

# CPC COOPERATIVE PATENT CLASSIFICATION

**F23R** **GENERATING COMBUSTION PRODUCTS OF HIGH PRESSURE OR HIGH VELOCITY, e.g. GAS-TURBINE COMBUSTION CHAMBERS** (using such products for specific purposes, [see the relevant classes for the purposes](#); chemical aspects of gas production [C06D 5/00](#); gas-turbine plants characterised by the arrangement of the combustion chamber in the plant [F02C 3/14](#); arrangement of afterburners in jet-propulsion plants [F02K 3/10](#); combustion chambers of rocket-engine plants [F02K 9/00](#))

<b>3/00</b>	<b>Continuous combustion chambers using liquid or gaseous fuel</b>	<b>3/44</b>	<ul style="list-style-type: none"><li>Combustion chambers comprising a {single} tubular flame tube within a tubular casing (<a href="#">reverse-flow combustion chambers F23R 3/54</a>)</li></ul>
3/002	<ul style="list-style-type: none"><li>{Wall structures (<a href="#">F23R 3/02</a> and <a href="#">F23R 3/007</a> take precedence)}</li></ul>	<b>3/46</b>	<ul style="list-style-type: none"><li>Combustion chambers comprising an annular arrangement of {several essentially tubular} flame tubes within a common annular casing or within individual casings</li></ul>
3/005	<ul style="list-style-type: none"><li>{Combined with pressure or heat exchangers}</li></ul>	<b>3/48</b>	<ul style="list-style-type: none"><li>Flame tube interconnectors, e.g. cross-over tubes</li></ul>
3/007	<ul style="list-style-type: none"><li>{constructed mainly of ceramic components}</li></ul>	<b>3/50</b>	<ul style="list-style-type: none"><li>Combustion chambers comprising an annular flame tube within an annular casing (<a href="#">toroidal combustion chambers F23R 3/52</a>)</li></ul>
3/02	<ul style="list-style-type: none"><li>characterised by the air-flow or gas-flow configuration (<a href="#">reverse-flow combustion chambers F23R 3/54</a>; <a href="#">cyclone or vortex type combustion chambers F23R 3/58</a>)</li></ul>	<b>3/52</b>	<ul style="list-style-type: none"><li>Toroidal combustion chambers</li></ul>
3/04	<ul style="list-style-type: none"><li>Air inlet arrangements</li></ul>	<b>3/54</b>	<ul style="list-style-type: none"><li>Reverse-flow combustion chambers</li></ul>
3/045	<ul style="list-style-type: none"><li>{using pipes}</li></ul>	<b>3/56</b>	<ul style="list-style-type: none"><li>Combustion chambers having rotary flame tubes</li></ul>
3/06	<ul style="list-style-type: none"><li>Arrangement of apertures along the flame tube</li></ul>	<b>3/58</b>	<ul style="list-style-type: none"><li>Cyclone or vortex type combustion chambers</li></ul>
3/08	<ul style="list-style-type: none"><li>between annular flame tube sections, e.g. flame tubes with telescopic sections</li></ul>	<b>3/60</b>	<ul style="list-style-type: none"><li>Support structures; Attaching or mounting means</li></ul>
3/10	<ul style="list-style-type: none"><li>for primary air (<a href="#">F23R 3/06</a>, <a href="#">F23R 3/045</a> take precedence)</li></ul>	<b>5/00</b>	<b>Continuous combustion chambers using solid or pulverulent fuel</b>
3/12	<ul style="list-style-type: none"><li>inducing a vortex</li></ul>	<b>7/00</b>	<b>Intermittent or explosive combustion chambers</b>
3/14	<ul style="list-style-type: none"><li>by using swirl vanes</li></ul>		
3/16	<ul style="list-style-type: none"><li>with devices inside the flame tube or the combustion chamber to influence the air or gas flow</li></ul>	<b>2900/00</b>	<b>Special features of, or arrangements for continuous combustion chambers; Combustion processes therefor</b>
3/18	<ul style="list-style-type: none"><li>Flame stabilising means, e.g. flame holders for after-burners of jet-propulsion plants</li></ul>	2900/00001	<ul style="list-style-type: none"><li>Arrangements using bellows, e.g. to adjust volumes or reduce thermal stresses</li></ul>
3/20	<ul style="list-style-type: none"><li>incorporating fuel injection means</li></ul>	2900/00002	<ul style="list-style-type: none"><li>Gas turbine combustors adapted for fuels having low heating value [LHV]</li></ul>
3/22	<ul style="list-style-type: none"><li>movable, e.g. to an inoperative position; adjustable, e.g. self-adjusting</li></ul>	2900/00004	<ul style="list-style-type: none"><li>Preventing formation of deposits on surfaces of gas turbine components, e.g. coke deposits</li></ul>
