

Title (en)
METHOD FOR MANUFACTURING A STEEL PART, INCLUDING THE ADDITION OF A MOLTEN METAL TO A SUPPORTING PART, AND PART
THUS OBTAINED

Title (de)
VERFAHREN ZUR HERSTELLUNG EINES STAHLBAUTEILS, EINSCHLIESSLICH DER ZUGABE EINER METALLSCHMELZE AN EINEM
TRÄGERTEIL UND SO HERGESTELLTES TEIL

Title (fr)
PROCÉDÉ DE FABRICATION D'UNE PIÈCE D'ACIER COMPORTANT L'ADDITION D'UN MÉTAL FONDU SUR UNE PIÈCE SUPPORT, ET
PIÈCE AINSI OBTENUE

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Abstract (en)
[origin: WO2018025063A1] The invention relates to a steel part including a supporting part (1) and a portion (17) formed by a solder (2; 7), in the form of molten metal (5; 12), on the supporting part (1), forming a heat affected zone (HAZ) (6) thereof and a molten area (21) between the HAZ (6) and the portion (17) formed by the addition of molten metal (5; 2). The supporting part (1) is made of 70-100 % steel with martensitic microstructure, the composition of which consists of: $0.01\% \leq C \leq 1.5\%$; $0.01\% \leq N \leq 0.2\%$; $0.2\% \leq Mn \leq 1.2\%$; $0.2\% \leq Si \leq 1.2\%$; traces $\leq Al \leq 0.1\%$; traces $\leq S + P \leq 0.05\%$; $5.0\% \leq Cr \leq 16.5\%$; traces $\leq Ni \leq 3.5\%$; traces $\leq Mo + W \leq 2.0\%$; traces $\leq Cu \leq 3.0\%$; traces $\leq Ti + Nb + Zr + V + Ta \leq 2\%$; traces $\leq Co \leq 0.5\%$; traces $\leq Sn + Pb \leq 0.04\%$; traces $\leq B \leq 0.01\%$; the remainder being iron; and complies with the conditions: $A = \% Mn + \% Ni + \% Cu + 30 * (\% C + \% N) - 3 * (\% Ti + \% Nb) \geq 1.5\%$; $B = \% Cr + \% Mo + 5 * \% V + \% W + \% Si + \% Al \geq 9\%$. The composition of the solder (2; 7) prior to being used consists of: $0.01\% \leq C \leq 0.1\%$; $0.01\% \leq N \leq 0.2\%$; $0.2\% \leq Mn \leq 2.0\%$; $0.2\% \leq Si \leq 1.2\%$; $15.0\% \leq Cr \leq 19.0\%$; $6.0\% \leq Ni \leq 13.0\%$; traces $\leq Mo + W \leq 3.0\%$; traces $\leq Cu \leq 3.0\%$; traces $\leq Co \leq 0.5\%$; traces $\leq B \leq 0.01\%$; traces $\leq S + P \leq 0.05\%$; traces $\leq Ti + Nb + Zr + V + Ta \leq 2\%$; traces $\leq Sn + Pb \leq 0.04\%$; the remainder being iron. The hardness of the HAZ (6) is no more than 20 % lower than that of the rest of the supporting part (1), and the martensite content of the HAZ (6) is no less than 70 %. The molten area (21) has a dilution rate of 50 wt % to 95 wt %, preferably of 75 wt % to 85 wt %. The invention also relates to a finished steel part thus produced, at least one of the portions formed by a process for adding molten metal (5; 12) being a reinforcement element (17; 24, 25, 26) for the supporting part (1; 22).

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