

KS

KOREAN INDUSTRIAL STANDARD

Glossary of Terms for Thermal Power Plant (Steam Turbines,
Geothermal Power Plant and Auxiliary Equipment)

KS B 0055 : 1987

Korean Agency for Technology and Standards
Ministry of Commerce, Industry and Energy,

2, Joongang-dong, Kwachon-city,
Kyunggi-do, 427-010 Rep. of Korea

Translation without guarantee. In the event of any doubt arising,
the original standard in Korea is to be evidence

KOREAN INDUSTRIAL STANDARD

KS B 0055 : 1987
(Confirmed in 1992)

Glossary of Terms for Thermal Power Plant (Steam Turbines, Geothermal Power Plant and Auxiliary Equipment)

1. Scope

This Korean Industrial Standard defines essential terms used for steam turbines, geothermal power plant and their auxiliary equipment.

2. Classification of terms

Terms associated with thermal power plants (steam turbines, geothermal power plant and their auxiliary equipment) shall be classified, depending on the types of equipment, as follows.

(1) Steam turbine and auxiliary equipment

(1.1) Steam turbine

- (a)** Type and style
- (b)** Construction
- (c)** Auxiliary equipment
- (d)** Steam turbine- General
- (e)** Performance and test

(1.2) Condensate system

- (a)** Type and style
- (b)** Construction
- (c)** Auxiliary equipment
- (d)** Condensate system- General
- (e)** Performance and test

(1.3) Feed water heating system

- (a)** Type and style
- (b)** Construction
- (c)** Auxiliary equipment
- (d)** Feed water heating system- General
- (e)** Performance and test

Referred standards:

- KS B 0058** Glossary of terms for thermal power plant use (Gas turbines and auxiliary equipment)
- KS B 0060** Glossary of terms for thermal power plant (General)
- KS B 0064** Glossary of terms for thermal power plant use (Boiler and auxiliary equipment)
- KS E 0002** Glossary of terms used in mining
- KS M 0011** Methods for determination of pH of aqueous solutions

- (1.4) Piping
 - (a) Type and style
 - (b) Construction
 - (c) Auxiliary equipment
- (1.5) Boiler feed water pump
 - (a) Type and style
 - (b) Construction
 - (c) Auxiliary equipment
 - (d) Boiler feed water pump- General
 - (e) Performance and test
- (1.6) Feed water treatment system
 - (a) Type and style
 - (b) Construction
 - (c) Auxiliary equipment
 - (d) Feed water treatment system- General
 - (e) Performance and test
- (2) Geothermal power plant
 - (a) Geothermal power plant- General
 - (b) Geothermal well and auxiliary equipment
 - (c) Turbine and Auxiliary equipment

3. Definition of terms

Terms and their meanings shall be as follows. In addition, idioms are also incorporated, if applicable, for reference.

Remark A term having a parenthesis in it means that it is actually two terms, that is, either a term including words in the parenthesis or another term excluding them.

(1.1) Steam turbine

(a) Type and style

No.	Terms	Definitions	Idioms
1101	Steam turbine	A prime mover in which, by expanding steam continuously through the path arranged appropriately, heat energy held in the steam is converted to velocity energy which in turn is transferred to the mechanical energy through the turbine rotor.	
1102	Condensing turbine	A turbine in which the steam is expanded sufficiently to low pressure by obtaining high vacuum in the process of condensing the turbine exhaust steam in the condenser.	
1103	Back pressure turbine	A turbine of which exhaust steam will be used for factories or other uses, or discharged to the atmosphere.	

