

Micro hydro turbine generator unit



SHANGHAI SUNTC GROUP CO., LTD

MICRO HYDRO SYSTEM

Having a full realization that developing micro-hydropower resources can make significant contribution to promote economic development and protect environment in rural and mountainous areas, in addition to develop and construct large and medium-scale hydropower projects, SUNTC also attaches great importance on developing small and micro-hydropower stations and supplying complete sets of generating equipment for them as well.

In an effort to ease and standardize the procedure for selecting a complete set of generating equipment from series of products for a given micro-hydropower station, we prepared this catalogue based on optimum types of generating. Five series of products (Francis, Propeller, Pelton, Turgo and Tubular types of generating equipment) contained in this catalogue can meet the requirements of a wider range of selections. Except functioning as a list of products, this catalogue also serves as a reference book for selecting generating equipment, and its material rich in both pictures and text simplify the selection of turbine, generator etc.

SUNTC not only supply various types of ready-made micro-generating equipment to satisfy different requirements of clients from home and abroad, but also provide designing, manufacturing and technical consulting services according to customer's particular specifications.

"Quality first and reputation supreme" SUNTC will surely give the reliable impression to every client and cooperator by satisfying their requirements under currently demanding and competitive market environment. Seeking excellent quality and providing perfect is the mission that SUNTC always pursues.

Generally, the installed capacity of the micro-hydraulic turbine and generator unit is unit is below 100kw, It is suitable for developing mini and micro-hydropower resources and with the following salient features:

- (1) Micro-capacity: it is appropriate for scattered constructing and utilizing, especially for electric power Consumers of small load in mountainous and terrace areas;
- (2) Economizing investment: only small amount of one Time investment is needed, therefore, it is convenient; for self-construction, self-management and self-utilization
- (3) Short construction period: it can be constructed and Put into operation in period;

(4) Appropriate technology: it is easy to install, operate and maintain due to simple structure and a few component of the unit;

(5) Product striation: it is with the characteristics of good performance, longevity of service, few wear out parts and Easy to replace.

At present, SUNTC can supply various types of micro-hydraulic turbine and generator units to satisfy the demand from electric power consumers in small load areas.

Clients can select the suitable type of the micro-hydraulic turbine and water head and making reference to the following selection lists for the micro-hydraulic turbine and generator unit.

Instruction of model designation

Type of Turbine	Code
Francis Type	HL
Propeller Type	ZD
Pelton Type	CJ
Turgo Type	XJ
Tubular Type (fixed blade)	GD
Tubular Type (adjustable blade)	GZ
Flume Feature	Code
Metal Spiral Case	J
Concrete Spiral Case	H
Open Flume	M
Pressurized Open Flume	MY
Arrangement of Main Shaft	Code
Vertical Shaft	L
Horizontal Shaft	E
Type of generator	Code
Vertical hydraulic Generator	SF
Horizontal hydraulic Generator	SFW
Single-phase asynchronous generator	DY

Three-phase asynchronous generator	SY
Single-phase synchronous generator	DT
Three-phase synchronous generator	ST
Single-phase permanent magnet synchronous generator	DCT
Three-phase permanent magnet synchronous generator	SCT
Type of Governor	Code
Mechanical-Hydraulic governor	TT.YT.YTT.ST
Electro-Hydraulic governor	DT.YDT.DST
Manual-electrical Governor	SDT
Manual Governor	ST
Step Motor Type Microcomputer Governor	BWT
Digital Valve Governor	YWT
PLC Microcomputer Governor	GWT
Valve Sort	Code
Sluice Valve	Z
Butterfly valve	D
Spherical valve	Q
Drive Mode	Code
Manual Operation	Omitted
Electromotor Drive	9
Hydraulic Drive	7
Type of controllers	Code
Load balancing and electrical control	D
Mechanical and hydraulic control	JS
Electro-mechanical and hydraulic control	JDS
Adjustable blade and hydraulic control	BS

Type of turbine Designation Example

HL220/A153-WJ-71

71----- Nominal Diameter of Runner (cm)

J----- Flume Feature

W----- Arrangement of Main Shaft

220/A153--- Type of Runner

HL----- Type of Turbine

CJA237-W-70/1*7

7----- Jet Diameter (cm)

1----- Number of Nozzle (S)

