

EXPANDING THE FUNCTIONS OF THE DIAMOND-ABRASIVE TOOL OF THE WATER-FREE ELECTRIC DISCHARGE GRINDING PROCESS

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The rise of information in industrial service of the demands of modern civilization intensifies the competition between technologies and stimulates the concentration and integration of innovations in the development of technical systems, in particular, electric-discharge diamond grinding [1].

The planetary problem of shortage of drinking water [2] raises issues of monitoring [3], restrictions and frugality in its use [4], including an extended transition to alternative minimally water-intensive and waterless industrial technologies for machining [5].

The exclusion of water from the zone of cutting contact of the diamond-abrasive tool contributes to a simplified supply of electric current to the processing zone directly through the body of the grinding wheel with its partial electrical insulation along the seating surfaces. This eliminates the need to modernize the grinding headstock of the machine. Such experience was obtained for diamond spark grinding [6], which, due to the controlled action of electric discharges, provides stable processing performance. An increase in both the cutting ability of the tool and its total resource, which is also important in automated processes, is facilitated by anhydrous diamond-abrasive machining with the supply of solid lubricant to its zone, which is performed along the working surface of the grinding wheel in a zone autonomous to cutting [7].

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