

F01K

STEAM ENGINE PLANTS; STEAM ACCUMULATORS; ENGINE PLANTS NOT OTHERWISE PROVIDED FOR; ENGINES USING SPECIAL WORKING FLUIDS OR CYCLES (gas-turbine or jet-propulsion plants [F02](#); nuclear power plants, engine arrangements therein [G21D](#))

Definition statement

This place covers:

All aspects of power plants using steam, vapour or special working fluids in a thermodynamic cycle. It covers also steam or vapour accumulators and power plants which are characterised by steam or heat accumulators, by the use of specific types of engines and by condensers and by the use of steam or condensate extracted from the power plant. Furthermore general lay-out, control and methods of operation of complete power plants and methods of converting heat or fluid energy into mechanical energy are covered.

Relationships with other classification places

Specific elements forming a thermodynamic cycle like the steam or vapour generator ([F22B](#)), expander ([F01D](#)), condenser ([F28B](#)) and pump ([F04](#)) are the subject of other subclasses.

Documents related to constructional features of steam turbines, gas turbines, internal combustions piston engines, condensers and pumps can be found in [F01D](#), [F02C](#), [F02B](#), [F28B](#) and [F04B](#), [F04C](#), [F04D](#) respectively.

References

Limiting references

This place does not cover:

Non-positive displacement machines or engines, like steam turbines	F01D
Internal-combustion piston engines	F02B
Gas turbine plants	F02C
Jet propulsion plants	F02K
Refrigeration machines, plants and systems	F25B
Nuclear power plants and engine arrangements therein	G21D

Special rules of classification

Attention is drawn to the definition of "steam" and "vapour". In cases where a specific entry for vapour is missing documents related to special vapours are classified in groups where only "steam" is explicitly mentioned.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

CHP	Combined Heat and Power, Cogeneration
Trigeneration	Combined production of heat, power and cold
HRSG	Heat Recovery Steam Generator
CCS	Carbon capture and storagecarbon capture and sequestration
Combined cycle	The exhaust of one heat engine is used as the heat source for another

FBC	Fluidized Bed Combustion
PFBC	Pressurised Fluidized Bed Combustion
APFBC	Advanced Pressurised Fluidized Bed Combustion
GFBC	Gasification Fluidized Bed Combustion Combined cycle systems
CHIPPS	Combustion-based High Performance Power System

F01K 1/00

Steam accumulators (use of accumulators in steam engine plants [F01K 3/00](#))

Definition statement

This place covers:

Steam or vapour accumulators acting as an energy storage device including:

- accumulators for storing steam in a liquid, like varying pressure accumulators (e.g. Ruth's type);
- accumulators for storing steam otherwise than in a liquid (e.g. pressure tanks);
- charging and discharging devices of accumulators with steam;
- safety and regulation means for accumulators;
- other parts, details and accessories of accumulators.

Relationships with other classification places

Group [F01K 3/00](#) covers the use of accumulators in steam engine plants and not the accumulator per se.

References

Limiting references

This place does not cover:

Use of accumulators in steam engine plants	F01K 3/00
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Charging or discharging of accumulators with steam	F01K 1/08
Multiple accumulators; Charging, discharging or controlling peculiar thereto	F01K 1/12
Steam circulation in multiple accumulators	F01K 1/14
Methods of steam generation using heat evolved in a solution absorbing steam; Soda steam boilers	F22B 1/20

Special rules of classification

All vapour accumulators which use special vapour instead of water vapour also have to be classified in this group.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "storage tank", "pressure tank", "vessel", "energy storage device" and "volume"

F01K 3/00

Plants characterised by the use of steam or heat accumulators, or intermediate steam heaters, therein (regenerating exhaust steam [F01K 19/00](#))

Definition statement

This place covers:

This group covers the use of steam/vapour accumulators, in general heat accumulators and intermediate steam/vapour heaters in power plant arrangements and in arrangements adapted for a specific use like for vehicle drive. Control of said devices is also covered.

Relationships with other classification places

Vapour or heat accumulators are often used in relationship with steam or vapour regeneration which is treated in [F01K 19/00](#)

Constructional features of accumulators and the accumulators per se are classified in [F01K 1/00](#)

Methods of steam generation in general characterized by the form of heating method are classified in [F22B 1/00](#)

References

Limiting references

This place does not cover:

Regenerating exhaust steam	F01K 19/00
Heat-transfer, heat-exchange or heat-storage materials	C09K 5/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Heating, cooling or ventilating devices characterised by comprising regenerative heating or cooling means, e.g. heat accumulators	B60H 1/00492
Methods of steam generation characterized by the form of heating method	F22B 1/00
Solar heat collectors having heat storage mass	F24S 60/00
Solar heat collectors with hot water storage	F24S 60/30
Heat storage plants or apparatus in general	F28D 20/00

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Ruth's type steam accumulator	accumulator for storing steam in a liquid (variable pressure system)
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F01K 5/00

Plants characterised by use of means for storing steam in an alkali to increase steam pressure, e.g. of Honigmann or Koenemann type

Definition statement

This place covers:

Storing steam based on thermo chemical energy storage and conversion. Absorbing and desorbing vapour into an alkali solution for discharging heat or producing cold taking into account pressure changes. Furthermore regenerative installations using absorption and desorption are also covered.

Relationships with other classification places

Accumulators where steam is stored in a liquid are classified in [F01K 1/04](#) in general.

References

Limiting references

This place does not cover:

Thermodynamic cycles with an absorption fluid remaining at least partly in the liquid state, like Kalina cycles	F01K 25/065
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Accumulators using materials absorbing or liberating heat during crystallisation	C09K 5/063
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Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Accumulator of Honigmann type	Steam or vapour accumulator based on a process based on the vapour pressure depression of a concentrated solution or adsorbed vapour in comparison to the pure working fluid
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