70----- Nominal Diameter for Runner (cm)

W----- Arrangement of Main Shaft (horizontal type)

A237----- Type of Runner

CJ----- Type of Turbine

Type of generator Designation Example

SFW800-12

12----- Number of poles

800----- Power

SFW----- Type of Generator

Type of Governor Designation Example

BWT-6000

6000----- Capacity of Servomotor (N.m)

BWT----- Type of Governor

CJWT-1

1----- Number of Nozzle (S)

CJWT--- Impulse Microcomputer Governor

Type of valve Designation Example

Z942H-1.6CDg600

Dg600----- Nominal Diameter (mm)

C----- Material for Valve Body (C: Carbon steel)

1.6----- Nominal Pressure (Mpa)

H----- Material of seal ring or liner (T: Copper, H: Alloy steel, X: Rubber)

2----- Structural Type

4----- Connecting Type (Flange)

9----- Drive Mode

Z----- Type of Valve

Automatically controlled micro hydro system

Relationship of installed capacity, water head and flow rate

	5kw	8kw	10 kw	12 kw	15 kw	20 kw	24 kw	30 kw	40 kw	50 kw	75 kw
5m	0.18	0.26	0.32	0.38	0.47	0.60	0.74				
6m	0.16	0.22	0.28	0.32	0.42	0.54	0.60	0.75			
7m	0.14	0.18	0.22	0.27	0.33	0.43	0.52	0.62	0.84		
8m	0.12	0.17	0.20	0.24	0.30	0.39	0.46	0.59	0.75	0.89	
10m	0.09	0.13	0.16	0.20	0.24	0.32	0.38	0.45	0.60	0.74	
12m	0.08	0.11	0.13	0.16	0.19	0.25	0.32	0.36	0.48	0.60	0.88
14m	0.07	0.10	0.12	0.14	0.17	0.22	0.27	0.32	0.42	0.53	0.76
16m	0.06	0.09	0.11	0.13	0.15	0.20	0.23	0.29	0.37	0.45	0.68
18m			0.09	0.11	0.13	0.17	0.21	0.25	0.33	0.42	0.60
20m				0.10	0.12	0.16	0.19	0.22	0.30	0.37	0.55
22m					0.11	0.14	0.16	0.21	0.27	0.32	0.48
25m							0.15	0.18	0.24	0.29	0.43
28m								0.16	0.21	0.27	0.387
30m								0.15	0.19	0.26	0.36

Unit: m³/s

Brief introduction of turbine-generator structure

1. The turbine

(1) Low head and horizontal tubular turbine:

The water enters into the runner through the fixed guide vane. The turbine can be directly connected with the generator by using the flexible coupling, or can be directly used to drive other equipment by using the belt pulley.

(2) High head and vertical Turgo turbine:

The turbine and the generator are directly connected and integrated into a whole unit. The nozzle needle is arranged at the inlet of turbine to regulate the flow rate.

2. The generator

Three-phase AC synchronous generator is employed

3. Comprehensive control panel

This control panel is supplied with the turbine-generator unit with the capacity between 8- 100KW to control the unit automatically, Such functions as acquisition and display of technical parameters, control of voltage and frequency, synchronization operation, protection of over speed, overvoltage, short circuit and backup are integrated into this control panel. After the unit being started, this control panel can automatically monitor the load fluctuation, maintain the load balancing and keep stable voltage and Frequency of the unit, so as to ensure smooth operation of the unit.

Since the generator is installed inside the pipe. The pipeline mounted turbine –generator unit is with the characteristics of easy erection, without housing and no danger of submergence in flood. It includes the runner, distributor and tailrace etc and is suitable for application in places of low head and large flow rate; its capacity is between 0.8-3KW.

The runner of Turgo turbine with single Nozzle consists of outer ring, inner ring and Blades. The Turgo turbine with single nozzle is appropriate for connection with the Generators with the capacity below 3KW.

The runner of Turgo turbine with double nozzle consists of outer ring , inner ring and

blades. The Turgo turbine with double nozzle is appropriate for connection with the Generators with the capacity above 3KW.

With the salient features of compact size, light weight, simple structure, reliable operation and easy installation and utilization, Turgo turbine connected with three-phase Permanent magnet AC synchronous generator with the capacity between 6KW and 30KW is most suitable for generating electric power for small load consumers in mountainous areas, and appropriate for individuals to purchase, install, manage and use.

