

UDC 62

**Gao Xingmin**, PhD student

National Technical University of Ukraine «Ihor Sikorsky Kyiv Polytechnic Institute»,  
[18152022190@163.com](mailto:18152022190@163.com)

## CURRENT STATE AND PRICE POLICY OF VICE PRODUCTION IN CHINA

The relevance of the study is due to the need for a detailed analysis of the current state of production of vices in China by leading companies, price policy and the growing demand for universal vices. The purpose of the work is to analyze the current state of production of vices in China and to find new ideas and approaches to improve and create new designs of vices with expanded functionality for clamping complex-profiled objects with different physical and technical properties [1, 2].

The current state of vice production in China.

Until the middle of the 19th century, China was a traditional feudal agricultural country, and the Chinese economic system was a self-sufficient small-scale peasant economy that created households as units. Industrial production at that time belonged to traditional craft production. The industrial revolution, which began in European countries in the 18th century, entered the industrial society. Because of this, China and Western countries have a fundamental difference in the economy. Also, the contradiction between the two sides over foreign trade gradually intensified. The first opium war of 1840. After the war, the Qing government that ruled China was forced to open up to the outside world. Against this background, in 1861, the Qing government began a westernization movement. China's modern industry began with the westernization movement in the 1860s. After more than a hundred years of development, it has become the main driving force behind China's development as a modern country. By the time the People's Republic of China (PRC) was founded, it had inherited a large number of industrial facilities that had been destroyed by war and destroyed when the PRC was on the mainland. After relations with the Soviet Union broke down, China groped and advanced on its own, and once again completed the development of modern industry. Until now, China is still working hard to develop its industry, and many companies have been established. Below are a few companies related to process equipment and vices in particular.

**Ningbo Changcheng Seiko Industrial Co. Ltd. 宁波长城精工实业有限公司** [3]. Founded in August 1984, it is a leading enterprise in China's hardware industry and recognized by the industry as the first Chinese hardware measuring instrument brand. The products are widely used in many industries, such as power construction, steel and coal, railway transportation, petrochemical industry, building decoration, shipbuilding, heavy industry, water conservancy, construction machinery, electronic telecommunications, military industry, etc. Shanghai Hanton Tools Co., Ltd. Hanton Tools was founded in Shanghai in 2003. The team has been developing and building international markets such as Europe and the United States for over a decade. It enjoys the reputation of the "King of the Hammers" in the industry. Its products are sold in more than 100 countries. A tooling business that integrates with sales and strives to improve cost efficiency. In 2014, the tool brand "Handun" independently developed 75 sets of installation tools and won a number of public recognitions, such as the Shanghai Award for Excellent Innovative Products of Light Industry. In 2015, we were the first to offer a standardized full-fledged after-sales service. Service advocacy largely meets the needs of most operators and consumers.

**Hardware Shanghai Minate/MNT/美耐特** [4]. Minate Group; is an enterprise that integrates research and development, production and sales. The group company has the trademark "DEGUQMNT Minate" for the production of DC mini electric grinders, cordless engraving machines and DC blowers. She has more than 50 patents. Shanghai Minate Hardware mainly

focuses on power tools. In 1998, the products expanded into automotive maintenance, electronic tools and other industries.

**Endura力易得** [5]. Since its establishment in 1998, the Endura tool brand has been engaged in the research and development, production and sales of industrial hand tools. Its ENDURA brand provides users with complete sets, insulation tools, plumbing tools, pliers, explosion-proof tools, special automotive maintenance tools and other support solutions with more than 3,600 products in 20 categories widely used in industry and mining, technical car maintenance, construction equipment, property and home improvement. Appearance and other quality indicators meet and exceed American ANSI standards, German DIN standards and Chinese national standards. After 20 years of hard work, Liyide's sales network has spread to 32 provinces and cities across the country and 10 countries and regions, including Australia, the Philippines, the United Kingdom and South Africa.

**Linyi City Hedong District Juyoupin Hardware Tools Co., Ltd. 山东易之力工具有限公司** [6]. Yizhili brand is owned by Linyi Hedong District Juyoupin Hardware Tools Co., Ltd., which was established in 2012. It is a well-known brand of hardware tools and is a professional manufacturer of tool boxes, plastic tool boxes, plastic iron tool boxes, tool bags, tool sets and other products. Manufacturing and processing companies, the product quality is recognized by the industry. The company owns its own brand Yizhili, which is a well-known brand of hardware tools. Its main products include: power tools, garden tools, welding equipment, etc. **绿林/greener**. Yantai Lvlin Tools Co., Ltd. was founded in 1992. After more than 20 years of hard work, she has formed a production, supply and sales organization. Tool distribution system: Greenwood Tools has a developed and extensive tool distribution system in Jiaodong area. The registered trademark "Greenwood" has become a well-known brand in the world of tools. **hobert enterprise co., ltd. Hobert Enterprise Co., Ltd.** was established in 1995 and specializes in the production of various vices and spare parts for machine tools, especially double force vices. Haubert vices are made of cast steel FCD60, have high clamping force, small curvature, no deformation and resistance to bending loads.

