DYNAMICS OF HYDRAULIC DRIVE OF HANGING SWEEPING EQUIPMENT OF DUST-CART WITH EXTENDED FUNCTIONAL POSSIBILITIES

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Abstract: *Simplified mathematical model of the hydraulic drive group of series connection hydraulic motors of hanging sweeping equipment of dust-cart is offered. Approximate analytical dependencies of pressure on inputs of hydraulic motors and the angular speeds on shafts of motors from time and the main parameters of hydraulic drive are obtained.*

Keywords: *mathematical model, the conversion Laplace, hydraulic drive, sweeping equipment of dust-cart, solid waste*

The introduction

On today collection of solid domestic wastes, sweeping of streets, roads and sidewalks comes true by separate communal machines: dust-cart and sweep-harvesters accordingly [1, 2].

The usability of street sweepers is extremely ineffective (low coefficient of load) so far as they are used rarely mainly in autumn and spring period's [3]. Rest of the time, the sweeping of the street and sidewalks comes true by yardmen's which work in the harmful terms. That is why is suggested to settle these problems in a complex, creating on a base of dust-cart an ecological machine by development of hanging sweeping equipment by dust-cart would be equipped. It will extend functional possibilities of dust-cart and considerably will lower the charges of communal services. Especially it topically for small cities and settlements of urban type, where maintenance of a few communal machines which execute different functions make difficulty in local budgets. According to Resolution of Cabinet of Ministers Ukraine #265 [4], providing an application of modern highly efficient dust-cart in the municipal economy of the country is urgent scientific and technical task. In particular, actual there is a problem of development of new constructions dust-cart with extended functional possibilities.

Organization of a Task of Investigation

The mathematical model of group hydraulic drive with serial connection of hydraulic motors of hanging sweeping equipment of new ecological machine (on base of dust-cart) for cleaning of populated areas from the solid wastes is published in work [5] and protected by patent of Ukraine [6], as a substantially nonlinear system of differential equalizations, that can not be solved by the known analytical methods in the possible limits of error.

The aim of the study is to determine the dependence's of factors of the load process solid waste by means of hanging sweeping equipment in box of dust-cart from the basic parameters of the hydraulic drive him to develop further methods of design calculations for new constructions dust-cart with extended functional possibilities.

In fig. 1 is present a scheme for calculating of simplified mathematical model of hydraulic