The tubular turbine with extended shaft consists of the flume, runner, distributor and tailrace etc. it is appropriate for application in places of low head and large flowrate. Its capacity is between 0.8KW and 3KW.

The vertical shaft micro-hydraulic turbine and generator unit is assembled with vertical shaft turbine and permanent magnet synchronous generator. The turbine will be installed into volute chamber at the site. With the characteristics of compact structure. Attractive appearance, small size, light weight, high efficiency, without excitation device and casing made from cast iron, it is with wide applicability and reliably-operational capability, and easy to install, maintain and use.

Selection of 0.2-30KW permanent magnetism turbine generator unit

Turbine Type	Head (m)	Flow(m ³ /s)	Power (W)	Speed (r/min)	Pipe Size (mm)
XJ14-0.2DCT4-Z	10-14	0.003-0.004	200	1500	50
XJ14-0.3DCT4-Z	12-14	0.003-0.005	300	1500	50
XJ18-0.5DCT4-Z	12-18	0.005-0.007	500	1500	50-75
XJ18-0.75DCT4-Z	14-18	0.005-0.008	750	1500	75
XJ22-1.1DCT4-Z	16-22	0.008-0.010	1100	1500	100
XJ22-1.1DCT4-Z	15	0.010-0.015	1100	1500	125-150
XJ25-1.5DCT4-Z	18-25	0.008-0.011	1500	1500	125
XJ25-1.5DCT4-Z	15	0.012-0.018	1500	1500	125-150
XJ25-3.0DCT4-Z	25-35	0.015-0.019	3000	1500	125-150
XJ25-3.0DCT4-Z	18-20	0.018-0.030	3000	1500	150
XJ28-6.0DCT4/6-Z	28-35	0.030-0.038	6000	1500	150-200
XJ28-6.0DCT4/6-Z	18-20	0.038-0.050	6000	1000	200
XJ30-10DCT4/-Z	30-38	0.040-0.050	10000	1500	200-250
XJ30-10DCT4/6-Z	25-30	0.050-0.060	10000	1000	200-250
XJ30-12SCT4/-Z	28-35	0.050-0.060	12000	1500	200-250
XJ30-15SCT4/6-Z	30-40	0.060-0.070	15000	1500/1000	200
XJ30-20SCT4/6-Z	30-45	0.060-0.100	20000	1500/1000	250-300
XJ38-30SCT4/6-Z	38-45	0.090-0.120	30000	1500/1000	250-300
ZD1.8-0.3DC T 4 - Z	1.8	0.04	300	1500	—
ZD2.0-0.5DC T 4 - Z	2	0.045	500	1500	—
ZD2.2-0.7DC T 4 - Z	2.2	0.05	700	1500	—
ZD2.5-1.0DC T 4 - Z	2.5	0.05	1000	1500	—
DG11-3.0DC T 4-Z	11	0.045	3000	1500	150
GD-WZ-20-3KW	4	0.136	3000	1000	250
GD-WZ-20-5KW	6	0.151	5000	1500	300
GD-WZ-20-6KW	7	0.156	6000	1500	300
GD-WZ-20-8KW	9	0.161	8000	1500	300
GD-WZ-20-10KW	11	0.165	10000	1500	300

Designation Example

XJ20-1.0DCT-D

D----- Types of the controllers

4----- Number of poles

DC----- Generator type

1.0----- Generator power (KW)

20----- Design Head (m)

