TEPERSAC PELTON TURBINES

TEPERSAC

TEPERSAC are a specialist Peruvian renewable energy company established in 1996. TEPERSAC have exported hydro turbines to Bolivia, Ecuador and El Salvador and their Pelton turbines are now available in the UK through their representative Sustainable Control Systems Ltd.

Tepersac Pelton turbine driving 100kW 8 pole generator

The turbines

TEPERSAC are experienced with manufacturing and installing hydro turbines from 1kW to 220kW and have manufactured more than 80 turbines to date. The turbines that are being exported to the UK are horizontal shaft Pelton turbines with one or two jets and runner pitch circle diameters (PCDs) from 250mm to 550mm.

Attention is given to quality of manufacture and assembly. The turbine runners are caste in a single piece from stainless steel, to ensure strength and immunity to corrosion. The stainless steel used is COR 13-4 (13% Chromium and 4% Nickel) which is harder and more durable than the more common caste stainless steels such as AISI 304 or AISI 316. The turbine runners are caste by Fundicion Central and Hidrostal (www.hidrostal.com), both ISO 9002 certified companies.

By using high quality stainless steel, an approved foundry and a single piece casting, with casting integrity checks, an extremely robust and corrosion resistant runner is produced. The turbine runners are dynamically balanced using computerised equipment (B50 precision balancing machine from IRD USA) as per ISO 1940.

The turbine casing is made from SAE/AISI 1020 steel, up to ½ inch thickness in the case of their largest turbines, due to its strength, machinability and weldability. The result is a very strong and rigid casing that is more than sufficient for supporting the shaft and bearings and which provides complete safety to the user. The casing is galvanised and then painted with 2 coats of an epoxy paint which meets ISO 12944. This provides excellent long term corrosion resistance.

Conservatively sized SKF self-aligning bearings are used on the turbines due to their high quality and the ease of obtaining replacements when their service life has expired. Stainless steel fixings are used on all turbines exported to the UK to ensure long term ease of disassembly for maintenance. Flow control is by means of actuated spear valves. High quality, UK manufactured graphite/PTFE packing rings are used to ensure smooth and reliable movement of the spear valve and this is further assisted by means of thrust bearings.

The turbine-generator mounting frame is manufactured in the UK. The turbine is thoroughly checked by an experienced mechanic and then the turbine and generator are precisely aligned on the mounting frame, ready for installation.

When the Clear Skies scheme was in place, the turbines were a recognised product. They come with a 12 months parts and labour warranty from the date of commissioning.

UK installations

There are now more than 30 Tepersac Pelton turbines installed in the UK, ranging in capacity from 5 kW to 220 kW and installed on net heads ranging from 23 metres to 234 metres. The first installation was in 2006.

UK representative

TEPERSAC are represented in the UK by Sustainable Control Systems Limited (SCS). SCS provide a range of generators and electrical/electronic control equipment that can be used with the TEPERSAC turbines. They manufacture equipment for both stand-alone systems and for grid connection, including to the latest G59/3 recommendations. They have supplied more than 400 systems for grid connected hydro schemes in the UK. Their latest MK2 controller is more versatile and more user friendly and comes with the option of remote monitoring and remote control. SCS has 6 employees and works from a purpose built industrial unit in Herefordshire. Dr Nigel Smith, the MD of SCS has been actively involved in micro hydro power for more than thirty years and has worked in Africa, Asia, North and South America as well as Europe.

Unit 9, Wormbridge Court, Wormbridge, HR2 9DH.
Tel: +44 (0)1981 570700
E-mail: info@sustainablecontrol.com
Web: www.sustainablecontrol.com