No.	Terms	Definitions	Idioms
1104	Extraction turbine	A condensing turbine from which interstage steam will be extracted to be used for factories or other uses.	condensing extraction turbine, bleeder turbine
1105	Back pressure extraction steam	A turbine of which interstage extraction steam and exhaust steam will be used for factories or other uses.	
1106	Regenerative turbine	A condensing turbine of which interstage extraction steam will be used to heat up the boiler feed water heater.	
1107	reheat turbine	A turbine in which all the steam is extracted from the interstages in the process of expanding, heated up again while passing through the reheater in the boiler, delivered to the next stage of the extracted stage, and from there expanded to the last stage.	
1108	Non-reheat turbine	A turbine in which the expanding steam is not reheated.	
1109	Exhaust turbine	A turbine of which low pressure steam exhausted from it will be used for factories, etc..	
1110	Mixed pressure turbine	A turbine driven by the mixed steam of two or more different pressure.	
1111	Impulse turbine	A turbine rotated by the impulse force of high velocity steam ejected from its nozzles where most of the steam pressure drop occurs.	
1112	reaction turbine	A turbine rotated by using not only the impulse force of steam velocity produced with the pressure drop across the nozzles and stationary blades but also the reaction force produced with the pressure drop in the steam paths between moving blades.	
1113	Axial flow turbine	A turbine in which the steam flows in the axial direction of it.	
1114	Radial flow turbine	A turbine in which the steam flows in the radial direction in a plane at the right angle to the turbine shaft.	
1115	Single flow turbine	A turbine in which all the steam flows, especially in its low pressure turbine, unidirectionally	
1116	Double flow turbine	A turbine in which the steam, delivered mainly to the center of low pressure turbine, flows bidirectionally. In case of "triple flow" and "quadruple flow" whose low pressure ends are divided into three and four respectively, they are referred to as "double flow" in a generic name.	

No.	Terms	Definitions	Idioms
1117	Tandem compound turbine	A turbine of which high pressure and low pressure, or high pressure, intermediate pressure and low pressure are assembled on one shaft.	
1118	Cross compound turbine	A turbine of which high pressure and low pressure, or high pressure, intermediate pressure and low pressure are assembled in parallel on two or more shafts.	
1119	Directly coupled turbine	A turbine of which shafts are directly coupled to its driven equipment by the coupling(s).	
1120	Geared turbine	A turbine of which shafts are coupled to its driven equipment by the gear(s)	
1121	Top turbine	A kind of back pressure turbine of which exhaust steam is used for driving another turbine.	
1122	Base turbine	A turbine using the exhaust steam of top turbine.	
1123	Turbine to drive boiler feed pump	A turbine for driving the boiler feed water pump coupled to it.	

(b) Construction

No.	Terms	Definitions	Idioms
1201	Very high pressure turbine	In case steam flow is divided into by its pressure, a turbine located in the most upstream position.	
1202	High pressure turbine	In case steam flow is divided into 3 or 4 by its pressure, a turbine located in the most upstream or the second upstream position respectively.	
1203	Intermediate pressure turbine	In case steam flow is divided into 3 or 4 by its pressure, a turbine located in the second upstream or the third upstream position respectively.	
1204	Low pressure turbine	A turbine located in the most down stream of the steam flow.	
1205	Casing	A cover enclosing the turbine rotor. Normally the stationary blades are attached on its inner surface, and both very high pressure and high pressure casings are usually dual- structured, that is, each of them has a inner casing and an outer casing.	cylinder, shell
1206	(Turbine) Outer casing	The outside of a dual-structured turbine casing which does not contact the high pressure steam directly.	outer shell
1207	(Turbine) Inner casing	The inside of a dual-structured turbine casing which contacts the steam directly.	inner shell

