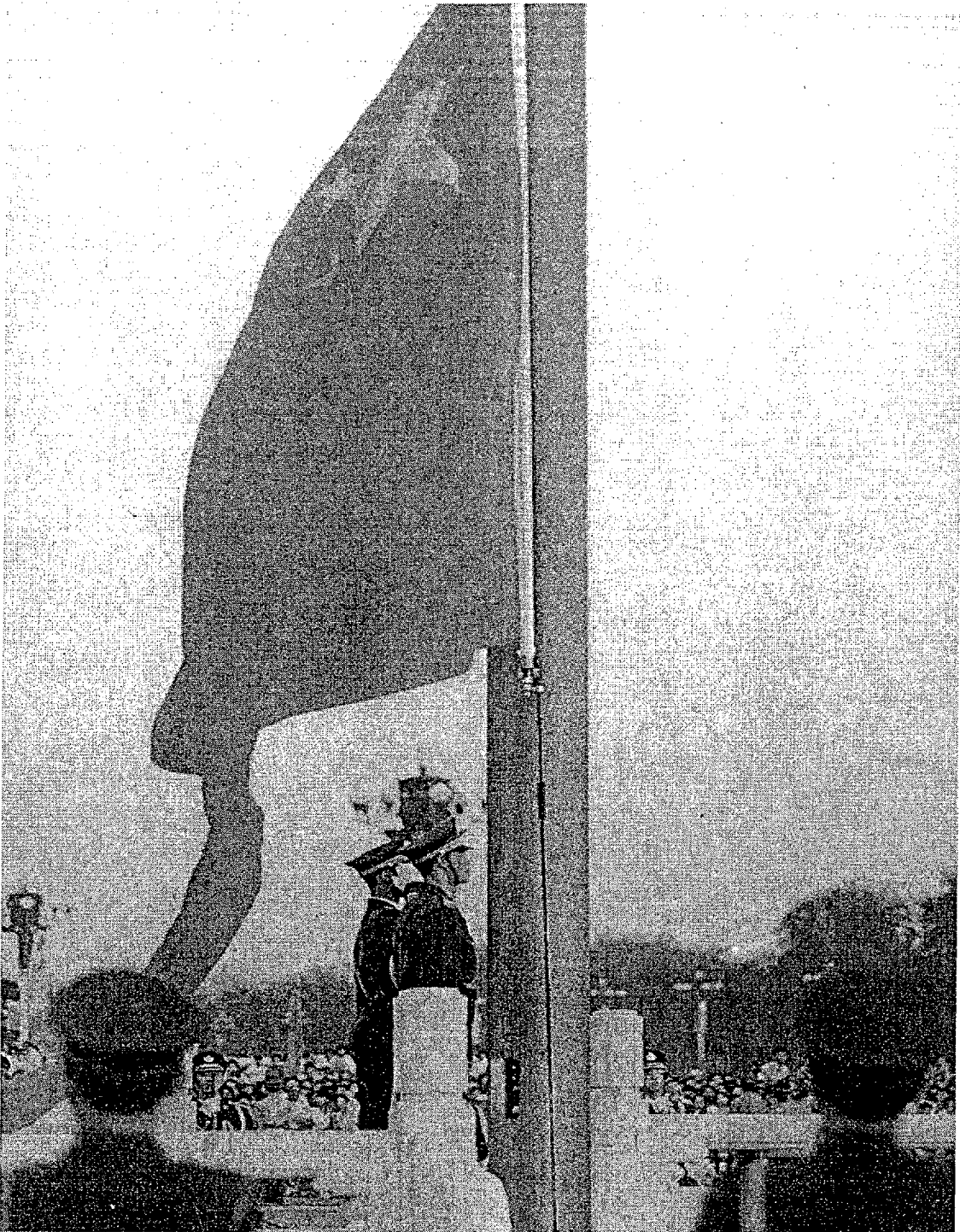


Central Iron & Steel Research Institute
(CISRI)

鋼 鉄 研 究 総 院



OUTLINE

- 1. General**
- 2. R & D**
- 3. Industry**
- 4. International Exchange and
Cooperation**