XJ----- Turbine Type

Selection of Francis turbine-generator unit

Turbine Type	Generator Type	Rated Head (m)	Rated Flow (m ³ /s)	Output (KW)	Speed (r/min)	Governor	Inlet
HL110-WJ-30	SFW20-6/368	20	0.15	20	1000	ST	φ300
	SFW28-6/368	25	0.16	28	1000		
	SFW40-6/493	30	0.18	40	1000		
	SFW50-6/493	35	0.19	50	1000		
	SFW55-6/493	40	0.2	55	1000		
	SFW75-4/493	45	0.217	75	1500		
	SFW75-4/493	50	0.229	75	1500		
	SFW90-4/493	55	0.24	90	1500		
HL110-WJ-35	SFW90-4/493	60	0.25	90	1500	ST	φ300
	SFW40-6/493	25	0.22	40	1000		
	SFW50-6/493	30	0.24	50	1000		
	SFW75-6/493	35	0.26	75	1000		
	SFW75-6/493	40	0.279	75	1000		
HL110-WJ-42	SFW100-6/590	45	0.296	100	1000	ST SDT	φ400
	SFW40-8/493	21	0.29	40	750		
	SFW55-8/493	25	0.318	55	750		
HL110-WJ-50	SFW100-/8/590	30	0.348	100	750	TT-1500	φ500
	SFW55-10/740	21	0.41	65	600		
	SFW75-10/740	24.8	0.45	75	600		
	SFW100-10/740	30.5	0.47	100	600		

Selection of Propeller turbine-generator unit

Turbine Type	Blade Angle (φ°)	Head (m)	Rated Flow (m ³ /s)	Output (KW)	Speed (r/min)	Governor	Model Type
ZDT03-LM(Y)-60LH	+5°	5.5	0.78	30	650	ST-1500 BWT-3000	SF30-6/423
		6.6	0.86	40	750		SF40-8/493
		8.3	0.94	50	750		SF55-8/493
	+10°	4.3	0.94	30	629		SF30-6/423

		5.2	1.09	40	750		SF40-8/493
		6.6	1.14	55	750		SF55-8/493
		8.4	1.2	75	750		SF75-8/590
	+15°	3.8	1	30	530		SF30-6/423
		4.5	1.3	40	750		SF40-6/423
		5.1	1.36	50	750		SF50-8/590
		5.6	1.37	55	750		SF55-8/590
		7	1.41	75	750		SF75-8/590
		7.8	1.79	100	1000		SF100-6/590
	+20°	4.3	1.37	40	600		SF40-6/423
		4.7	1.7	55	750		SF55-6/590
		6	1.737	75	750		SF75-8/590
		7.5	1.75	100	750		SF100-8/590
	+25°	3.2	1.365	30	492		SF30-6/423
		3.8	1.44	40	520		SF40-6/423
		4.6	1.66	55	600		SF55-6/590
		5.4	2.05	75	750		SF75-8/590
	+30°	6.7	2.08	100	750		SF100-8/590
		3.7	1.54	40	465		SF40-6/423
		4.3	1.94	55	600		SF55-6/590
		5.4	1.97	75	600		SF75-8/590
		6.2	2.42	100	750		SF100-8/590
	+35°	3.6	1.66	40	447		SF40-6/423
		4.2	1.93	55	523		SF55-6/590
5.3		2.2	75	600	SF75-8/590		
6.4		2.23	100	600	SF100-8/590		
ZDT03-LM (Y)-80LH	+5°	4.5	1.276	40	472	SDT-3000 BWT-3000	SF40-8/493
		5.5	1.426	55	548		SF55-8/543
		6.5	1.55	75	600		SF75-8/590
		8.3	1.7	100	600		SF100-8/590

Selection of Propeller turbine-generator unit

Turbine Type	Blade Angle (φ°)	Rated Head (m)	Rated Flow (m³/s)	Output (KW)	Speed (r/min)	Governor	ModelType
ZDT03-LM (Y)-80LH	+10°	3.6	1.52	40	428.6	SDT-3000	SF40-8/493
		4.5	1.7	55	477.3	BWT-3000	SF55-8/493

