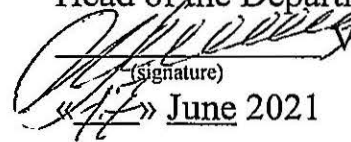


BELARUSIAN NATIONAL TECHNICAL UNIVERSITY
Faculty of Mechanical Engineering
Department of << Mechanical Engineering Technology >>

APPROVED BY
Head of the Department


(signature) V.K. Sheleg
«17» June 2021


CALCULATION AND EXPLANATORY NOTE
DIPLOMA PROJECT

«Analysis of the typical technological process of manufacturing gears and development of the technical process of mechanical processing of the crankshaft distribution gear. Production volume is 180 thousand parts per year».


Specialty 1 - 36 01 01 "Technology of mechanical engineering»

Specialization 1 - 36 01 01 01 "Technology of mechanical assembly production»

Student group No. 1031117



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initials and surname

Head of the diploma project


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Consultants:

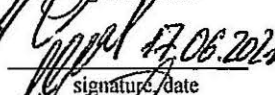
Technological part


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initials and surname

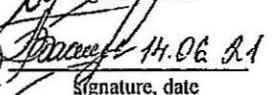
CAD part


signature, date Assistant. P.A. Avgustovsky
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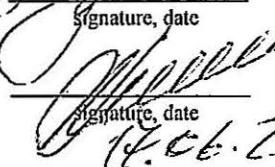
Occupational safety


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Economic part


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Project scope:

Calculation and explanatory note – pages

Graphic part – sheets

Minsk, 2021

ABSTRACT

Diploma project: 157 P., 18 Fig., 33 Table., — Sources, 01 App.

Analysis of the typical technological process of manufacturing gears and development of the technical process of mechanical processing of the crankshaft distribution gear. The volume of production is 180 thousand pieces per year.

The object of the development is the technical process of manufacturing gears in mass production.

Project objective: to develop a progressive technical process of gear machining with a feasibility study of the decisions made.

During the design process, the following changes were made to the basic technical process:

1. A method for obtaining a blank by stamping on a CHSP (crank hot stamping press) in closed dies instead of open ones is proposed.

2. The sequential processing of the gear teeth on two 5C268 and 5C269 gear drawing machines has been replaced by processing on a single GLISSON 724 machine with two working positions (roughing and finishing).

3. For the operation of drilling three inclined lubrication holes, instead of the vertical drilling machine 2N125, an aggregate drilling semi-automatic machine of the model 1KHMA744 is used, on which three holes are processed simultaneously.

4. In the grinding operation of the hub and the adjacent end face, instead of the 3M151E circular grinding machine, a model 3T151 semi-automatic circular grinding machine is used for their simultaneous processing.

5. The design of a mechanized device for turning operations has been developed.

6. An active form of size control is proposed for grinding the surfaces of the part.

The objects of possible implementation of the elements of the diploma project can be:

1. The proposed method for obtaining a blank by stamping on a CHSP (crank hot stamping press) in closed dies.

2. The design of a mechanized device for fixing the part on the turning operation.

3. The design of the three-contact measuring system for the operation of grinding the surfaces of the part.

The calculation and analytical material presented in the diploma project objectively reflects the state of the developed technical process, the theoretical and methodological provisions and concepts borrowed from literary and other sources are accompanied by references to their authors.

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