1. GENERAL

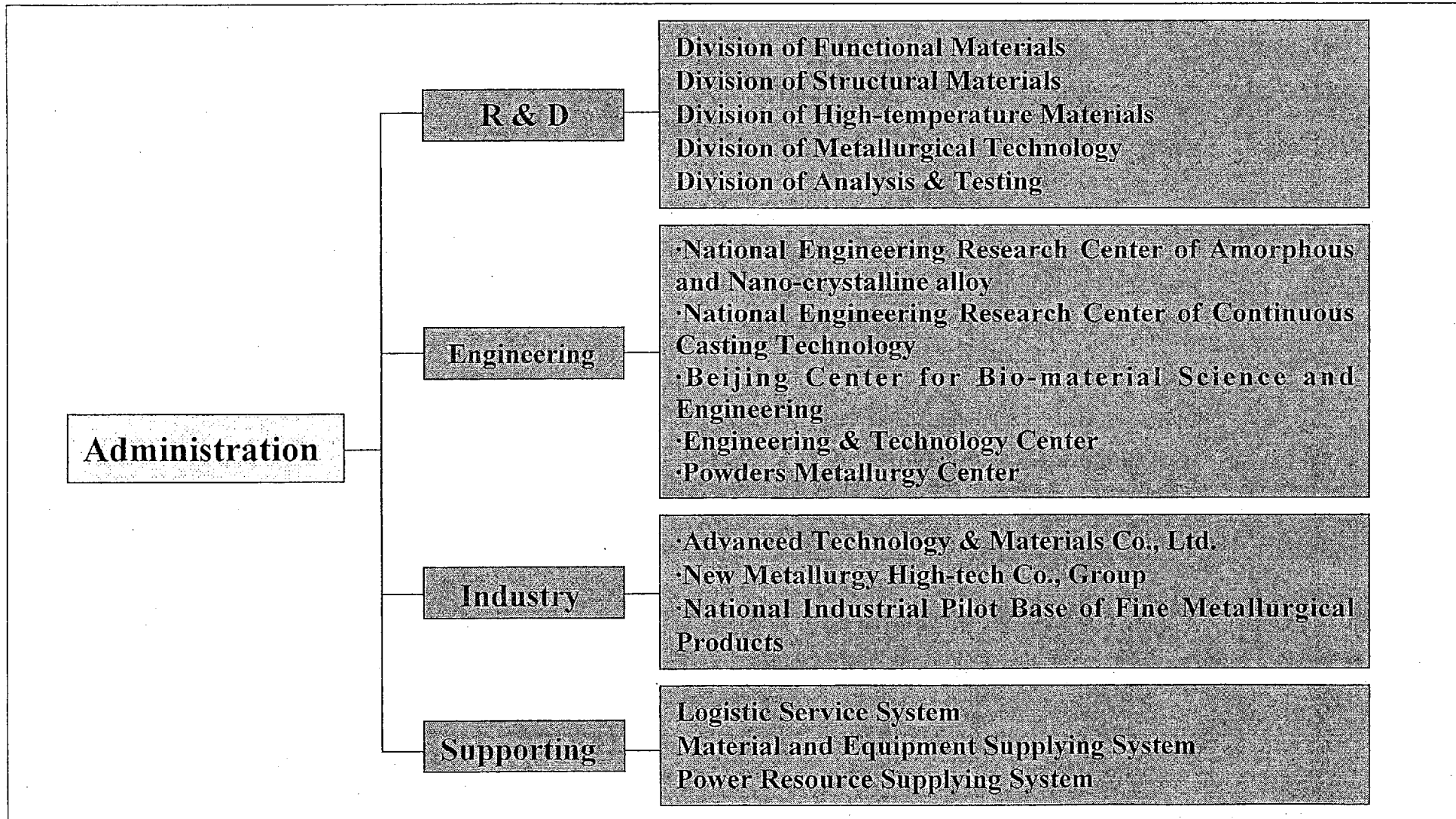
History

CISRI, the largest research institute in metallurgical industry, was founded in 1952.

Since 1999, CISRI has become a high-tech enterprise.

1. GENERAL

Organization Structure



1. GENERAL

Resources

- **Human Resources:**
 - 3 members of Chinese Academy of Sciences
 - 3 members of Chinese Academy of Engineering
 - 312 staff with doctor degree and master degree
 - 832 senior engineers
- **Scientific and technical achievements: 3000 items**
 - 78 State invention awards
 - 83 State science and technology awards
 - 491 patents

1. GENERAL

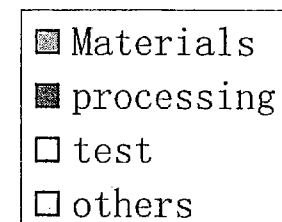
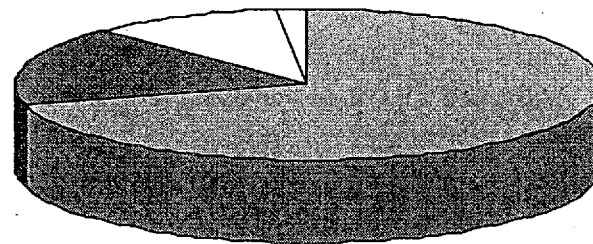
Main Research Areas:

- **Material Science and Engineering**
- **Metallurgical processing and engineering**
- **Analysis, testing and quality certification**

