

# **PROIECTAREA SI FABRICAREA COMPONENTELOR DIN MATERIAL PLASTIC INJECTAT**

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**Teză de master**

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## REZUMAT

BABEI VITALIE. Proiectarea si fabricarea componentelor din material plastic injectat. Universitatea Tehnica a Moldovei, Facultatea de Inginerie Mecanica, Industrialasi Transporturi; Departamentul Tehnologia Constructiilor de Masini; 2019. Teza de master: pag. 57; desene – 63.

Lucrarea de fata se bazeaza pe studiul teoretic privind matritele de injectat, materialele plastice care se folosesc in matrite de injectat si tehnologia proiectarii si fabricarii pieselor din mase plastice.

Capitolul 1 intitulat „Tehnologia injectarii” este un capitol care cuprinde notiunile generale despre matrite de injectat mase plastice. El prezinta principiile injectarii, componentele principale dintr-o matrita. Urmeaza cu o detaliere asupra functionarii unei matrite. De asemenea descrie materialele din care se construiesc matricele, si incheie cu o clasificare a tipurilor de matrice si masini de injectat.

Capitolul 2 numit „Materiale plastice folosite pentru matrice de injectat” este o continuare a celui anterior si pune accent pe diversitatea maselor plastice si importanta alegerii corecte proiectarea materialului din care urmeaza sa fie fabricata piesa.

Capitolul 3 numit „Tehnologia proiectarii pieselor din plastic injectat”, abordeaza problemele care apar in timpul fabricarii pieselor si referintele de baza pentru imbunatatirea proiectarii unor caracteristici geometrice in scopul obtinerii unor suprafete de o calitate superioara si a elementelor de suport si ansamblare cu proprietati fizice mai bune in proiectarea plasticului la etapa incepatoare de productie a pieselor in domeniul automotive.

Capitolul „Concluzii” este un capitol final in care se trag concluzii cu privire la lucrarea scrisa.

## SUMMARY

BABEI VITALIE. Design and manufacture of the injected plastic components. Technical University of Moldova, Faculty of Mechanical Engineering, Industrial Engineering and Transports; Department of Machine Building Technology, 2019. Master thesis: page 57; drawings - 63.

The present paper is based on the theoretical study of injection molds, plastics used in injection molds and the technology of designing and manufacturing plastic parts.

Chapter 1 entitled „Injection Technology” is a chapter that contains general notions about injection molds. It presents the principles of injection, the main components of a matrix. It follows with a detail on the functioning of a mold. It also describes the materials from which the matrixes are built, and concludes with a classification of matrix types and injection machines.

Chapter 2 called „Plastics used for injection molds” is a continuation of the previous one and focuses on the diversity of plastics and the importance of choosing the correct design of the material from which the parts are to be made.

Chapter 3 called „Design technology of the injected plastic” addresses the problems that arise during the manufacturing of the parts and the basic references for improving the design of geometric features in order to obtain superior quality surfaces and the support and assembly elements with physical properties good in plastic design at the beginning of the production of parts in the automotive field.

Chapter „Conclusions” is a final chapter in which conclusions are drawn about the written work.

**Cuvinte cheie.** asamblare, sudare, caroserie, automobil, linie tehnologică, sisteme de producție, sisteme flexibile de fabricatie, manipulator.

**Keywords.** assembly, welding, bodywork, automobile, technological line, production systems, flexible manufacturing system, manipulator.

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## **Introducere.**

Formarea prin injectie a cunoscut o crestere constanta de la sfirsitul anilor 1800. Evolutia tehnicii a inceput de la productia de lucruri simple, cum ar fi piepteni si butoane la produsele de larg consum, industriale, medicale si aerospatiale.

Inventia unei masini de turnare prin injectie a fost realizata de John Wesley, care a injectat celuloidul fierbinte intr-o matrita care a dus la bile de biliard care au fost folosite ca inlocuitor pentru fildes, care se baza pe tehnica de turnare sub presiune pentru metale.

Industria a progresat incet de-a lungul anilor, producatoare de produse cum ar fi suruburi, butoane si piepteni de par. industria sa extins rapid in anii 1940, deoarece cel de-al doilea razboi mondial a creat o cerere imensa pentru produse ieftine, produse in masa. In 1946, inventatorul american James Watson Hendry a construit prima masina de turnare prin injectie cu surub, care permite un control mult mai precis asupra viteza injectiei si calitatea articolelor produse. Aceasta masina a permis, de asemenea, ca materialul sa fie amestecat inainte de injectare, astfel incit materialul colorat sau reciclat sa poata fi adaugat la materialul virgin si amestecat bine inainte de a fi injectat.[2]

Dezvoltarea progresiva a industriei materialelor plastice datorataaparitiei a numerosi polimeri noi cu caracteristici foarte diferite si a perfectionarii tehnologiilor de prelucrare a acestora, a determinat extinderea amestecului a aplicarii materialelor plastice in ultimii 30 de ani, aparitia a numeroase produse din polimeri sintetici sau naturali modificati, inlocuitori ai metalelor sau ai altor materiale deficitare, care au invadat mediul artificial in care evolueaza viata oamenilor, influentind in mod determinant evolutia economico-sociala. In ultimii 60 de ani productia de materiale plastice s-a dublat practic la fiecare 5 ani.[3]

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