

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
ФАКУЛЬТЕТ ІНОЗЕМНОЇ ФІЛОЛОГІЇ
ТА СОЦІАЛЬНИХ КОМУНІКАЦІЙ**



**СОЦІАЛЬНО-ГУМАНІТАРНІ
АСПЕКТИ РОЗВИТКУ СУЧАСНОГО
СУСПІЛЬСТВА**

**МАТЕРІАЛИ V ВСЕУКРАЇНСЬКОЇ НАУКОВОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ,
АСПРАНТІВ, ВИКЛАДАЧІВ ТА СПІВРОБІТНИКІВ**

(Суми, 20-21 квітня 2017 року)

**Суми
2017**

Another option is classification of the five-axis machines depending of the Z-axis location and the axis types configuration. By default, Z-axis is spindle axis, and therefore, spindle location determines the machine type (vertical or horizontal). The particular configuration depends on two of the three rotation axes used and their location. Catalogues review presented the advantages, features and fields of the application of their particular configuration.

It should be noted that path generation and vibrations are the main key points for improvement of five-axis machining. Path strategies developed from linear to advanced trochoidal ones with features detection. The high-speed machining is the main approach to finish five-axis machining, but other approaches are also used. Because of low rigidity the vibration during five-axis machining could be both regenerative and depend on tool rotation speed and rigidity of the machining system.

From the analysis of methods of increasing the efficiency of five-axis machining, it was concluded that it is advisable to conduct further research (theoretical and practical) in the field of improving the effectiveness of a particular type of a part.

REVIEW AND COMPARATIVE ANALYSIS OF NATIONAL AND GLOBAL METHODS OF ENERGY SECURITY RISK INDEX CALCULATON

K. V. Gryshko – *Sumy State University, group PhD- 62*

A. M. Dyadchko – *EL Adviser*

Economic security is an essential component of the national security, which provides the conditions for stable state development and resistance to external and internal threats. One of the important components of state economic security is energy security. In Ukraine, the assessment of energy security as a component of the Ukrainian national security is carried out in accordance with the Methodological Recommendations for calculating the level of economic security of Ukraine, developed by the Ministry of Economic Development and Trade of Ukraine. According to these recommendations, the formation of an energy security index consists of the following stages: the formation of an indicator set, the determination of characteristic values, normalization of indicators, weight coefficients determination and an integral index calculation.

The methodology of the energy security risk index calculation, adopted by the U.S. Energy Institute and the methodology of the International Energy Agency are the most common in the world. The main purpose of these methods is to obtain a single energy security risk index using existing data to calculate sub-indexes that describe geopolitical and economic conditions and environmental risks.

The comparative analysis shows the differences that exist in approaches to the standardization of individual indicators, the number of sub-index and the determination of weight coefficients for them. We identified the national approach deficiencies. There is a limited scope of the energy security aspects, the lack of a basis for comparison and the lack of a long statistical data series for energy security indicators, the slow updating of thresholds for indicators that is included in the normalization algorithm.

THE ORIGIN OF WATER HAMMER IN DISPLACEMENT PUMPS

D. Zabitsky – Sumy State University, group PhD-62

A. M. Dyadechko – E L Adviser

For a long time, a man has learned to use the liquid to his advantage. This has led to the emergence of such a machine as a pump, a hydraulic machine which converts the energy of the drive motor into the hydraulic energy of the fluid flow. Pumps in the narrow sense, are hydraulic machines which work only with elastic liquids. They are divided into two main groups: dynamic and displacement ones.

The main operating characteristics of pumps are the pressure and feed efficiency. Pumps are used safely with safety valves and their variants for providing proper operation. When we use these machines in a network the water hammer, a sudden valve overlap, arises. Dynamic changes of pressure are called pressure pulsations or water hammer. The term "water hammer" is used to adverse effects accompanied by pressure pulsations, like hammer blows can affect the system pipelines and their components. This phenomenon is the cause of additional increase in dynamic load on the pipeline, valves, fastening elements, calipers, and other system components.

Water hammer phenomenon was described quantitatively in 1897-1899 by N.E. Zhukovsky. It can not occur in the pipelines containing gas