1. GENERAL

Research Projects

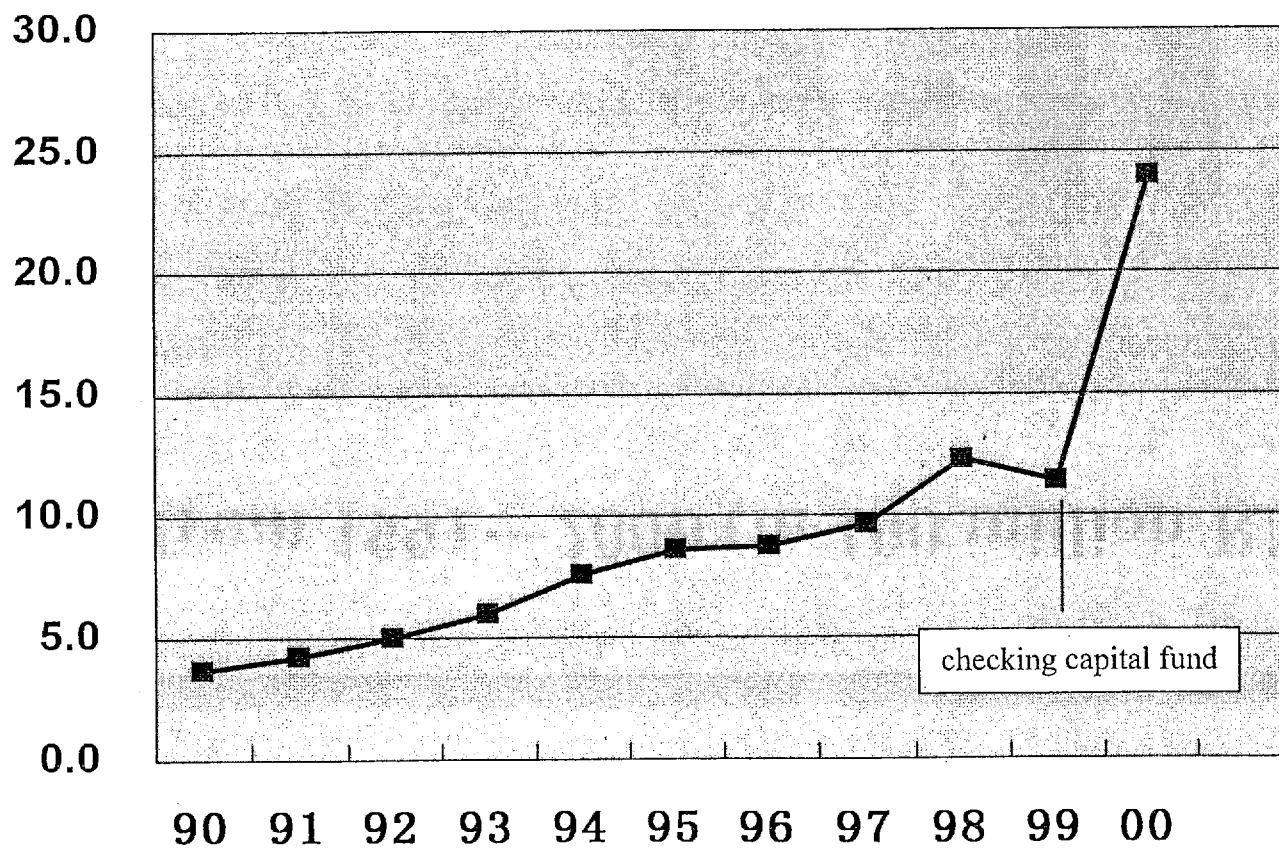
- In 2000, totally 388 projects were processed.
 - materials: 274
 - processing: 66
 - test: 42
 - others: 6



56 projects were newly contracted in 2000.

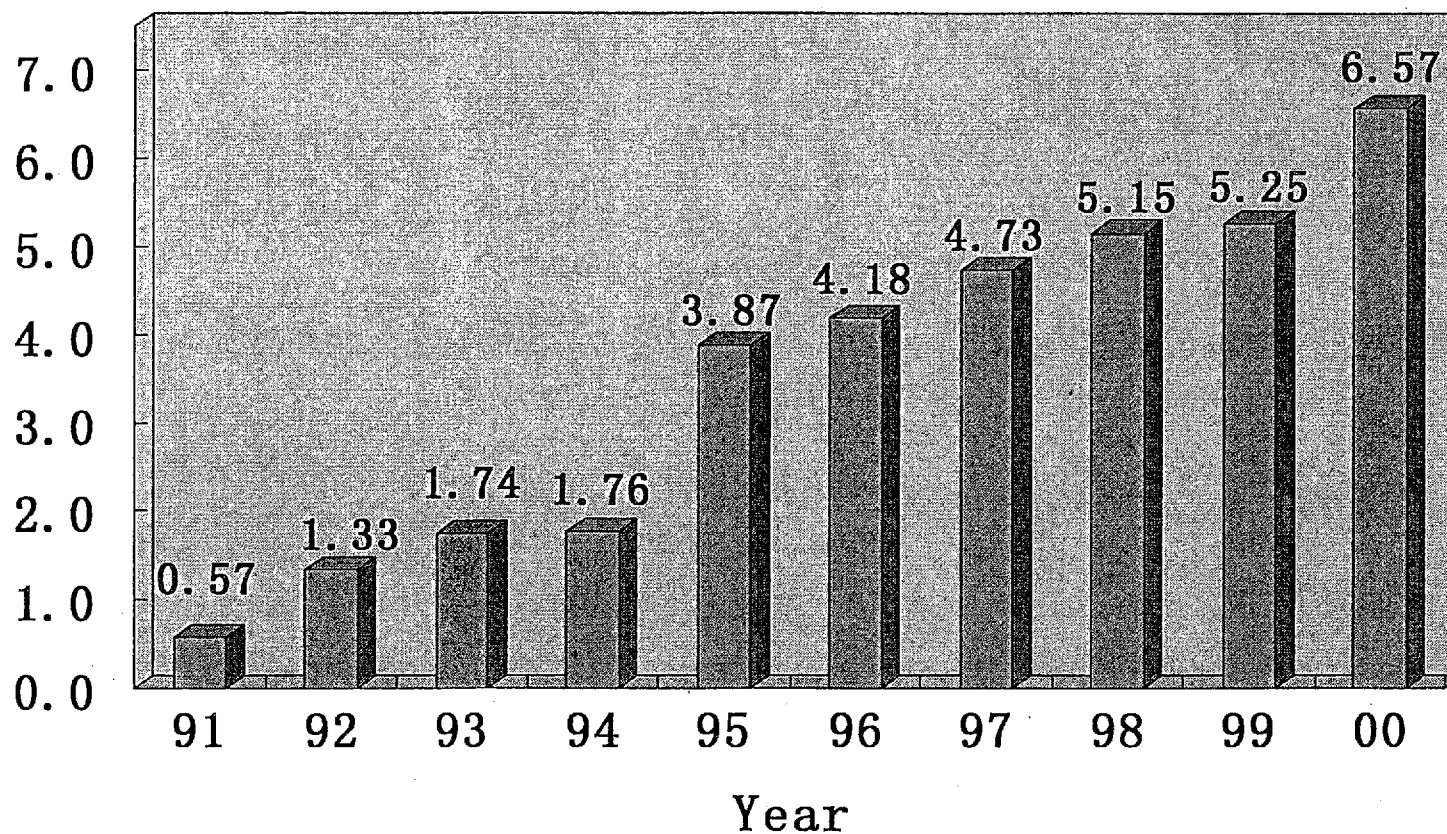
1. GENERAL

Total property from 1990 to 2000 (in 100 million RMB)