No.	Terms	Definitions	Idioms
1208	Barrel-type casing	A barrel-shaped turbine outer casing for high pressure, having no horizontal flange,	
1209	(Turbine) Turbine rotor	A rotational body having a function to take work being produced while the high velocity jetting steam from nozzles and stationary blades impulses moving blades. Two types, built-up type and built-in type, are used. In some case, a simple rotor with no blade inserted is also referred to as turbine rotor.	turbine spindle
1210	(Turbine) Blade	Parts exerting the impulsive and reactive actions by the steam passing through the flow paths of turbine steam and therefore giving rotational force on the turbine rotor. There are two kinds of blades, either to be fixed to the casing side or to be inserted into the turbine disks.	
1211	Moving blade	Blades fixed to the turbine rotor side.	bucket
1212	Stationary blade	Blades fixed to the turbine casing side.	
1213	(Turbine) Nozzle	Kinds of ejecting holes for effectively converting heat energy in the steam to velocity energy.	
1214	Shroud ring	Band-shaped metals attached to the tips of turbine blades for incorporating several blades into one body.	shroud band, bucket cover
1215	Lacing wire	Metal strips, attached to the mid-span of turbine long blade, usually for tying several blades as a member.	tie-wire
1216	Diaphragm	Two pieces of disks inserting around them turbine nozzles or stationary blades to keep pressure differences between each stages of turbine.	
1217	Steam chest	A chamber for distributing the steam uniformly before it flows into the main steam control valves.	
1218	Nozzle box	A chamber leading the steam flowing from the steam chest to the 1st stage.	
1219	Exhaust hood	A chamber leading the steam exhausting from the last stage outlet.	
1220	Crossover pipe	A steam pipe outside the turbine with an expansion joint, connecting between intermediate pressure turbine and low pressure turbine.	
1221	Bearing	A device supporting turbine, generator and other rotors.	
1222	Thrust bearing	A bearing supporting the axial force exerted on the turbine rotor(s).	

No.	Terms	Definitions	Idioms
1223	Thrust collar	A pressure receiving part of turbine rotor side supporting the thrust force in the axial direction.	
1224	Steam seal gland	A device for preventing leakage from the part of the turbine rotor through the casing, by using the steam.	
1225	Water seal gland	A device for preventing leakage from the part of the turbine rotor through the casing, by using the water.	
1226	Labyrinth packing	A packing for reducing leakage through pressure drop by the action of throttling the leaking steam to seal the clearances of turbine rotor and casing, diaphragms, etc..	
1227	Carbon packing	A ring made of several assembled circular arc shape carbons to seal the rotating shaft sections of a small turbine and the likes.	
1228	Gland steam regulator	A regulator to keep the gland steam constant independently of the turbine load change.	
1229	Main stop valve	A valve at the turbine entrance for the purpose of stopping the steam. Some have a built-in by-pass valve.	main throttle valve
1230	Full arc admission starting device	A device starting the turbine by injecting steam from all the nozzles.	
1231	Main steam control valve	Valves for controlling the turbine load by increasing or decreasing the amount of steam delivered to the turbine.	control valve, governing valve
1232	Over load valve	A valve having a function of delivering more than the rated flow rate making preparation for overload.	
1233	Pilot valve	A valve increasing or decreasing the hydraulic fluid pressure delivered to the servomotor.	
1234	Servomotor	A device moving other mechanisms, using the power generated by the hydraulic fluid pressure controlled by the pilot valve.	
1235	Speed governing device	A turbine speed control device regulating the steam flow rate by increasing or decreasing the opening of the main steam control valves to keep the rpm constant in spite of load change. In parallel operation mode, load change is possible. Mechanical type and electrical type are used.	speed governor, mechanical- hydraulic governor, electronic- hydraulic governor

No.	Terms	Definitions	Idioms
1236	Acceleration governor	As a device for limiting the turbine acceleration, when the acceleration goes beyond the prescribed value during turbine operation, a kind of governor that detects this and operates accordingly.	
1237	Auxiliary governor	As a device for preventing the turbine overspeed, when the speed goes beyond the prescribed value during turbine operation, a kind of governor that detects this and operates accordingly.	
1238	Acceleration relay	As an overspeed protection device incorporated into the driving mechanism of the main steam control valves or the intercept valves, a mechanism for closing such valves quickly once it detects acceleration exceeding a prescribed value.	
1239	Governor impeller	As a kind of centrifugal pump coupled directly to the turbine shaft, a part of speed governing system detecting speed or speed variation.	
1240	Rotating pilot valve	A valve connected to fly balls for regulating the opening of main control valves by changing the hydraulic fluid pressure through up-and-down motions in accordance with the turbine speed change.	
1241	Governor motor	An electric motor for manipulating the governing handle of speed governor from a distance.	
1242	Load limiter	A device for limiting the opening of the main control valves in order not to open more than any preset opening irrespective of a signal from the speed detector. Among these there some with a function to change rpm when stat-up and shut-down.	load limiting device
1243	Auxiliary pilot valve	A valve operated by the load limiter for regulating the opening of the main control valves by setting the load limiter position.	
1244	Reheat stop valve	A steam stop valve installed right before the intercept valve of reheat turbine.	
1245	Intercept valve	A valve installed at the turbine entrance for preventing turbine overspeed by controlling the reheat steam in an emergency.	
1246	Combined reheat valve	A valve incorporated the intercept valve and the reheat steam stop valve into a single body.	
1247	Equalizing valve	A by-pass valve of the intercept valve.	equalizer valve
1248	Extraction control valve	A valve increasing or decreasing the steam flow rate of the next stage of extraction to keep the extraction pressure of extraction turbine constant.	

