Title (en)

Method of manufacturing multi phase microstructured steel piece

Title (de)

Herstellungsverfahren eines Stahlwerkstücks mit mehrphasigem Mikrogefüge

Title (fr)

Procédé de fabrication d'une pièce en acier de microstructure multi-phasée

Publication

EP 1767659 A1 20070328 (FR)

Application

EP 05291958 A 20050921

Priority

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Abstract (en)

Making a steel part having a multi-phased microstructure having ferrite comprises: cutting a steel blank in to a steel strip of a composition having e.g. carbon (C), manganese (Mn), silicon (Si), aluminum (Al), molybdenum (Mo), chromium (Cr), phosphorus (P), titanium (Ti), and vanadium (V) (all at specific weight percentage); optionally pre-deforming the blank in cold; heating the blank to a temperature greater than the steel temperature and keeping the part under this temperature; transferring the heated blank within a working tool to make the part hard; and cooling the part within the tools. Manufacturing a steel part having a multi-phased microstructure containing ferrite, which is homogeneously distributed in each area of the part, comprises: cutting a steel blank in to a steel strip of a composition containing carbon (C) at 0.01-0.50 wt.%, manganese (Mn) at 0.5-3 wt.%, silicon (Si) at 0.001-3 wt.%, aluminum (Al) at 0.005-3 wt.%, molybdenum (Mo) =1 wt.%, chromium (Cr) at =1.5 wt.%, phosphorus (P) at =0.1 wt. %, titanium (Ti) at =0.2 wt.%, vanadium (V) at =1 wt.%, optionally elements like nickel at =2 wt.%, copper at =2 and sulfur (S) at =0.05 wt.% and rest iron and other impurities; optionally pre-deforming the blank in cold; heating the blank to a temperature greater than the steel temperature and maintaining the part under this temperature such that the part after heating comprises austenite of >=25%; transferring the heated blank within a working tool to make the part hard; and cooling the part within the tools to give the multi-phased microstructure Independent claims are included for: (1) a steel part obtained by the process; and (2) an automobile engine comprising the steel part.

IPC 8 full level

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CPC (source: EP KR US)

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