3/24	<ul style="list-style-type: none"><li>of the fluid-screen type</li></ul>	2900/00005	<ul style="list-style-type: none"><li>Preventing fatigue failures or reducing mechanical stress in gas turbine components</li></ul>
3/26	<ul style="list-style-type: none"><li>Controlling the air flow</li></ul>	2900/00006	<ul style="list-style-type: none"><li>Using laser for starting or improving the combustion process</li></ul>
3/28	<ul style="list-style-type: none"><li>characterised by the fuel supply (<a href="#">burners F23D</a>)</li></ul>	2900/00008	<ul style="list-style-type: none"><li>Combustion techniques using plasma gas (<a href="#">plasma torches F23R 2900/00009</a>)</li></ul>
3/283	<ul style="list-style-type: none"><li>{Attaching or cooling of fuel injecting means}</li></ul>	2900/00009	<ul style="list-style-type: none"><li>Using plasma torches for igniting, stabilizing, or improving the combustion process</li></ul>
3/286	<ul style="list-style-type: none"><li>{having fuel-air premixing devices (<a href="#">F23R 3/30</a> takes precedence)}</li></ul>	2900/00012	<ul style="list-style-type: none"><li>Details of sealing devices</li></ul>
3/30	<ul style="list-style-type: none"><li>comprising fuel prevapourising devices</li></ul>	2900/00013	<ul style="list-style-type: none"><li>Reducing thermo-acoustic vibrations by active means</li></ul>
3/32	<ul style="list-style-type: none"><li>being tubular</li></ul>	2900/00014	<ul style="list-style-type: none"><li>Reducing thermo-acoustic vibrations by passive means, e.g. by Helmholtz resonators (<a href="#">silence apparatus using resonance F01N 1/023</a>)</li></ul>
3/34	<ul style="list-style-type: none"><li>Feeding into different combustion zones</li></ul>	2900/00015	<ul style="list-style-type: none"><li>Trapped vortex combustion chambers</li></ul>
3/343	<ul style="list-style-type: none"><li>{Pilot flames, i.e. fuel nozzles or injectors using only a very small proportion of the total fuel to insure continuous combustion (<a href="#">ignition in gas-turbine plants F02C 7/264</a>; <a href="#">pilot flame igniters F23Q 9/00</a>)}</li></ul>	2900/00016	<ul style="list-style-type: none"><li>Retrofitting in general, e.g. to respect new regulations on pollution</li></ul>
3/346	<ul style="list-style-type: none"><li>{for staged combustion}</li></ul>	2900/00017	<ul style="list-style-type: none"><li>Assembling combustion chamber liners or subparts</li></ul>
3/36	<ul style="list-style-type: none"><li>Supply of different fuels</li></ul>	2900/00018	<ul style="list-style-type: none"><li>Manufacturing combustion chamber liners or subparts</li></ul>
3/38	<ul style="list-style-type: none"><li>comprising rotary fuel injection means</li></ul>		
3/40	<ul style="list-style-type: none"><li>characterised by the used of catalytic means</li></ul>		
3/42	<ul style="list-style-type: none"><li>characterised by the arrangement or form of the flame tubes or combustion chambers</li></ul>		
3/425	<ul style="list-style-type: none"><li>{Combustion chambers comprising a tangential or helicoidal arrangement of the flame tubes}</li></ul>		

- 2900/00019 . Repairing or maintaining combustion chamber liners or subparts
- 2900/03041 . Effusion cooled combustion chamber walls or domes
- 2900/03042 . Film cooled combustion chamber walls or domes
- 2900/03043 . Convection cooled combustion chamber walls with means for guiding the cooling air flow ([means for creating turbulence F23R 2900/03045](#))
- 2900/03044 . Impingement cooled combustion chamber walls or subassemblies
- 2900/03045 . Convection cooled combustion chamber walls provided with turbulators or means for creating turbulences to increase cooling
- 2900/03281 . Intermittent fuel injection or supply with plunger pump or other means therefor
- 2900/03282 . High speed injection of air and/or fuel inducing internal recirculation
- 2900/03341 . Sequential combustion chambers or burners
- 2900/03342 . Arrangement of silo-type combustion chambers
- 2900/03343 . Pilot burners operating in premixed mode