No.	Terms	Definitions	Idioms
1249	Extraction pressure governor	A valve regulating both main steam control valves and extraction control valves to keep the extraction pressure constant.	
1250	Extraction check valve	A check valve for preventing water vapor or water in the extraction pipe and feed water heater connected to this from flowing backward to the turbine	reverse current valve
1251	Pre-emergency governor	A kind of speed governor controlling the intercept valves.	
1252	Emergency governor	A device operating at less than 111% of rated speed when turbine overspeed, and therefore at the same time stopping the turbine by preventing steam from flowing into it.	overspeed governor
1253	Back-up overspeed governor	A kind of turbine overspeed protection device operating at around 112% rpm, used mainly when carrying out the oil trip test of emergency governor.	
1254	Load sensing relay	A device for preventing overspeed by detecting load shutdown and at the same time closing the valves momentarily which controls speed and load of the turbine.	load anticipator
1255	Vacuum tripping device	A device for preventing steam from flowing into the turbine to stop it urgently in case of low vacuum.	
1256	Lock out device	A device for testing emergency governor without emergency shutdown.	
1257	Thrust failure protection device	A device for stopping the turbine urgently when a thrust bearing gets abnormal.	
1258	Vacuum breaker	A valve for pulling air into the condenser when shutting down the turbine.	
1259	Relay dump valve	A valve operated in an emergency turbine shutdown for stopping the supply of operating air to each extraction check valve.	
1260	Emergency blow down valve	A valve for delivering the residual steam in the high pressure turbine, reheater and reheat steam piping from the middle of labyrinth packing to the condenser in an emergency turbine shutdown.	
1261	Initial pressure regulator	A device for the main steam control valves to initiate closing when the main steam pressure drops to a certain level, and for them to close to the opening of no load when it drops to a lower level.	initial pressure limiter

No.	Terms	Definitions	Idioms
1262	Initial pressure governor	A device for controlling the turbine inlet main steam pressure.	
1263	Back pressure governor	A device controlling the main steam control valves to keep the turbine back pressure constant.	
1264	Speed matching valve	A valve for regulating the speed of turbines by connecting main steam to the intermediate pressure turbine during speed increase, in case each of the high pressure turbine and low pressure turbine has a separate shaft.	
1265	No load device	A device for detecting that the turbine is operating with no load.	
1266	Automatic run back device	For a reheat turbine, a device for decreasing a permanent speed close to the rated speed automatically by the governor motor, in case rpm exceeds a certain value due to an abrupt load decreasing.	
1267	Low bearing oil pressure tripping device	A device for stopping the turbine urgently when bearing oil pressure drops too low.	
1268	Bearing oil pressure regulating valve	A pressure control valve to keep the bearing oil pressure constant.	
1269	Atmosphere relief diaphragm rupture disc	A protecting plate broken automatically when the turbine exhaust pressure rises abnormally. It is usually installed on the low pressure casing.	
1270	Low pressure casing spray	A cooling water spraying equipment to prevent the exhaust hood temperature rise.	desuperheating spray in low pressure section
1271	Lagging	The outer covering enclosing the surface of casing.	

(c) Auxiliary equipment

No.	Terms	Definitions	Idioms
1301	(Turbine) Main oil pump	The main pump for supplying pressure oil for both control and bearing during turbine operation.	
1302	Auxiliary oil pump	A pump, for supplying both control oil and bearing oil, which starts when the turbine is during start-up or shutdown or the main oil pump is abnormal.	
1303	Emergency bearing oil pump	An emergency oil pump for bearing protection by automatically starting when bearing oil pressure low.	