1. GENERAL

Turnover from 1991—2000 (in 100 million RMB)



2. R&D

2.1 Structural Materials

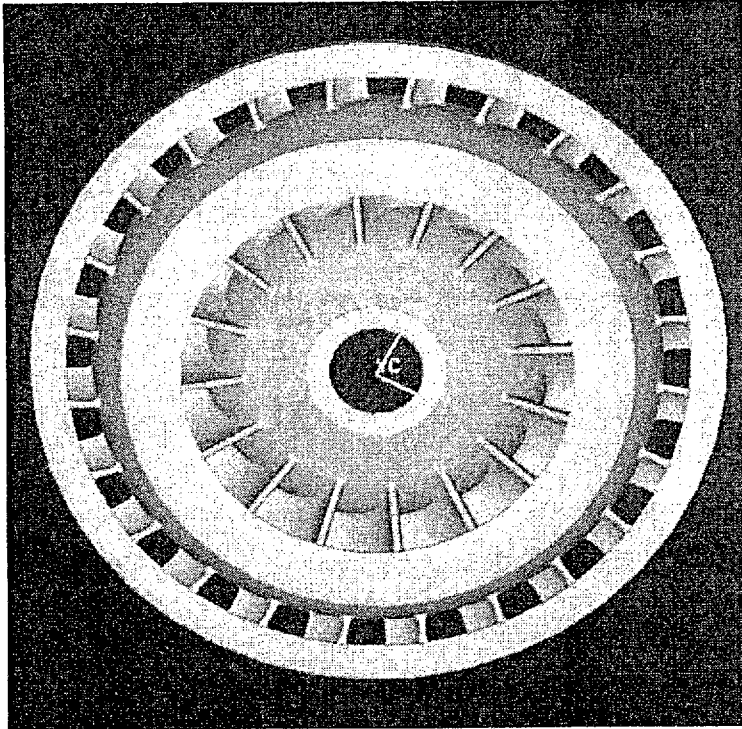
- **New generation steel materials**
- **Computational materials science**
- **High strength, high toughness steels**
- **Structure and property prediction**
- **New welding consumables and technology**
- **Coating technology**

2. R&D

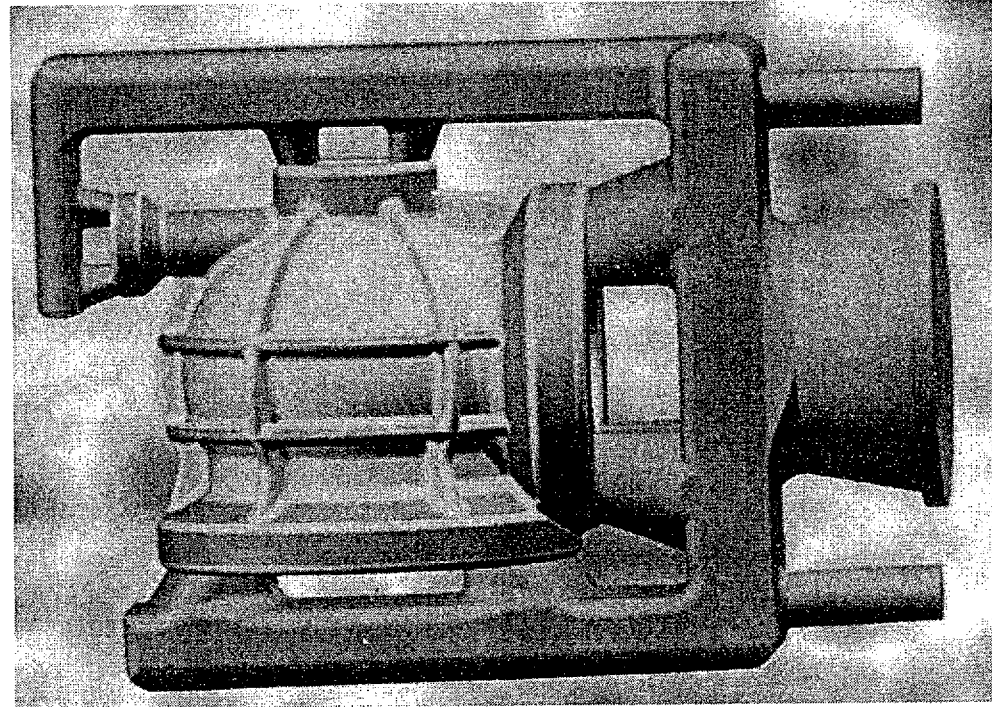
2.2 High Temperature Materials

- **Intermetallics**
- **Powder metallurgy superalloys**
- **Cast and wrought superalloys**
- **Computer aided (CA) casting**

3-D Model



Casting system design



**CA Casting, integration of design,
materials, processing and products**

2. R&D

2.3 Functional Materials

- Permanent magnetic materials
- Amorphous and nano-crystalline alloys
- Elastic alloys and expansion alloys
- Giant magnetostriction materials
- Stealth materials
- Thin films, magnetofluid materials

2. R&D

2.4 Analysis, testing and quality certification

- Hydrogen measurement of liquid steel
- Inclusions on-line examination
- Flaw detection of rail wheels by EMAT
- Trace element analysis