**Deli Tools Co., Ltd.得力工具有限公司** [7]. Deli Tools Co., Ltd., established in 1998, is a hardware enterprise integrating research and development, design, production and sales. Application scenarios such as engineering, horticulture, electromechanical maintenance and household tools have maintained a leading market share for many years, and have become a leading brand in the Chinese tool industry. **Laizhou Hongyuan vice Manufacturing Co., Ltd. Laizhou Hongyuan Vice Manufacturing Co., Ltd.** was founded in 1998 as a result of the restructuring of the former Laizhou Deputy Factory. At present, it mainly produces products such as vices, ADIs, auto parts, construction machinery parts and power parts, which are sold to the United States, Canada, Australia, Japan and EU countries. The company has more than 50 years of history in the production of vices and has become the world's largest manufacturer of vices. With an annual production volume of 1.3 million bench vices, the quality of the product has been fully recognized by consumers. The self-developed table vise has received more than 50 domestic and foreign patents, has been recognized as a well-known brand product in China, and registered in the European Union, the United States and other regions. In April 2016, the Forward trademark was registered in the US and now has an international independent brand. An analysis of the price policy was also carried out to maintain positions on the world market in the face of competition and growing demand. Conclusion. As a result of the analysis, it is necessary to search for new ideas and approaches [1,2] to improve and create new constructions of vices with expanded functionality for clamping complex-profiled objects with different physical and technical properties.

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Дядя С.І., канд. техн. наук, доцент  
Козлова О.Б., канд. техн. наук, доцент  
Тришин П.Р., канд. техн. наук  
Яхно Д.А., аспірант

Національний університет «Запорізька політехніка», kozlova@zntu.edu.ua

## КОНТРОЛЬ КОЛИВАНЬ ПРИ КІНЦЕВОМУ ФРЕЗЕРУВАННІ РОЗПОДІЛОМ ЇХ НА ШВИДКІСНІ ЗОНИ

Прогнозування умов різання на металорізальних верстатах дозволяє планувати точність обробки, продуктивність, стійкість інструменту. Саме для цього будують пелюсткові діаграми стабільності, за якими для кінцевого фрезерування визначають межі осьової глибини залежно від частоти обертання шпинделя. В якості критерію оцінювання обрано співвідношення  $k$  частоти коливань  $f_c$  до зубцевої частоти  $f_z$  [1].

$$k = \frac{f_c}{f_z} = \frac{60f_c}{nz} \quad (1)$$

За цим показником розрізняють чотири зони (рис. 1), в яких є ділянки стабільності.

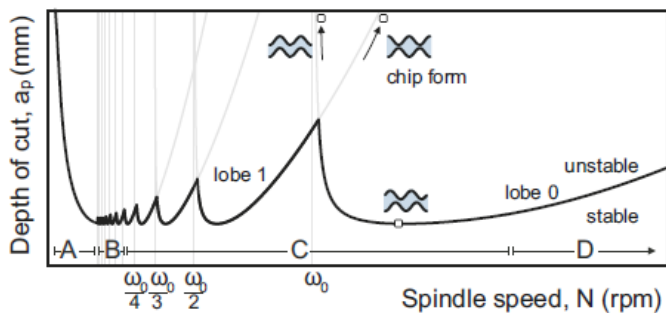


Рис.1 – Пелюсткова діаграма [1]

В зоні високих швидкостей  $C$  ( $3 > k > 0,5$ ) на поверхні різання практично не залишається хвилястість і діють тільки вимушені коливання. Зона надвисокої швидкості  $D$  ( $0,5 > k$ ) характеризується стабільністю різання через те, що зубцева частота набагато перевищує власну частоту інструменту або деталі. Але через механічні обмеження верстатів ця зона не завжди доступна. На підставі формули (1) частоту обертання шпинделя в залежності від оброблюваності матеріалу для сталого фрезерування в умовах стисненої регенерації, коли в зачепленні знаходиться кілька різальних зубів і відсутній холостий хід, можна розрахувати за формулою (2) і скоригувати вибором числа зубів інструмента.