

DESIGN OF A BEVEL GEAR PRODUCTION BY PRECISION FORGING

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Academic year: 2020/2021

Abstract: The aim of this project was to design an innovative production process of the existing bevel gear as a part of the Faculty collaboration with HKS Forge, s.r.o. in Trnava. The current forging process is rather inefficient and precision forging represents an effective strategy for its improvement. In the process of innovation, three approaches utilizing different billet type and production sequence were designed. To verify the designed processes, the DEFORM 3D simulation software was utilized to generate forging simulations. These simulations were then used to evaluate the correctness of the material flow inside the die cavity. The attained results indicated that precision forging of a tubular billet was the optimal design approach. The contribution of establishing this precision forging process lies in the reduction of production costs. Although, this reduction is limited by the increase of maintenance costs owing to tighter dimensional tolerances of the forging die.

Keywords: bevel gear, precision forging, innovation proposal, simulation program

DESIGNING THE MANUAL CONTROL FOR A HEAT WELDING MACHINE

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Pracovisko: CJHŠ

Rok vypracovania: 2020/2021

Abstrakt: The contribution is about developing a manual control mode for the hot plate welding machine, increasing thus the particular device efficiency and exceeding its scope of operation. The aim was to program a fully functional manual control mode for hot-plate welding machine and easy to use human-machine interface. In introduction welding of plastics, machines for welding of plastics are described, followed by aim and procedure of my work. This project was developed for Mincovňa Kremnica š.p. and had to meet the company's requirements.

Kľúčové slová: plastics, welding, machine, manual control

STU MTF STUDENT PART-TIME AND SUMMER JOBS OPPORTUNITIES AND IT'S IMPACT ON THEIR STUDY

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Workplace: CJHŠ

Academic year: 2020/2021

Abstract:

Aim of the contribution was to find if STU MTF second year full-time students have a job alongside their study and how they manage both. I chose this topic because I do not work now and I was curious how my schoolmates are doing. In my survey I used a questionnaire with nine questions. The results showed that more than a half of 58 respondents work, but only 11% work in their study field. Their main reason for work is financial situation. And the survey also showed that more than 60% of students want to change negative impact on their study.

Keywords: questionnaire, students, part-time job, study field, impact

4IDEA.SPACE – community and network hub

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Academic year: 2020/2021

Abstract:

Our work aims to present and introduce a virtual community place (4idea.space) for students, employees of STU MTF and experts from industrial companies. We have been developing the portal since July 2020. The main idea of the community portal is to bring an extracurricular education to the people of STU MTF as well as new opportunities to participate in school and industry research projects. Overall, the web portal is divided into three main sections: education, project & coworking and job portal. The education section provides courses from various areas of science or free-time activities. Students, teachers, and people from practice can create their courses. The main purpose of project and coworking is to help people expand their team of experts or students. Users can create or sign up for a certain project. The job portal is intended for those working in the business, academic sphere, or manufacturing to address students and employees of STU MTF to apply for various positions like job offers or project participation. 4idea.space is a virtual community space that provides networking for STU MTF. It is the perfect place to improve the interdisciplinary collaboration between institutes of the faculty and as well closer interconnection with industries. Key words: WordPress, learning management system, job offers, projects, web page.

AIR DECOMPOSER-REGENERATOR CARBON CAPTURE DEVICE

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Year: 2020/2021

Abstract: Carbon dioxide (CO₂) is a greenhouse gas contributing to climate change. It is considered to be the main culprit of global warming. The levels of carbon dioxide are higher than at any point in the past 800 000 years. The amount of CO₂ in the atmosphere has mostly risen due to burning of the fossil fuels.

We present a scalable electrolytic conversion of the atmospheric CO₂ into carbon nanoparticles. Carbon nanoparticles are a very valuable commodity with the potential for many applications. The consumption of CO₂ has been accomplished by the electrolysis of lithium carbonate. It has been proved that 1-hour electrolysis can consume 0.8 grams of carbon dioxide and produces 0.2 grams of carbon nanoparticles.

This project aims to build a system able to continuously consume CO₂ and produce carbon nanoparticles in a single step. To make the system eco-friendly sunlight will be used as the only energy source. The entire system will be stored in a little convenient box called ADR. This box would be available for purchase by anyone who wishes to contribute to the mitigation of climate change.

Key words: climate change, carbon dioxide, electrolysis, carbon nanoparticles, ADR

LEARNING STYLES OF STUDENTS AT MTF STU AND THEIR EDUCATION PREFERENCES

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Supervisor: Mgr. Ľudmila Hurajová, PhD.

Institute: Department of Languages and Humanities

Academic year: 2020/2021

Abstract: The aim of this work is to elicit what learning styles the STU MTF students use for effective learning to recommend and propose some ideas how to foster gaining knowledge and skills. To collect the data we have conducted a questionnaire with 8 questions using 5 multiple-choice questions and 3 single choice questions.

The answers achieved from 159 students indicate that the most preferred and efficient sources are books, education websites, portals and, podcasts. These data could be also useful for teachers for preparing their lessons. The findings have produced some recommendations for establishing rich education environment for students by designing and building chill-out zones for students, a book club, developing community portal 4idea.space for enhancing extracurricular learning also by running an education podcast.

Key words: learning styles, learning sources, questionnaire, effective learning