The China quality System Certification Center for metallurgical industry and National Analysis Center for Iron & Steel are established in CISRI

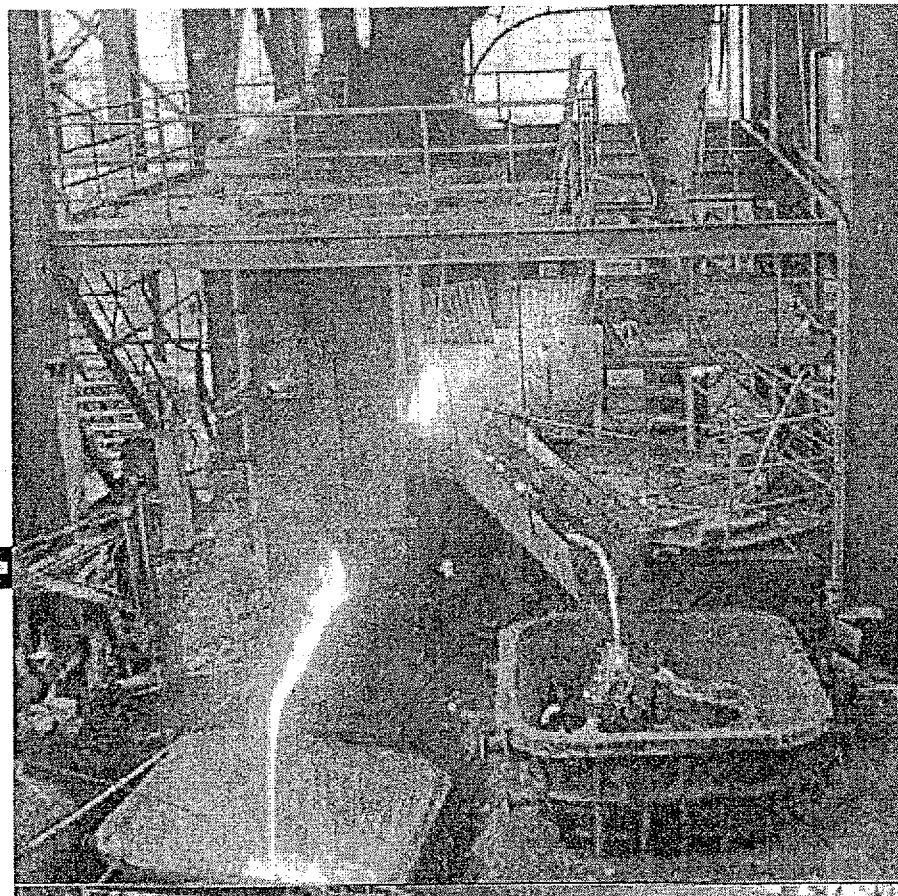
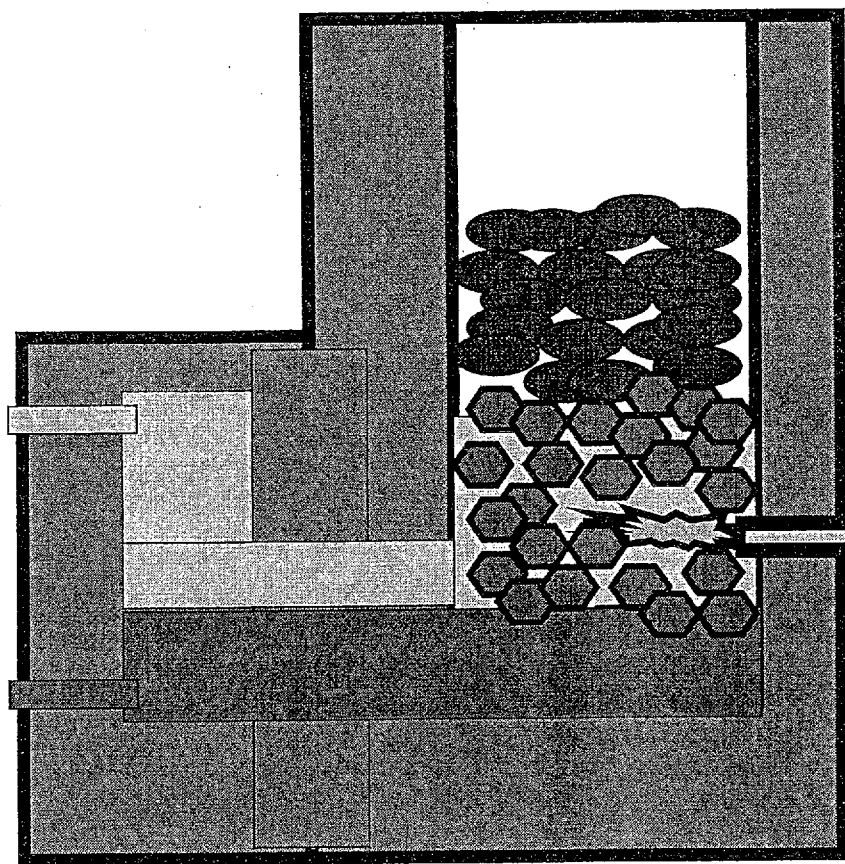
2. R&D

2.5 Metallurgical Processing and Engineering

- Smelting reduction
- Ultra clean steel making
- Artificial intelligence for dynamic control of converters
- Thin strip continuous casting
- Electromagnetic stirring for c.c.
- Comprehensive control of thickness, tension and flatness for cold and hot rolling

