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ANALYSIS OF THE STATE ON CONTROL BY BALLING PROCESS FOR SURDENING MATERIALS IN DRUM PELLETIZERS

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The analysis of the known systems of automatic regulation by balling process for surdening in drum pelletizers, and also applicability of methods statistical optimization for control of mentioned process. The methodological features of calculable researches of balling process from position control are described.

Keywords: burdening materials, balling process, drum pelletizer, adjusting systems, methods of statistical optimization, control

In connection with the deficit of rich on iron ore materials on the enterprises of ferrous metallurgy of Ukraine все more active the concentrate of the deep enriching which contains a to 90..95 % faction a 0.0,04 mm finds application. Quality of the noted concentrate is determined mainly by efficiency of process of грудкування of materials of charge in грудкувачеві.

Considerable experience of creation of CAP is presently accumulated by the process of грудкування, majority from which is based on adjusting of presentation of amount of moistening liquid. Thus the purpose of such adjusting was or stabilizing of eventual humidity of charge [10], or maintenance of certain correlation a "expense of charge is an expense of water" [16], or stabilizing of grain-size distribution of грудкованої charge [4]. The adjusting systems, that it is based on two first principles, work effectively in the case when physical properties of materials of charge do not change. Defect them consists in the necessity of adjustment of value of OMC during treason of physical properties of materials of charge. noted defect CAP of humidity of charge is deprived, based on stabilizing of grain-size distribution of грудкованої charge. However for such system characteristic is absence of account of technological parameters of work of грудкувача : his speeds of rotation and angle of slope which results in the loss of management quality.

Obviously, that for the removal of the indicated defect necessary is control system by the process of грудкування, which would allow complex to take into account all parameters which manage, is humidity of materials of charge, speed of rotation and angle of slope of грудкувача. For the decision of such task most expedient is application of САУ by the process of грудкування, which has a two-tier structure.

For the search of optimal management drum грудкувачем apply the methods of the mathematical programming [17]. It should be noted that the known algorithms of static optimization are oriented mainly to the certain structure of mathematical model and assume only her self-reactance adaptation. Considerably anymore flexibility in the question of clarification of model structure have methods of recognition of patterns.

The methods of recognition apply, mainly, for prognostication of motion of technological process, id est prophecy of parameters which characterize a process, and also for attributing of the expected mode to one of the classes - typical modes [set in good time 21]. Obviously, that the common use of methods of optimization and methods of recognition allows to promote efficiency of management technological processes [22].

The algorithm of static identification optimization allows to decide the task of optimal management technological processes without bringing in of the traditional mathematical raising of such tasks as an objective function and limitations.

Process control of грудкування of iron-ore materials in drum грудкувачах consists in a choice and realization on the technological object of optimal values of parameters which manage, to which take the measure of moistening of charge, speed of rotation and angle of slope of drum грудкувача. For the decision of this task it is necessary to realize the effective algorithm of management. Development of САУ of process of грудкування of materials of charge must include a synthesis and analysis of a few variants of algorithms which manage, from which it is necessary to choose the best on the corresponding criterion of efficiency. Thus researches of control system, which are developed, carry out by means of analytical, experimental and calculable methods [28].

The most acceptable to two-tier control system process of грудкування of materials of charge are calculable methods, based on the construction of model of control system and study of her on computer by the method of statistical tests [28]. This method is an original calculable experiment. Essence of work of model of control system consists in the following. The generator of indignations forms the value of percentage of factions of initial materials of charge of Mi. In the block of search of optimal managements after mattered revolting actions with the use of algorithm of management, the optimal values of parameters which manage W determine, n and α. Values of the noted parameters enter model of technological process, where with the use of analytical dependences determine factious composition of грудкованої charge .

Application of such imitation of control system is related to the decision of row of methodological problems :

- problems of analysis of technological process and stowage of him formal specification, id est exposure of structure of the system, authentication of her components, development of model of process, adapted to the use in calculable experiments;

- problems of statistical design on computer, id est to the analysis of statistical conformities to law of casual functions, receipt of pseudocasual numbers, development of numerical models of casual functions which imitate the real casual processes on computer, and also statistical treatment of results;

- implementation actually of imitation experiment for research of efficiency of control system and determination of requirements which are produced to computing facilities for the successful functioning of the synthesized algorithm of management on the real object.

During researches of two-tier control system by the process of грудкування of materials of charge in drum грудкувачах the concrete decision of the noted problems development of package of designings softwares, which allow to execute the calculation of the stationary modes which arise up in the process of грудкування of initial charge after treason of parameters of work of drum грудкувача, serves as, and also to the measure of moistening of materials of charge and initial factious composition.

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