		5.4	1.81	75	500		SF75-8/590		
		6.3	2.09	100	600		SF100-8/590		
	+15°	3	1.9	40	422		SF40-8/493		
		3.7	1.99	55	422		SF55-8/493		
		4.5	2.24	75	478		SF75-8/590		
		5.4	2.34	100	478		SF100-8/590		
	+20°	2.7	1.99	40	356		SF40-8/493		
		3.4	2.3	50	422		SF55-8/493		
		4.1	2.39	75	422		SF75-8/590		
		4.9	2.64	100	478		SF100-8/590		
	+25°	3.2	2.46	55	356		SF55-8/493		
		3.8	2.8	75	422		SF75-8/590		
		4.6	2.93	100	422		SF100-8/590		
	+30°	3	2.77	55	356		SF55-8/493		
		3.6	2.84	75	356		SF75-8/590		
		4.4	3.28	100	422		SF100-8/590		
	ZDT760-LM (Y)-60LH	+5°	2.6	1.1	20		483	SDT-1500	SF20-6/368
			3.3	1.21	28		545		SF28-6/368
4.2			1.37	40	615	SF40-8/493			
5.3			1.54	55	750	SF55-8/493			
6			1.64	75	750	SF75-8/590			
+10°		2.5	1.19	20	448	SF20-6/368			
		3.1	1.33	28	500	SF28-6/368			
		4	1.51	40	577	SF40-8/493			
		5	1.69	55	600	SF55-10/493			
+15°		6	1.93	75	750	SF75-8/590			
		2.35	1.27	20	430	SF20-6/368			
		2.9	1.42	28	482	SF28-6/368			
		3.8	1.63	40	525	SF40-8/493			
		4.7	1.81	55	600	SF55-10/493			
5.8		2	75	750	SF75-8/590				

Selection of Propeller turbine-generator unit

Turbine Type	Blade Angle (φ°)	Head (m)	Rated Flow (m^3/s)	Output (KW)	Speed (r/min)	Governor	Model Type
ZDT60	-5°	2.5	1.29	30	355	SDT-3000	SF30-8/368

-LM(Y)- 60LH		3	1.41	40	390	BWT-3000	SF40-8/493
		3.5	1.53	55	420		SF55-8/493
		4	1.63	55	450		SF55-8/493
		4.6	1.75	75	480		SF75-8/590
		5	1.79	75	480		SF75-8/590
		5.4	1.9	75	520		SF75-8/590
		6	2	100	560		SF100-8/590
	0°	2.5	1.49	32	355	SF30-8/368	
		3	1.64	42	390	SF40-8/493	
		3.5	1.77	53	420	SF55-8/493	
		4	1.89	65	450	SF75-8/590	
		4.6	2.02	80	480	SF75-8/590	
		5	2.08	90	480	SF75-8/590	
		5.4	2.19	102	520	SF100-8/590	
	+5°	2.5	1.8	40	355	SF40-8/493	
		3	1.97	55	390	SF55-8/493	
		3.5	2.13	75	420	SF75-8/590	
		4	2.28	75	450	SF75-8/590	
		4.5	2.43	100	480	SF100-8/590	
		5	2.48	100	480	SF100-8/590	
	+10°	2.8	2.14	55	355	SF55-8/493	
		3.4	2.35	75	390	SF75-8/590	
		3.9	2.53	75	420	SF75-8/590	
		4.4	2.7	100	450	SF100-8/590	
	+15°	2.9	2.45	55	355	SF55-8/493	
		3.5	2.69	75	390	SF75-8/590	
		4.1	2.89	100	420	SF100-8/590	
	ZDT56 0-LM(Y) -40LH	0°	6	0.432	20	1000	SF20-6/368
			7	0.467	30	1000	SF30-6/423
			8	0.499	30	1000	SF30-6/423
9			0.53	35	1000	SF35-6/423	
10			0.559	40	1000	SF40-6/493	
11			0.586	50	1000	SF50-6/493	
12			0.612	55	1000	SF55-6/493	
13			0.636	55	1000	SF55-6/493	
14			0.66	750	1000	SF75-6/493	

Selection of Propeller turbine-generator unit

Turbine Type	Blade Angle (φ°)	Rated Head (m)	Rated Flow (m^3/s)	Output (KW)	Speed (r/min)	Governor	Model Type
ZDT560-LM (Y)-40LH	+5°	6	0.531	20	1000	TT-750	SF20-6/368
		7	0.575	30	1000		SF30-6/493
		8	0.615	35	1000		SF35-6/493
		9	0.653	40	1000		SF40-6/493
		10	0.686	50	1000		SF50-6/493
		11	0.722	55	1000		SF55-6/493
		12	0.751	75	1500		SF75-4/493
		13	0.785	75	1500		SF75-4/493
		14	0.814	75	1500		SF75-4/493
	+10°	6	0.646	30	1000		SF30-6/493
		7	0.7	35	1000		SF35-6/493
		8	0.746	40	1000		SF40-6/493
		9	0.795	50	1000		SF50-6/493
		10	0.835	55	1000		SF55-6/493
		11	0.876	75	1000		SF75-6/493
		12	0.915	75	1500		SF75-4/493
		13	0.954	100	1500		SF100-4/493
		14	0.99	100	1500		SF100-4/493
	+15°	6	0.724	30	1000		SF30-6/493
		7	0.801	40	1000		SF40-6/493
		8	0.856	50	1000		SF50-6/493
		9	0.91	55	1000		SF55-6/493
		10	0.96	75	1000		SF75-6/493
		11	1.01	75	1000		SF75-6/493
		12	1.05	100	1500		SF100-4/493
		13	1.11	100	1500		SF100-4/493