Smelting reduction

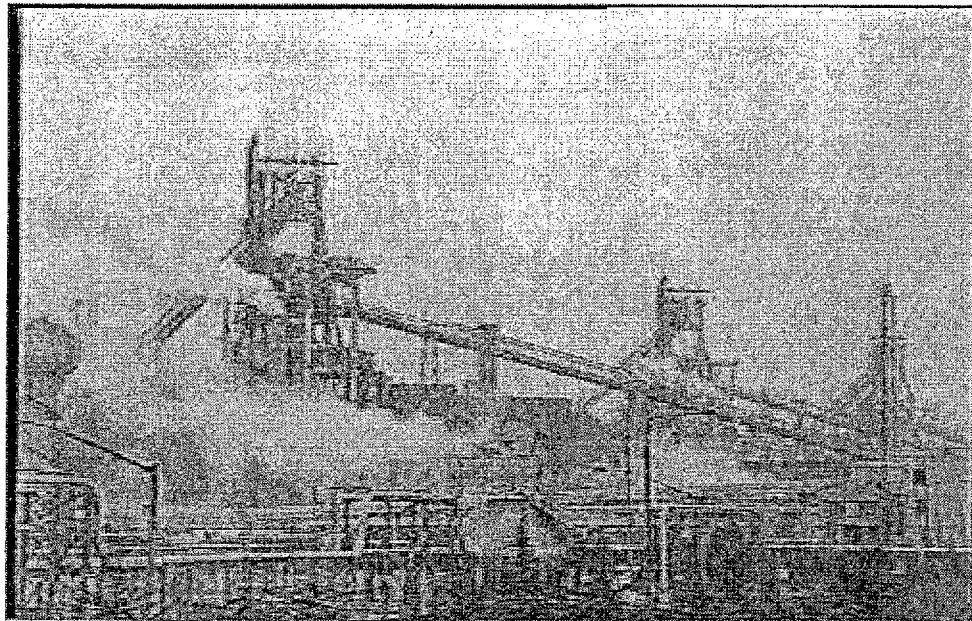
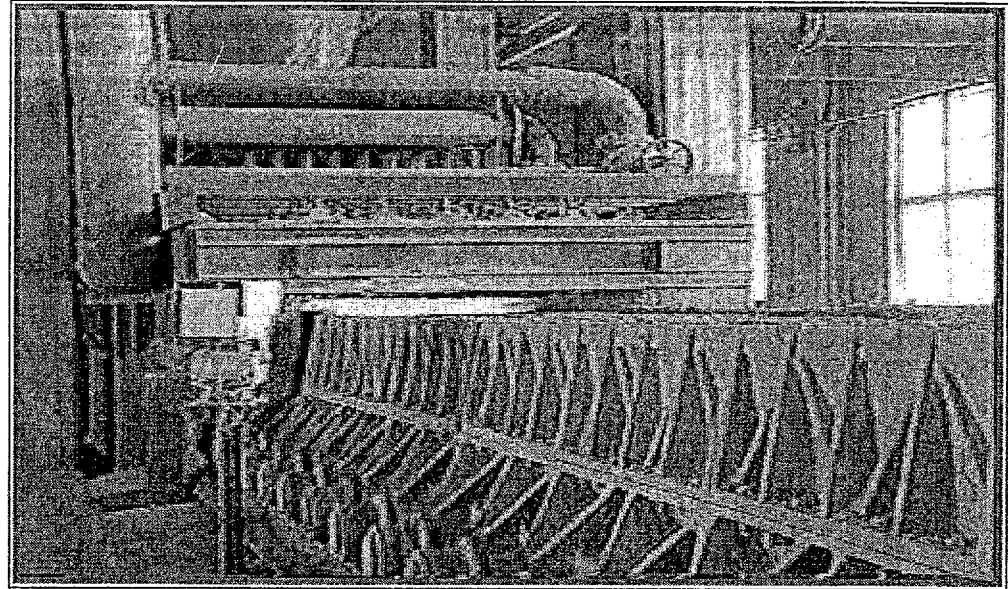
- 227 -



