Наплавлення пресового інструмента для обробки кольорових металів самозахисним порошковим дротом ПП-50Х6В2ГСМФА

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Abstract

The work is devoted to development of the method of restoration of worn press tools from 3Kh3M3F steel for extrusion of non-ferrous alloys by mechanized hardfacing with self-shielded flux-cored wire. The advantages and disadvantages of different classes of hardfacing materials are considered and use of 50Kh6V2GSMFA steel is proposed. In the case of hardfacing with selfshielded flux-cored wire the alloying part of this steel provides a higher hardness at high working temperatures of pressing, due to a complex hardening of the martensite matrix with carbides of tungsten, chromium and other elements, as well as additional hardening by vanadium nitride. It allowed increasing the tool life. Moreover, alloying by chromium at the level of 5.5 – 6.0% improved adhesion to the processed metal. Resistance to thermal erosion and thermal fatigue strength of the deposited layer was increased by selection and optimization of gas-slag-forming components. Industrial trails of hardfaced steel 50Kh6V2GSMFA, first applied for restoration and hardening of the hot pressing matrices from 3Kh3M3F steel, were conducted at LLC “ZCM” (city of Bakhmut). Compared to new unsurfaced matrices, those restored by hardfacing demonstrated 2.4…2.5 times higher durability, while working diameter drawdown after 5 pressing cycles decreased three times. Total cost of matrix restoration by surfacing is 1.5 – 20 times lower than that of a new matrix from 3Kh3M3F steel. 19 Ref., 4 Fig.

Keywords: press tools, wear, resistance to thermal erosion, adhesion resistance, hardfacing, self-shielded flux-cored wire, medium-chrome steel, durability, restoration cost

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