

IWA 33-1:2019-12 (E)

Technical guidelines for the development of small hydropower plants - Part 1: Vocabulary

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Terms related to hydrology	1
4.1	Hydrological observation	1
4.2	Hydrologic data processing	3
4.3	Hydrological computation	3
5	Terms related to engineering geology	5
6	Terms related to hydraulic engineering and energy	6
7	Terms related to hydraulic structure	8
7.1	Structure type	8
7.2	Dam	9
7.3	Water gate/sluice	10
7.4	Spillway	10
7.5	Power house	12
7.6	Forebay and penstock	13
7.7	Surge chamber	14
7.8	Tailrace structures	15
7.9	Tunnel, culvert and culvert pipe	15
7.10	Intake	16
7.11	Sediment management facility	16
8	Terms related to engineering construction	17
8.1	Diversion	17
8.2	Closure	17
8.3	Cofferdam	18
8.4	Pit drainage	18
9	Terms related to hydraulic machinery	19
9.1	Hydraulic turbines	19
9.1.1	Types of hydraulic turbine	19
9.1.2	Turbine parameters and turbine characteristics	22
9.2	Hydro turbine generator	25
9.2.1	Types of hydro turbine generator	25
9.2.2	Parameters of a hydro turbine generator	25
9.3	Hydro turbine governing system	26
9.4	Oil, compressed air and cooling water supply systems	26
9.4.1	Oil system	26
9.4.2	Compressed air system	27
9.4.3	Water supplying and discharging system	27
9.5	Valve	28

9.6	Installation and testing of turbine generator units	29
10	Terms related to hydro mechanical structure	30
10.1	Gate	30
10.2	Trash rack and trash-removal device	31
10.3	Hoist and crane	32
11	Terms related to electrical system	32
11.1	System operation mode	32
11.2	Main electrical connection	33
11.3	Transformer	34
IWA 33-1:2019(E) 11.4	Switchgear installation	35
11.4.1	Switching device	35
11.4.2	Transformers for measurement and protection	36
11.4.3	Bus and cable	36
11.5	Excitation system	37
11.6	Supervisory control and protection system	38
11.6.1	Supervisory and control system	38
11.6.2	Relay protection	42
11.6.3	Synchronizing system	42
11.7	Lightning protection and grounding	43
11.8	Plant service power and near region and construction power supply	44
11.9	Direct-current system	45
11.10	Communication	45
12	Terms related to social and environmental impact assessment	46
13	Terms related to economic evaluation and project investment	47
Annex A (informative)	Workshop contributors	49
Bibliography	51
Alphabetical index of terms	52