Selection of Propeller turbine-generator unit

Turbine Type	Blade Angle (φ°)	Rated Head (m)	Rated Flow (m^3/s)	Output (KW)	Speed (r/min)	Governor	Model Type
ZDT560-LM (Y)-40LH	0°	4.7	0.86	30	5.38	SDT-1500	SF30-6/423
		6.2	0.99	40	560		SF40-6/423
		7.6	1.09	55	600		SF55-6/423

		9.3	1.21	75	750	S75-8/590
		11.2	1.26	100	750	SF100-8/590
	+5°	4.2	1	30	519	SF30-6/423
		5.5	1.15	40	594	SF40-6/423
		6.7	1.27	55	600	SF55-6/423
		7.8	1.41	75	750	S75-8/590
		9.4	1.45	100	750	SF100-8/590
		+10°	4.8	1.33	40	548
	6		1.45	55	600	SF55-6/423
	7.2		1.758	75	750	S75-8/590
	8.4		1.73	100	750	SF100-8/590
	+15°	4.6	1.47	50	600	SF50-6/493
		5.6	1.61	55	600	SF55-6/493
		6.8	1.82	75	600	SF75-8/590
		7.8	1.41	75	750	SF75-8/590
		9	1.97	100	750	SF100-8*590

Selection of Pelton turbine-generator unit

Turbine Type	Head (m)	Discharge (m ³ /s)	Output (KW)	Speed (r/min)	Generator Type	Governor	Inletvalve		
CJ22-W-45/ 1*4	136	0.056	55	1000	SFW55-6/493	ST	Z94.1H-2.5Dg2 00		
	173	0.063	75	1000	SFW75-6/493				
	210	0.069	100	1500	SFW100-4/590				
CJ22-W-45/ 1*4.5	136	0.066	55	1000	SFW55-6/493		ST	Z94.1H-2.5Dg2 00	
	173	0.073	75	1000	SFW75-6/493				
	210	0.081	100	1000	SFW100-6/590				
CJ22-W-45/ 1*4.5	110	0.071	55	750	SFW55-8/493			ST	Z94.1H-2.5Dg3 00
	140	0.079	75	750	SFW75-8/493				
	170	0.087	100	100	SFW100-6/590				
CJ22-W-45/	100	0.101	75	750	SFW75-8/493	ST			Z94.1H-2.5Dg3 00

1*5.5	120	0.111	100	750	SFW100-8/590		
CJ22-W-45/ 1*6	80	0.107	75	600	SFW75-10/590	BWT-3000/ CJWT-1	Z94.1H-1.6Dg4 00
	100	0.12	100	600	SFW100-10/740		
CJ22-W-45/ 1*7	80	0.146	100	500	SFW100-12/740		Z94.1H-1.6Dg3 00

