

СУЧАСНІ ВЕРСТАТИ

Веселовський Я.П.

Науковий керівник – викл. Насонова Н.А.

Since beginning of the human race, people have evolved tools and energy sources to power these tools to meet the requirements for making the life more easier and enjoyable.

Today one of the features of the century is an extraordinary growth of electronic, automatic, micro technologies. There is also a sharp rise of unconventional techniques and technologies. Metal cutting machine tools are the main type of equipment in machine building and instrument-making. Metal cutting machine tools are intended for the performance of a variety of operations on a wide range of products. A uniform system of classification of metal cutting machine tools is based on the nature of the processing to be performed and the type of cutting tool used.

The non-conventional manufacturing processes may be classified on the basis of type of energy, namely, mechanical, electrical, chemical, thermal or magnetic, applied to the workpiece. It is possible to get the desired shape transformation or material removal from the work surface by using different mechanisms.

Non-traditional manufacturing processes harness energy sources considered unconventional by yesterday's standards. Material removal can now be accomplished with electrochemical reaction, high temperature plasmas and high-velocity jets of liquids and abrasives. Materials that in the past have been extremely difficult to form, are now formed with magnetic fields, explosives and the shock waves from powerful electric sparks. Material-joining capabilities have been expanded with the use of high-frequency sound waves and beams of electrons and coherent light.

The non-conventional manufacturing processes are not affected by hardness, toughness or brittleness of material and can produce any intricate shape on any workpiece material by suitable control over the various physical parameters of the processes.

Unconventional machine tools employ superheated gases, heat, light, chemical electrical, sonic energy and high-energy particle beams to shape the exotic materials and alloys that have been developed to meet the needs of modern technology. . All the new technological applications have an unconventional character, but after they became known and applied, they are rapidly turn into conventional ones. Metal cutting facilitates scientific and technical progress, as well as the development of the technology and organization of machine-building production.