Study on Public Service Platform for Castings and Forgings in Tiexi equipment manufacturing industrial cluster area, Shenyang city

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Tiexi district of Shenyang city is a big industrial district with equipment manufacture as its core industry. Since 2002, through relocation and reform, technology upgrade and product structure adjustment, the district now becomes an important industrial cluster area having various industries with considerable scale and technical level; the equipment manufacturing industry in the area becomes a pillar industry promoting local area economic development and the construction of industrial corridor of Shenyang-Tiexi. In 2006, the Tiexi's turnover in the equipment manufacturing industry accounts for 50% of that of Shenyang city and 13% that in Liaoning province. Casting and forging industry is an important foundation for the development of equipment manufacturing industry.

The necessity for constructing Tiexi Public Service Platform for Castings and Forgings

As a national important old industrial and equipment manufacturing base, the new Tiexi District has a strong casting and forging production capacity, which is spread in 12 enterprises including former Shenyang Heavy Machinery Group Co., Ltd. and Shenyang Blower Works (Group) Co., Ltd and the casting capacity in Tiexi accounts for 36% of that of Shenyang city. With China’s fast economic development, there is a higher and higher demand for end products. For example, automotive, heavy mining machinery, machine tool and general engineering industries all need considerable amount of components, mainly castings and forgings with high technical content, good quality which can be produced efficiently and supplied in a strong capacity. At present, the casting and forging enterprises in Tiexi have only limited production scale, obsolete equipment, outdated technology, low production capacity, long production cycle and low market share, poor economic profit and heavy burden; and are difficult to make high quality products. Except for poor management and operation problems, the ‘large and comprehensive’ and ‘small and comprehensive’ production structure cannot meet the demand for socialized large-scale production. Single variety of products are made in these companies and the products are overlapped each other in these companies, leading to strong internal friction in market competition. Therefore, it is necessary to fully play public service functions of government to construct a Public Service Platform for Castings and Forgings in Tiexi district to improve resource usage efficiency, to reduce product development and production cost. This is an effective breakthrough for promoting quality level and competitiveness of castings and forgings for Tiexi district.

The construction of Tiexi Public Service Platform for Castings and Forgings is a necessity for constructing China’s advanced equipment
manufacturing industrial base. According to the development direction of national equipment manufacturing industry, it is necessary to fully develop China’s basic industry including the important casting and forging industry to supply strong support and market-oriented, fundamental public service for equipment manufacturing industry.

Constructing Tiexi Public Service Platform and integrating casting and forging resources and processes is a demand for undertaking international industrial transfer. At present, the transfer of international manufacture industry, especially the basic component manufacturing industry has already tilted towards developing countries; China, no doubt, is a key country for international industrial transfer. Therefore, we need to integrate existing basic manufacturing processes and improve our comprehensive competitiveness.

Relocating the hot process sectors of Tiexi’s old equipment manufacturing enterprises into the industrial park, readjusting product structure based on specialization and large scale production, reallocating resource related facilities and constructing Tiexi Public Service Platform for Castings and Forgings — ‘Tiexi Casting and Forging Industrial Park’ is the necessity of market economy development and is a significant measure for equipment manufacturing enterprise renovation and reform in organization system and mechanism.

Principles of constructing Tiexi Public Service Platform for Castings and Forgings

1. According to the characteristics of socialist market economy, full play government’s guiding role, the role of market in resource allocation and the main role of enterprises;
2. Based on the existing, advanced resources of the equipment manufacture enterprises in Tiexi, relay on the key equipment manufacturing enterprises, emphasise introducing advanced resources of the domestic and foreign equipment manufacturing enterprises;
3. Give priority to the development of private equipment manufacturing enterprises;
4. Give full play of the role of scientific research institutes and universities.

Based on the principles of resource share, unified collaboration and production specialization, after meeting the needs for production for the enterprises in Tiexi, 20% of the total capacity in equipment allocation and production is left for Shenyang city, Liaoning province and North-east China area, with supplying the first class public service for these areas.

**Operation and management model**

Casting and forging (including heat treatment) processes are important processes in equipment manufacturing procedure, contributing 70% to the equipment products. Tiexi Public Service Platform for casting, forging and rough machining — ‘Casting and Forging Industrial Park’ under construction will realize multi-variety of product structure, at the same time emphasize the development of large and special castings and forgings for heavy mining, general engineering, defense and aerospace industries, etc.