Selection of Turgo turbine-generator unit

Turbine Type	Head (m)	Discharge (m ³ /s)	Speed (r/min)	Output (KW)	Generator Type	Governor	Inlet valve		
XJ13-L-15/1*3.5	14	0.0151	1000	1.1	TS-3/6	ST	φ150		
	18	0.0171	1000	1.8	TS-3/6				
	22	0.0189	1000	2.5	TS-3/6				
	26	0.0206	1500	3.1	TS-3/4				
	30	0.0221	1500	3.7	TS-5/4				
	34	0.0236	1500	4.7	TS-5/4				
	38	0.0249	1500	5.6	TS-8/4				
	44	0.0268	1500	7.1	TS-8/4				
XJ13-L-20/1*4.5	30	0.031	1000	5.7	SFW10-6/368		ST	φ200	
	40	0.035	1000	8.3	SFW10-6/368				
	50	0.039	1000	11.6	SFW12-6/368				
	60	0.043	1500	16.9	SFW18-4/368				
	70	0.047	1500	21.8	SFW24-4/368				
	80	0.051	1500	26.6	SFW30-4/368				
XJ13-L-205/1*5.5	30	0.044	1000	7.36	SFW10-6/368			ST	φ200
	40	0.051	1000	12.1	SFW12-6/368				
	50	0.057	1500	17.3	SFW18-4/368				
	60	0.062	1500	23.8	SFW24-4/368				
	70	0.067	1500	30.1	SFW35-4/423				
	80	0.072	1500	37.1	SFW40-4/423				
	90	0.076	1500	44.1	SFW50-4/423				
XJ13-L-25/1*4.5	35	0.04	1000	8.4	SFW10-6/368	ST			φ200
	40	0.043	1000	10.4	SFW10-6/368				
	45	0.045	1000	12.1	SFW10-6/368				
	50	0.048	1000	14.2	SFW12-6/368				
	55	0.05	1000	16.3	SFW14-6/368				
	60	0.052	1000	18.4	SFW20-6/368				

	65	0.054	1000	20.2	SFW20-6/368		
	70	0.056	1000	22	SFW20-6/368		

Selection of Turgo turbine-generator unit

Turbine Type	Head (m)	Discharge (m ³ /s)	Output (KW)	Speed (r/min)	Generator Type	Governor	Inlet valve
XJ13-W-25/1*5.5	30	0.055	8.2	750	SFW10-8/368	ST	φ200
	35	0.059	12.5	750	SFW12-8/368		
	40	0.063	16.1	1000	SFW20-6/368		
	45	0.067	19.4	1000	SFW20-6/368		
	50	0.071	23	1000	SFW24-6/368		
	55	0.074	25.6	1000	SFW28-6/368		
	60	0.078	29.2	1000	SFW30-6/423		
XJ13-W-25/1*6	35	0.067	15.2	1000	SFW14-6/368		
	40	0.071	18.6	1000	SFW20-6/368		
	45	0.075	22.2	1000	SFW20-6/368		
	50	0.079	26.7	1000	SFW28-6/368		
	55	0.083	30.5	1000	SFW30-6/368		
	60	0.087	34.1	1000	SFW35-6/423		
	65	0.091	39.4	1000	SFW40-6/423		
XJ13-W-25/1*7	30	0.082	13.5	750	SFW16-8/368		
	35	0.089	18.5	750	SFW20-8/368		
	40	0.095	22.5	1000	SFW24-6/368		
	45	0.101	28	1000	SFW30-6/423		
	50	0.106	32.8	1000	SFW35-6/423		
	55	0.111	37.1	1000	SFW40-6/423		
	60	0.116	42.3	1000	SFW40-6/423		
	65	0.121	48.9	1000	SFW50-6/493		
XJ02-W-32/1*5	50	0.059	20	1000	SFW20-6/368		φ250
	60	0.064	28	1000	SFW28-6/368		
	70	0.068	35	1000	SFW35-6/423		
	80	0.074	40	1000	SFW40-6/423		
	90	0.079	50	1000	SFW50-6/493		
	100	0.083	55	1000	SFW55-6/493		
	110	0.087	75	1000	SFW75-6/493		

	120	0.091	75	1000	SFW75-6/493		
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Selection of Turgo turbine-generator unit

