

Title (en)

METHOD FOR PRODUCING A COATING MADE OF POWDERED MATERIALS AND DEVICE FOR REALISING THE SAME

Title (de)

VERFAHREN UND VORRICHTUNG ZUR HERSTELLUNG EINER AUS PULVERMATERIAL BESTEHENDEN BESCHICHTUNG

Title (fr)

PROCEDE DE PRODUCTION D'UN REVETEMENT SE COMPOSANT DE MATERIAUX EN POUDRE ET DISPOSITIF DE MISE EN OEUVRE DE CE PROCEDE

Publication

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Application

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Abstract (en)

The present invention relates to the field of producing coatings and may be used in metallurgy, in mechanical engineering, in radio- and electronic engineering. The essence of the invention is that for broadening the technological possibilities of producing a coating from various powder materials, for increasing the effectiveness of the process of applying and forming a coating, and for prolonging the service life of the spraying system, as well as for improving the physicochemical properties of the produced coating, in a method comprising the steps of forming an accelerating flow of a working carrier gas, introducing particles of a powder material thereinto, feeding the resulting gas-and-powder mixture into an accelerating supersonic nozzle and applying the powder material to the surface of an article by means of the gas flow, before feeding the gas-and-powder mixture into the accelerating nozzle (16), this mixture is preliminarily accelerated by a gas, which is inert to the starting material, to a velocity defined by the Mach number within $0.3 \leq M \leq 1.0$, and then an additional acceleration is carried out, for which purpose the gas-and-powder mixture is introduced into the core of the accelerating flow of the working carrier gas. Before applying the powder material to the surface to be coated, the powder particles are separated from the gas by changing the direction of the gas flow. For carrying the method into effect, in a device comprising a spraying unit made in the form of an accelerating supersonic nozzle (16) and an intermediate nozzle (13); a means (9) for feeding the working carrier gas; a means for introducing the gas-and-powder mixture; and a metering feeder (6); provision is made for a means for feeding additional gas inert to the powder material; for the intermediate nozzle (13) to be made as a supersonic one, with the diameter of the nozzle exit section dsect. smaller than the diameter of the critical section Dcrit. of the accelerating nozzle, and for arranging the nozzle (13) coaxially with the nozzle (16) in the subsonic part of the latter, with the possibility of translational displacement. For varying the direction of the gas flow, the accelerating supersonic nozzle (16) has at the outlet of its supersonic part a linear portion (17) which passes into a portion with a curvilinear surface (18) of a radius R. <IMAGE>

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Cited by

DE10158622A1; EP1620209A4; DE102006029619B3; EP1806183A1; US6819211B2; WO2007141292A1; WO2007147796A1; US7631816B2; EP1806429A1

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