BELARUSIAN NATIONAL TECHNICAL UNIVERSITY

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Faculty of Mechanical Engineering Department of Mechanical Engineering Technology

APPROVED FOR PROTECTION
Head of the Department
C. Sheleg
June 2021

EXPLANATORY NOTE GRADUATION PROJECT

"Analysis of typical mechanical processing of gears and development of a technological process for manufacturing a planetary wheel. The volume of production is 120 thousand pieces per year

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

Specialization 1 - 36 01 01 01 "Technology of-mechanical assembly production" Student groups 10311117 S.M.P.M.Jayarathne signature, daté. initials and surname Head of the diploma project Professor V.K. Sheleg initials and surname Consultants: on the technological part Professor V.K. Sheleg Initials and surname Assistant P.A Avgustovsky CAD part Initials and surname Occupational safety Senior Lecturer Y. N. Fasevich ignature, date initials and surname 14.06.21 accede on the economic part Senior lecturer L.V. Butor initials and sumame Responsible for standard control Professor V.K. Sheleg initials and surname Project scope: Calculation and explanatory note pages

Abstract

Diploma project: 143 P., 14 Fig., 31 Table, — Source, 1 App.

"Analysis of typical mechanical processing of gears and development of a technological process for manufacturing a planetary wheel. The volume of production is 120 thousand pieces per year"

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

The purpose of the project: to develop a progressive technical process for mechanical processing of a gear with a feasibility study of the decisions made.

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

on

- 1. A method is proposed for obtaining a blank by stamping on CHSP in closed dies instead of open ones.
- 2. It is proposed to concentrate all rough turning of a part on a horizontal eight-spindle semi-automatic machine 1B240P-8K with double indexing. Due to this replacement, two turning operations are excluded from the technical process, which were carried out respectively on the horizontal six-spindle semiautomatic device KA-104 and the multi-cutter semiautomatic device 1N713.
- 3. At the operation of gear milling, a prefabricated worm cutter with a polished (unprocessed) profile of replaceable racks is used as a cutting tool.
- 4. At the end-face grinding operation after HTT, the 3M151V cylindrical grinding machine was replaced by a 3B153T semiautomatic end-face cylindrical grinding machine.
- 5. The design of a special gear hobbing device with a mechanized drive has been developed, designed to fix the gear on the tooth milling operation.
- 6. The design of a chain overhead conveyor for interoperational transportation of a part has been proposed.

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