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#### **Modular machine tool profession present situation and development ponder**

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#### [ABSTRACT]

Present state and development direction of modular machine tool technology and equipment at home and abroad are summarized. Some concepts of the author are set forth.

**Keywords:** Modular machine Development thinking Technological innovation

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Our country joins after WTO, the manufacturing industry faces opportunity and challenge coexisting. The Modular machine tool profession enterprise at the right moment adjusts the strategy, adopted positively should to the strategy, appeared has produced! Sells two prosperous good tendencies, up to September, 2002, an Modular machine tool profession enterprise only Modular machine tool product item, the output has reached 800 according to incomplete statistics, the output value reaches 3 above the hundreds million, in 2001 the same ratio grew above 10%, moreover Modular machine tool profession industry increase in value! Product sales rate! Whole staff total wages! The exportation delivery value and so on the economic indicator has the varying degree growth, new product! The new technology goes to the yearly average to have the large scale enhancement, the obvious profession enterprise operation condition is good”

## **1 Modular machine-tool technical equip present situation and trend of development**

The Modular machine tool and from the generation is the collection mechanical and electrical in a body synthesis automatic high technique of manufacture and the complete craft equipment, Its characteristic is highly effective! High-grade! The economy is practical, thus is widely applied in the project machinery! Transportation! Energy! War industry! Light industry! Professions and so on electrical appliances. Our country tradition Modular machine tool and the Modular machine tool mainly use from the generation machine! Electricity! Gas! The hydraulic control, its processing object mainly produces the Modular machine tool processing connecting rod which the batch quite big major and medium flask body class and the axis class components (the recent years developed! The board and so on also occupies certain share), completes the drill hole! Broaching! Reams, processes each kind of thread! Bore! Surfacing and lug boss, in hole boring each kind of shape trough, as well as milling plane and formed surface and so on. he Modular machine tool classification is many, has the large-scale Modular machine tool and the small Modular machine tool, has one-sided! Two-sided! Three! Horizontal type! Vertical! Inclined type! Compound expression, but also has the multi-location rotation table model Modular machine tool and so on; Along with the technical unceasing progress, one kind of new Modular machine tool, the flexibility Modular machine tool more and more receives people's favor, it applies the multi-position headstock! May trade the headstock! The code retinue jig and the cutting tool automatic replacement, matches by programmable controller (PLC)! Numerical control (NC) and so on, Along with market competition aggravating and to product demand, high accuracy! High productivity! Flexibility! Multi-varieties! Short period! The numerical control engine bed and is attacking the traditional Modular machine tool profession from the generation, therefore the Modular machine tool equips the development mentality must be by increases the group bed processing precision! Modular machine tool flexibility! The Modular machine tool operational reliability gathers the engine bed technology the complete set for the main attack direction. At the same time, the enhancement technology application, enhances the Modular machine tool product numerical control rate; On the other hand further develops the new part, the multi-coordinates part, causes its modulation in particular! Flexibility, adaptation adjustable invariable! Multi-variety processing market demand. Super velocity and super elevation precision processing

technical equip and compound! Multi-purpose! The multiple spindle control device and so on is welcome deeply. However more essential is the Modern Communication Technology in the engine bed equipment application, the information communication introduction causes the modern engine bed the automatic further to enhance, also has the quite big disparity in these aspect our country Modular machine tool equipment, therefore our country Modular machine tool technical equip high velocity! High accuracy! Flexibility! Modulation! Adjustable invariable! Random workable as well as the communication application will be the next development direction”



图 1 压缩机外支撑八工位回转工作台组合机床  
Fig. 1 Modular machine tool with 8-station rotary table for compressor outside supports

## 2 Modular machine tool profession development ponders

in the recent two years although the Modular machine tool profession production and marketing presents the trend of escalation, but in the profession some enterprise similar existence debt management situation, the primary cause is the traditional Modular machine tool product can satisfy the user flexibility! High accuracy! The short period market demand, simultaneously Modular machine tool profession some enterprises have the modern management level to be low! The brain drain is serious! The achievements in scientific research cannot transform rapidly as flaws and so on productive forces. For this proposed suggested as follows:



图 2 ZHS- XU86 凸轮轴轴承盖加工自动线  
Fig. 2 Automatic line for machining bearing cap of ZHSXU 86 camshaft

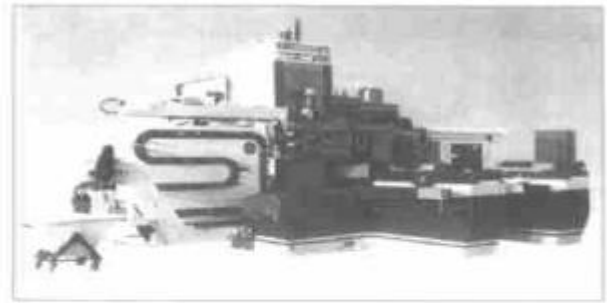


图 3 UD80 型换刀换箱柔性加工单元  
Fig. 3 UD80 type flexible machining cell for tool changing and box changing

(1) enhancement modern management level, after China joins WTO, the urgent need enterprise raises the modern management level, further deepens the enterprise interior reform, establishes the perfect adaptation market economy the operational mechanism./The establishment enterprise's science management system, achieves the centralization to be correct! Decentralization order! The authorization has the chapter! With the power having responsibility right intrinsic unification organic synthesis, is enhances the enterprise controlling force to have “must completely change the backward system, must set up the globalization management idea, sharpens the international market competitive ability, establishes the market rapid reaction mechanism, adapts the market demand which develops day by day”

(2) urgently awaited to sharpen the enterprise innovation ability “enterprise's survival, the key lies in the product the vitality” to march into Electronic Age today, the traditional Modular machine tool already cannot meet the high speed development domestic and foreign market requirement, this request enterprise had to adapt the science and technology rapid development, established the technological innovation system, the advancement enterprise's technology advancement, accelerated to the flexibility! Numerical control! High accuracy! The short period direction develops, enhances the Modular machine tool applicable scope and the market coverage; Simultaneously implements the name brand strategy, the struggle creates the world brand, accelerates our country Modular machine tool development advancement, causes Our country Modular machine tool Profession Enterprise to be in an impregnable position in the world manufacture domain.

In summary, the Modular machine tool profession must develop the technical

attack attacking and capturing current profession enterprise technological development difficult problem; Two must strengthen and the overseas joint capital cooperation, the use and the study overseas vanguard technology, enhances the enterprise the modern management level and the technical level; Three must through to introduce technical the digestion absorption to carry on innovates again, develops own product “through ours endeavor, causes our country truly by to make the great nation to turn makes the powerful nation”

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