COSRI principle

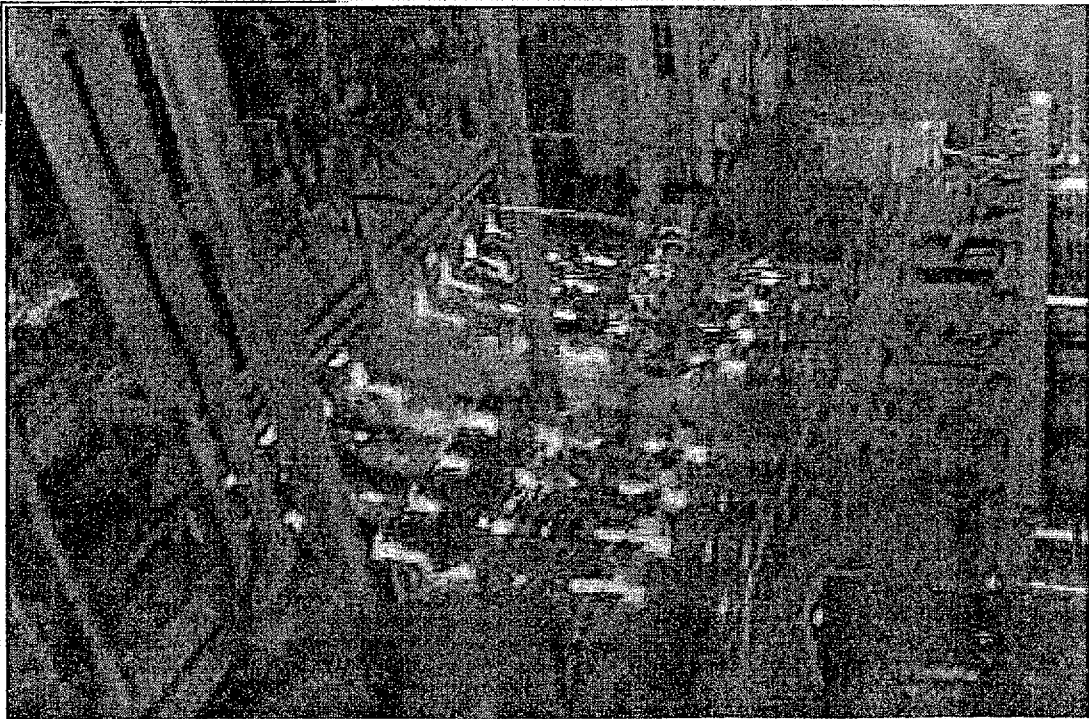
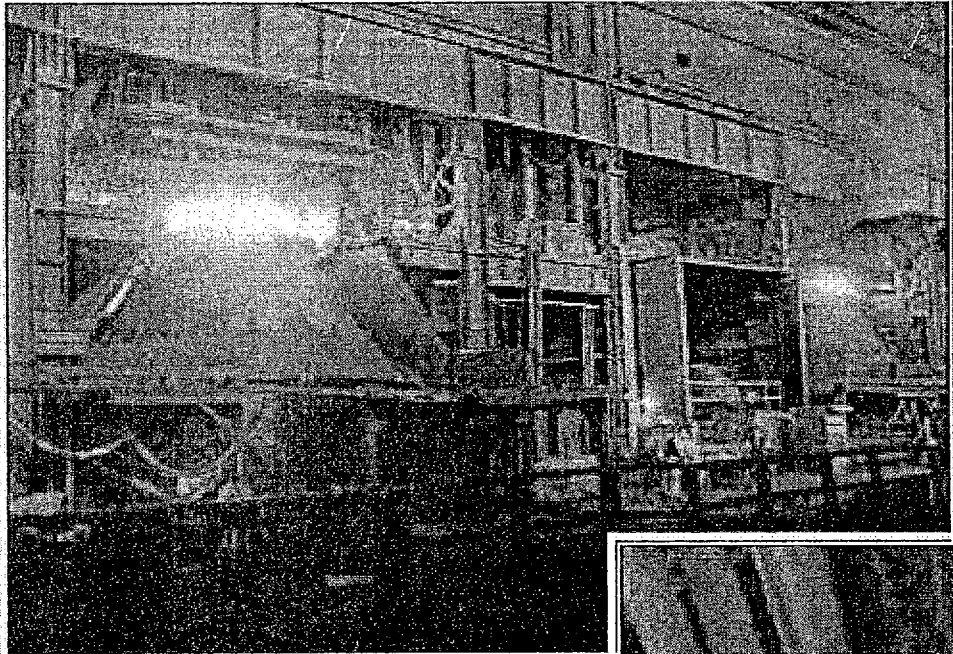
pilot - scale test

