating power as per expectation of KSEB.

Having experienced the reliability of this technology for 4 years KSEB is now contemplating use of same for numerous other similar low head sites.



Power plant in operation, after Commissioning & Testing

KERALA STATE ELECTRICITY BOARD LIMITED
(Incorporated under the Indian Companies Act, 1956)
 Registered Office: Vidyuthi Bhavanam, Pattom, Thiruvananthapuram-695004
 Web site : www.kseb.in, CIN:U40100KL2011SGC027424

Office of the Chief Engineer (Civil Construction) South
 6th Floor, Vidyuthi Bhavanam, Pattom, Thiruvananthapuram 695004.
 Kerala Phone: 0471-2446432, 2514481, E-mail: ceccs@ksecinet.com

No. CECCS/General/Screw Turbine/2014-15 /113 Thiruvananthapuram
 22.07.2017

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s. Jash Engineering Limited, 31, Sector 'C', Industrial Area, Sanwer Road, Indore – 452 015 has carried out the work of Design, Manufacture, Supply and installation of Poringalkuthu Micro Tail Race Project (11 KW) in Thrissur District, Kerala State with Screw Turbine technology on turn key basis. Operation and maintenance of the plant, for the first year from the date of commissioning of the plant was also entrusted to them vide Agreement No. 4/CECC/2015-16 dated 06.07.2015 of the Chief Engineer (Civil Construction) South, KSE Board Ltd. The contractor has satisfactorily completed the work on 06.02.2016. After the successful Operation and maintenance of the plant, for the first year the same is handed over to KSEB Ltd on 14.06.2017.

This certificate is issued to the firm based on their request to produce the same to various potential customers to create awareness of renewable energy generation with screw turbine technology and promoting Green Energy to other part of Country.

Chief Engineer (Civil Construction) South

For more details Poringalkuthu 11 kW Power Plant, please follow the link given hereunder:
<https://youtu.be/xMNR6d7BSQs>

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 Shivpad Engineers Pvt Ltd, INDIA