The enterprises entering the industrial park will follow market rules, take new system and mechanism of modern enterprise to solve problems in system, ownership structure, labor relations and make market-oriented, specialized large-scale production. Infrastructure and public supporting facilities in the park including swage treatment, power transform station, gas station, boiler house, compressed air station, internal road, various power pipe and wire network, and special railway will be constructed with investment by Tiexi District government. These facilities will take uniform management and supply service to enterprises entered in the park as resource commodity.

**Target**

Based on the development of current and future products, the designed target for casting, forging and rough machining for Tiexi Public Service Platform see Tables 1, 2, 3 and 4.

**Project progress**

Located in the west Tiexi District, the industrial park is planned for 1.5 square kilometers land. For the first phase, the 800 000 square meters construction area will be completed by the end of 2007. Now, the internal roads for the first phase construction have already been completed. To date, nine enterprises, including Shenyang Foundry Plant, Shenyang Research Institute of Foundry etc. and the hot process sectors of Shenyang Heavy Machinery Group Co., Ltd, Shenyang Blower Works (Group) Co. Ltd. and Shenyang Mining Machinery Group Co. Ltd. have already entered in the park. Shenyang Casting and Forging

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Annual capacity of Tiexi Public Service Platform</th>
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<tbody>
<tr>
<td>Iron castings</td>
<td>Steel castings</td>
</tr>
<tr>
<td>80 000 t</td>
<td>60 000 t</td>
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</tbody>
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<th>Table 2</th>
<th>Products of Tiexi Public Service Platform</th>
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<tbody>
<tr>
<td>Steel castings</td>
<td>Iron castings</td>
</tr>
<tr>
<td>Low and high alloy steel, stainless steel, ultra-low carbon castings</td>
<td>Grey iron, compacted/vermicular iron, ductile iron, ADI, alloyed iron castings</td>
</tr>
</tbody>
</table>
Industrial Co. Ltd. has also been established by the reorganization of the hot process sector of Northern Heavy Industries Group Co. Ltd. and the casting sector of Shenyang Blower Works (Group) Co. Ltd. Four companies including Shenyang Heavy Machinery Group Co. Ltd. and Shenyang Research Institute of Foundry etc. have started to trial produce already.

In the park, a 20 000 square meters land is prepared for a rough machining center, which is constructed by readjusting and relocating some machining capacity of the existing, old equipment including vertical and horizontal lathes, mills and bores etc. to form an integration production of casting, forging and rough machining. In addition, by encouraging enterprises to list on stock market and introducing international strategic investors, the enterprises entering in the park will have multi-ownership and multiple capital investment; modernized enterprise system will be formed. Up to now, many casting and forging companies from USA, Japan and Korea have shown their extreme interests in entering the industrial park; some world top 500 companies, such as Japanese company IHI and Toshiba and French company ALSTOM intend to take the industrial park as a international outsourcing base for their castings and forgings and to give technical support to the park.

### Ancillary construction of Tiexi Public Service Platform for Casting and Forging

In order to promote comprehensive development of Tiexi industrial cluster area and fully play the service function of government, a public research and development platform, a public financial service platform, a public logistics and a personal training platform will be constructed in the industrial park.

#### (1) Public research and development platform

A public research and development platform—Tiexi Institute of Modern Industry will be constructed to supply service to enterprises entered in the industrial park. The Tiexi Institute of Modern Industry will meet the demand of the enterprises and open to whole China to undertake research and development projects and supply services.

#### (2) Public financial service platform

A public financial service platform will be built up to optimize investment and financial environment. This is a service platform supplying enough and guaranteed funds with capital market operation. For example, a ‘Liaoning-Shenyang equipment manufacturing industrial investment fund’ will be set up to supply credit lines to key projects etc.

#### (3) Public logistics platform

A public modernized logistics system platform will be built up to reduce production cost for companies in the park. The logistics platform will introduce well-known domestic and international logistics companies and their advanced managing technique to build up a comprehensive logistics cluster with various functions and open to whole China and meet various needs for different enterprises.

#### (4) Personal training platform

A personal training platform will be built up to supply intelligence service to companies in the park. A training center for hot process and enterprise management will be built up with help by universities and research institutes. A training center for technicians and skilled workers will be built up with help by Shenyang School of Equipment Manufacture.

All above supporting platforms will perfect Tiexi’ industrial system. We firmly believe that the Casting and Forging Industrial Park will effectively improve the casting and forging technical and quality level and significantly enhance the competitiveness. Welcome to Tiexi Casting and Forging Industrial Park. Choosing Tiexi Casting and Forging Industrial Park is choosing success.

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