Pellet sintering



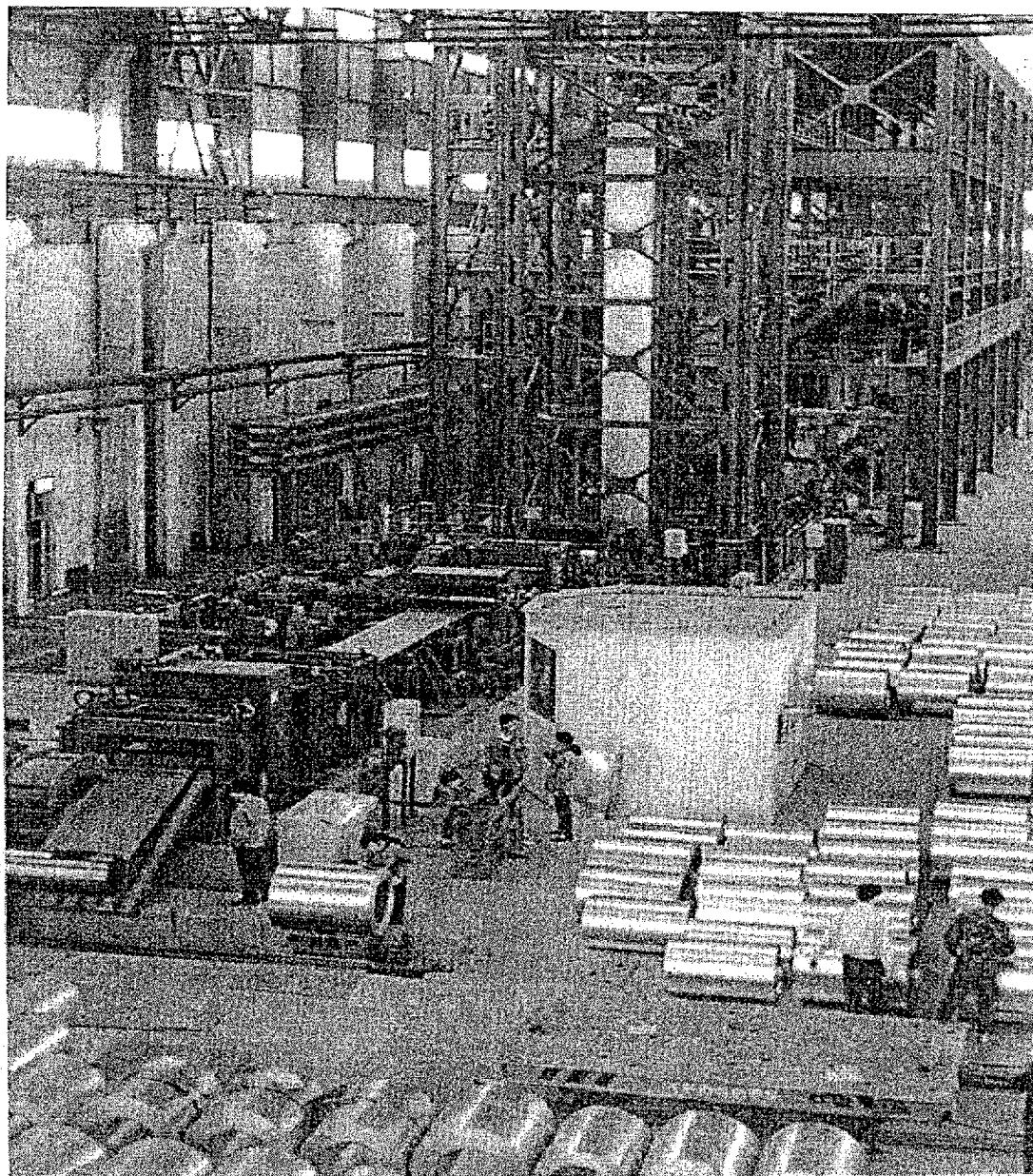
Coal-injection

Slag-splashing



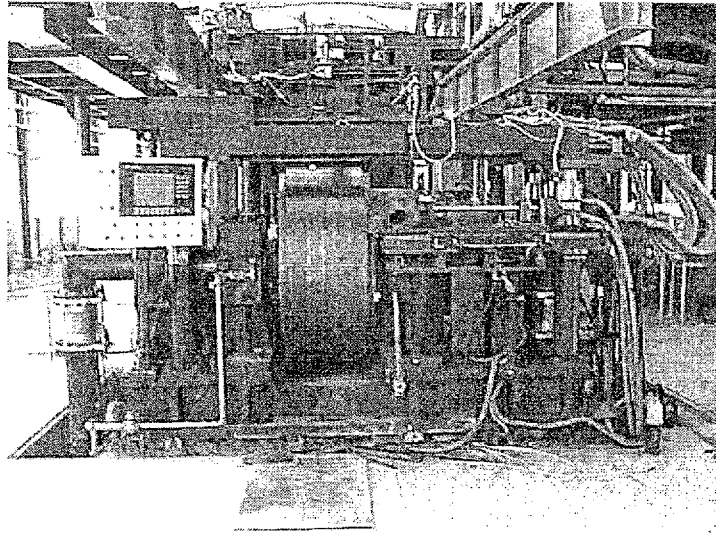
**High-efficiency
continuous casting**

Production line of hot dip alloy steel in Huangshi city, Hubei Province

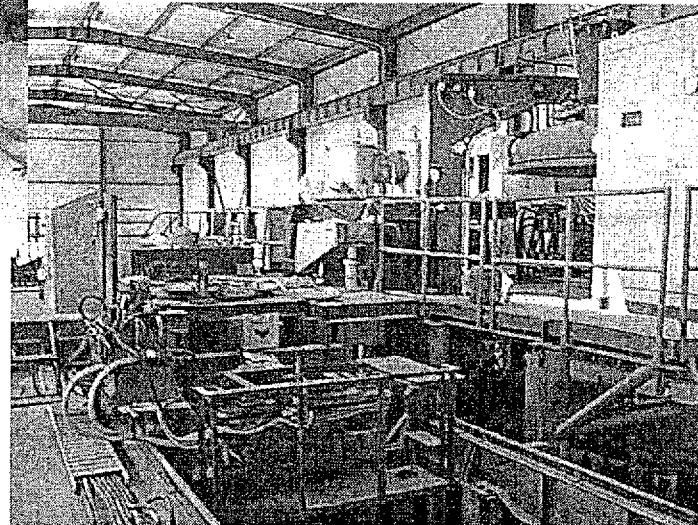


3. INDUSTRY

- **Functional materials and products**
- **Ultra hard materials and refractory metals**
- **Fine metal products**
- **Biomedical materials and products**
- **Analytical instruments**

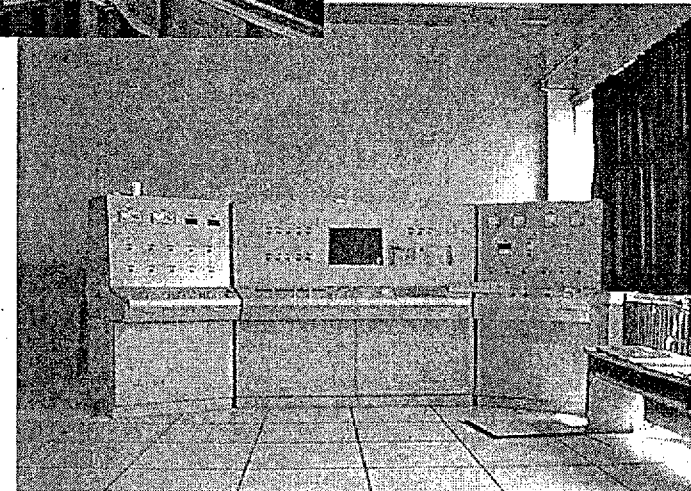


Pilot line for amorphous alloy strips with capacity of thousand tons per year



Design and manufacture of machine for rapid cooling

Design and manufacture of smelting and casting system



Automation control system

4. INTERNATIONAL EXCHANGE AND COOPERATION

- **International cooperative research project**
- **Cooperation with JICA**
- **Academic exchange and relations**
- **Joint ventures and service station**



热烈欢迎不破祐教授来访