Turbine Type	Head (m)	Discharge (m ³ /s)	Output (KW)	Speed (r/min)	Generator Type	Governor	Inletvalve
XJ02-W-32 /1*6	50	0.085	30	1000	SFW30-6/423	ST	φ250
	60	0.093	40	1000	SFW40-6/423		
	70	0.1	50	1000	SFW50-6/493		
	80	0.107	55	1000	SFW55-6/493		
	90	0.114	75	1000	SFW75-6/560		
	100	0.12	75	1000	SFW75-6/560		
	110	0.126	100	1000	SFW100-6/560		
120	0.131	100	1000	SFW100-6/560			
XJ02-W-32 /1*7	40	0.104	30	1000	SFW30-8/493		
	50	0.116	40	1000	SFW40-6/423		
	60	0.127	55	1000	SFW55-6/493		
	70	0.137	75	1000	SFW75-6/560		
	80	0.147	75	1000	SFW75-6/560		
	90	0.156	100	1000	SFW100-6/560		
XJ02-W-32 /1*8	100	0.164	100	1000	SFW100-6/560		
	50	0.145	50	1000	SFW50-6/493		
	60	0.159	75	1000	SFW75-6/560		
	70	0.171	75	1000	SFW75-6/560		
XJ02-W-32 /1*9	80	0.183	100	1000	SFW100-6/560		
	35	0.1333	30	750	SFW30-8/493		
	40	0.1425	40	750	SFW40-8/493		
	50	0.1593	50	750	SFW50-6/493		
	60	0.1745	75	1000	SFW75-6/493		
	70	0.1885	100	1000	SFW100-6/560		
XJA-W-40/ 1*7	80	0.2015	100	1000	SFW100-6/560		
	50	0.116	40	750	SFW40-8/493		
	60	0.127	55	750	SFW55-8/493		
	70	0.137	75	750	SFW75-8/560		
	80	0.146	75	1000	SFW75-6/560		
XJA-W-40/ 1*8	90	0.155	100	1000	SFW100-6/560		
	50	0.147	55	750	SFW55-8/493	ST CJT-1	φ300
	60	0.161	75	750	SFW75-8/560		

	70	0.174	100	750	SFW100-8/560		
	80	0.186	100	1000	SFW100-6/560		
XJA-W-40/ 1*9	30	0.148	55	600	SFW55-10/493		
	40	0.171	55	600	SFW55-10/560		
	50	0.197	75	750	SFW75-8/560		
	60	0.21	75	750	SFW75-8/560		
	70	0.226	100	750	SFW100-8/560		
	80	0.242	100	1000	SFW100-8/560		

Selection of Tubular turbine-generator unit

Type	Blade Angle (φ°)	Head (m)	Discharge (m^3/s)	Output (KW)	Speed (r/min)	Governor	Model Type
GD003-WX-60	+5°	4	0.87	21.6	750	YT-35	SFW40-8/493
		5	0.83	30.8	750		SFW55-8/493
		6	0.86	39.8	750		SFW75-8/560
		7	0.91	50.3	750	TT-35	SFW75-8/560
		8	0.95	60.2	750		SFW100-8/560
	+10°	4	1.06	31.8	750	YT-35	SFW40-8/493
		5	1.11	43.8	750		SFW55-8/493
		6	1.19	58	750	TT-35	SFW75-8/560
		7	1.22	70.3	750		SFW75-8/560
		8	1.25	81.8	750		SFW100-8/560
	+15°	4	1.31	40.5	750	YT-35	SFW40-8/493
		5	1.36	55	750		SFW55-8/493
		6	1.4	69.3	750	TT-35	SFW75-8/560
		7	1.47	85.9	750		SFW75-8/560
		8	1.52	100.3	750		SFW100-8/560
	+20°	4	1.47	45.6	750	YT-35	SFW40-8/493
		5	1.52	62.2	750		SFW55-8/493
		6	1.57	78.5	750	TT-35	SFW75-8/560
		7	1.96	95	750		SFW75-8/560
		8	1.68	110.6	750		SFW100-8/560

	+25°	4	1.65	48	750	YT-35	SFW40-8/493
		5	1.72	69.2	750		SFW55-8/493
	6	1.78	87.8	750	TT-35	SFW75-8/560	

Remarks: Due to continuous improvement of the product, the data listed in this catalogue are only for reference and may be changed without prior notice. The exact technical parameters of the turbine-generator unit will show in the instruction manual

Please inform the following detailed information while placing order:

- ★ **Head:** maximum head, minimum head, design head;
- ★ **Flow rate:** design flow rate, sing unit flow rate;
- ★ **Installed capacity:** single unit capacity, number of installed units;
- ★ **Elevation:** Horizontal centerline of turbine, design water level of tailrace;
- ★ **Climate conditions:** highest temperature, lowest temperature, long term maximum average temperature
- ★ **Penstock data:** length and diameter;
- ★ **Conditions of water quality:** Such as sediment etc:
- ★ **Operating mode of hydropower station:**
- ★ **Technical parameters of generator:** rated capacity, rated voltage, Power factor, insulation class, ventilation method, etc.

For special requirements please further discuss with us freely

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