

Questionnaire for Price Quotations of Water Turbines

Contact Name	<input style="width: 100%;" type="text"/>
Company	<input style="width: 100%;" type="text"/>
Street	<input style="width: 100%;" type="text"/>
ZIP/area code, city, township	<input style="width: 100%;" type="text"/>
Country	<input style="width: 100%;" type="text"/>
Phone:	<input style="width: 100%;" type="text"/>
Fax:	<input style="width: 100%;" type="text"/>
E-mail:	<input style="width: 100%;" type="text"/>
PROJECT NAME	<input style="width: 100%;" type="text"/>
PROJECT LOCATION	<input style="width: 100%;" type="text"/>

1. Gross head: m

2. Available flow?

January:	<input style="width: 60px;" type="text"/>	l/s	May:	<input style="width: 60px;" type="text"/>	l/s	September:	<input style="width: 60px;" type="text"/>	l/s
February:	<input style="width: 60px;" type="text"/>	l/s	June:	<input style="width: 60px;" type="text"/>	l/s	October:	<input style="width: 60px;" type="text"/>	l/s
March:	<input style="width: 60px;" type="text"/>	l/s	July:	<input style="width: 60px;" type="text"/>	l/s	November:	<input style="width: 60px;" type="text"/>	l/s
April:	<input style="width: 60px;" type="text"/>	l/s	August:	<input style="width: 60px;" type="text"/>	l/s	December:	<input style="width: 60px;" type="text"/>	l/s

Please provide a flow duration curve for the project site.

Do you consider as important that maximized annual generation is obtained? yes no

3. Max. power output expected at generator terminals? kW

4. How is the flow conducted to the turbine?

a)	Open canal	Length	<input style="width: 100px;" type="text"/>	m
		Cross section	<input style="width: 100px;" type="text"/>	m
	and/or			
b)	Penstock:	Length	<input style="width: 100px;" type="text"/>	m
		Diameter	<input style="width: 100px;" type="text"/>	mm
	Material of pipe:		<input style="width: 100px;" type="text"/>	
	Max. permissible pressure rise in the penstock (if any):		<input style="width: 100px;" type="text"/>	bar



5. Altitude of installation: m above sea level

6. What do you want to do with the energy?

- a) Current production Frequency: Hz Voltage: V
- Synchronous generator
 - Stand-alone operation
(autonomous energy production for the supply to an independent grid system)
 - Grid-connected operation
(mains paralleling)
 - Grid-connected + stand-alone operation
(mains paralleling and stand-alone operation)
 - Asynchronous generator
(mains paralleling)

- b) Transmission
- Saw mill
 - Mill

7. Water quality (e.g. high abrasive contents, pH value etc.)

8. Do you have a water license or permit? yes no

9. Scope of delivery:
- Turbine
 - Regulator
 - Speed increaser (if required)
 - Generator
 - Switchboard
 - Generator main breaker

Do you consider as important to have minimal maintenance requirements? yes no

Please send us a project drawing or sketch along with your inquiry.

Date, place

Signature



Explanations to the questionnaire

- to 1) “Gross head“ refers to the vertical distance between upstream and downstream level.
- to 4) This information is required for determine net head and the turbine regulator characteristics.
- to 6) Apart from the technical considerations, the required investment depends on the selection of the generator type. Please find below a listing of the plant configuration with required investment, followed by necessary expenses:

Asynchronous plant for grid-parallel operation	Asynchronous/Induction generator	<p>With smaller power outputs the price of an asynchronous generator (squirrel cage motor) will be more favourable than using a synchronous generator.</p> <p>A water level regulator will be sufficient for the regulation.</p>
Synchronous plant Grid-parallel operation only	Synchronous generator No flywheel	<p>At larger power outputs the price of a synchronous generator will be more favourable than using an asynchronous generator.</p> <p>A water level regulator will be sufficient for the regulation.</p>
Synchronous plant Stand-alone operation only	Synchronous generator with flywheel	<p>For autonomous electricity production, a self-excited synchronous generator is required.</p> <p>A speed governor or load controller is necessary to maintain constant speed, especially in case of varying load demand.</p> <p>The plant must be able to start without external energy (black start).</p>
Synchronous plant Suitable for stand-alone and grid-parallel operation	Synchronous generator with flywheel	<p>For autonomous electricity production, a self-excited synchronous generator is required</p> <p>A speed controller maintains the speed constant, even in case of a varying load demand.</p> <p>The plant must be able to start without external energy (black start).</p> <p>For grid-parallel operation, the turbine regulator demands an additional function to regulate the flow according to head water level.</p>