No.	Terms	Definitions	Idioms
1304	Turning gear oil pump	A pump for supplying during turbine turning.	
1305	Jacking oil pump	An oiling pump to alleviate rotating friction of rotor at start-up.	
1306	Oil transfer pump	An oil delivering pump for transferring lubricating oil from storage tank to turbine main oil pump.	
1307	Oil booster pump	An oil pump driven by an oil turbine for supplying the pressure oil to the main oil pump.	
1308	Oil turbine	A kind of turbine driven by pressure oil.	
1309	Oil ejector	An ejector for supplying pressure oil to the pump.	
1310	Main oil tank	An oil tank having the amount of oil required for turbine control oil and bearing oil circulating system.	oil reservoir
1311	Vapor extractor	An equipment for eliminating air, moisture, gas, etc. in the main oil tank.	
1312	Oil cooler	An equipment for cooling the lubricating oil of turbine, generator, etc.	
1313	Oil purifier	An equipment for removing impurities such as water and dust contained in the turbine lubricating oil. There are 3 types, that is, centrifugal type, filter type and Bowser type.	oil conditioner
1314	Hydraulic power unit	A device producing the pressure oil for the control of electronic speed governor. It is composed of tanks, hydraulic fluid coolers and hydraulic fluid pumps.	
1315	Hydraulic fluid pump	An oil pump supplying the pressure oil for the control of electronic speed governor.	
1316	Hydraulic fluid cooler	An equipment for cooling the hydraulic fluid of electronic speed governor.	
1317	Oil storage tank	A temporary storage tank used when inspecting main oil tank or supplying oil to it.	batch oil tank
1318	Seal water tank	A water storage tank for the water glands.	
1319	Pump governor	A device detecting the oil pump discharge pressure and controlling the speed of oil turbine which drives the oil pump.	
1320	Reduction gears	A gear train for reducing the turbine rpm before transmitting the turbine output to the driven equipment.	

No.	Terms	Definitions	Idioms
1321	Turning gears	An equipment for rotating the turbine rotor slowly.	
1322	Turning motor	A electric motor for driving turning gears.	
1323	Turbine foundation	An independent foundation separated from building floor in consideration of vibration, etc. when installing a turbine-generator.	
1324	Turbine control panel	A panel for generally carrying out control, operation and supervision of all equipment related to turbine.	
1325	Turbine start-up panel	A panel installed in front of a turbine for carrying out control, operation and supervision of the turbine.	
1326	Turbine supervisory instrument	An instrument for inspecting whether a turbine is operated safely and reasonably or not.	
1327	Speed indicator	An instrument for indicating or both indicating and recording the rpm of turbine. Tachometer generators (or tachometer) are often used.	speed recorder, tachometer
1328	Governor valve position recorder	An instrument for indicating or both indicating and recording the opening of main control valves by attaching a slide rheostat and the likes to the driving mechanism of the turbine main control valves.	cam angle recorder, cam angle indicator
1329	Eccentricity indicator	An instrument for indicating or both indicating and recording eccentricity of a turbine.	eccentricity recorder
1330	Differential expansion indicator	An instrument for indicating or both indicating and recording the differential expansion between casing and rotor of a turbine.	differential expansion recorder
1331	Shell expansion indicator	An instrument for indicating or both indicating and recording the casing expansion of a turbine.	shell expansion recorder
1332	Vibration indicator	An instrument for indicating or both indicating and recording the vibration of a turbine. Normally the positive amplitudes will be indicated.	vibration recorder
1333	Shaft position indicator	An instrument for indicating or both indicating and recording the axial position of a turbine rotor which causes the wear of turbine thrust bearing, etc..	shaft position recorder
1334	Turbine automatic starting device	A device for starting and speeding up a turbine automatically while supervising various states.	
1335	Automatic load regulator	A device for controlling generator load automatically.	
1336	Speed setter	A device for selecting the target rpm's in regular sequence at the turbine start-up and controlling the actual rpm of turbine to match the target rpm.	