

# 中國優秀工程設計

**Excellent Project Designs of China**



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# **EXCELLENT PROJECT DESIGNS OF CHINA**



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我國現代化建設步伐

谷牧

一九九〇年秋月



活跃设计思想  
推动技术进步  
赶上世界先进水平

为中国优秀工程  
设计图集题

韩光 一九九〇年  
十月四日



社会主义建设  
计划外  
图。

林语冰

一九五一年



# 前言

建國四十多年來，我國工程設計行業廣大技術人員勤勤懇懇、兢兢業業，為社會主義建設做出了成千上萬個工程項目設計，取得了很大成績。特別是改革開放以來，我國國民經濟出現了蓬勃發展的新局面，國家集中了必要的財力、物力和技術力量，高質量、高效率、高水平地建設了一批以能源、交通、通信和原材料為重點的項目。全國廣大勘察設計人員為此作出了重大貢獻，創作出了一批優秀設計。如七十年代設計建成的攀枝花大型鋼鐵聯合企業，設計中採用了一系列新工藝、新技術，攻克了釩鈦礦冶煉的難關，是世界冶金史上的一項突破；規模宏偉的葛洲壩水電站，裝機容量達 221.5 萬千瓦，居全國第一；京漢廣中同軸電纜載波工程，跨越五省、市，全長 2702 公裏，標志着我國國際通信進入全球電話時代；

大慶乙烯原料工程工藝研究項目，設計中解決了原油密閉集輸低壓、油田氣和輕烴集輸油田氣處理加工等工程問題，取得了五項科技成就，經濟效益十分顯著。

為了總結經驗，發揚成績，表揚先進，從 1980 年開始在全國範圍內開展評選優秀設計活動。十年來國家評選了四屆優秀工程設計，共評出全國優秀工程設計 665 項，現將獲獎項目匯總編印成《中國優秀工程設計》大型系列畫冊。本畫冊薈集了全國四屆優秀設計項目，內容豐富、資料翔實、圖文並茂，形象直觀地反映了各優秀工程設計項目的特點，體現了我國設計行業的最高水平。本系列畫冊是一部裝幀精美的綜合性文獻，對廣大設計單位和設計人員具有長期保存的歷史價值和現實的參考價值。本系列畫冊獻給全國勘察設計人員和關心支持我國勘察設計事業發展的人們。

吳奕良

# PREFACE

Since the founding of the People's Republic of China, project designers have worked out designs for thousands of projects with painstaking efforts for the construction of socialism. Great achievements have been accomplished, especially since the program of reform and opening to the outside world was put into practise and China's economy shows a prosperous uprise, so the government gathered finance, materials and technologies to construct an array of hi-quality and efficiency projects focused on energy, communications, telecommunication, and raw materials. Many surveying and designing professionals have made significant contributions to create a large number of designs. For examples Panzhihua Iron and Steel Complex, designed and constructed in the 70s, adopted a series of new technologies and techniques in its designing, thus overcoming the difficulty of smelting vanadium and titanium ores, a breakthrough in world metallurgical history; Huge project Gezhouba Hydropower Station has a total installation capacity of 2.215 million KW, the largest in this country; Beijing-Wuhan-Guangzhou central shaft cable carrier project span across five provinces at a total length of 2700 km, which symbolizes China's international communication has entered a global telephone era; Daqing ethylene

raw material engineering technology research project design solves the processing and treating problems of crude oil tight concentrated transfusion low-pressure oil pit gas and hydrocarbon concentrated-transfusion oil pit gas and has accomplished five scientific and technological achievements and gained remarkable economic results.

To sum up good experience, to praise the advanced and to achieve more, a nationwide excellent projects selection started in 1980. Over the past decade, four selections of excellent project designs have been finished, a total of 665 pieces of designs have been selected. Today we've compiled these prize-winning designs into a pictorial album series **EXCELLENT PROJECT DESIGNS OF CHINA**, which has a rich content, detailed and truthful reference materials. Its fine pictures and words show vividly the characteristics of every excellent project design and also the highest level of designing in China. This pictorial album is a comprehensive work with elegant binding and layout and embodied with historic and practical value to designing institutes and designers. We hope to devote this album to our designers and those who care and support the development of China's surveying and designing cause.

Editorial Board

Wu Yiliang

# 目 録

## Catalogue

冶金 Ministry of Metallurgical Industry	14
有色 Ministry of Non-fer- rous Industry	38
煤炭 Ministry of Coal Indus- try	48
石油 Ministry of Petroleum Industry	54
石化 China Petrochemical Corporation	66
化工 Ministry of Chemical Industry	76
電力 Power Plant and Design Institute	92
水電 Water Conservancy Hydro-power Plane and Design Institute	108
紡織 Ministry of Textile In- dustry	130

# 撫順鋼廠精塊鍛工程設計

主要負責設計單位為冶金部北京鋼鐵設計研究總院。1984年完成設計，1986年全部建成投產並經正式驗收。該工程是為解決國防軍工急需，增加品種規格，提高產品質量的國家重點建設項目。僅引進了技術先進的1000噸精鍛機和2000噸快鍛單機，由國內負責總體設計。工藝流程合理，設備選型正確，項目完整，技術先進，廠

房結構簡捷、美觀，所設計的多種加熱爐、熱處理爐，可適應不同鋼種不同批量的生產，綜合節能措施顯著，環保安全措施齊全，從而形成了完整的鍛壓生產系統，具有八十年代先進水平，並預留了發展餘地。

投產後生產了航空、國防、電子核電、機械等單位急需的若干產品品種，填補了國內產品的空白，減少進口，節省了外匯。

Beijing Central Engineering and Research Incorporation of Iron and Steel Industry acted as the main organization being responsible for the engineering completed in project 1984.

The project was built up and accomplished in 1986, examined and accepted officially, and put into operation. It is a national major project for meeting the urgent needs of preparing military products for national



# THE ENGINEERING PROJECT DESIGN FOR PRECISION FORGING OF FUSHUN STEEL WORKS

defence, increasing the variety and improving the quality of products. The responsibility of overall engineering design was fulfilled by domestic organizations. Only the advanced 1,000t precision forge press and 2,000t quick acting forge press were imported. The main advantages of this project engineering are:

\* With reasonable technological processes and arrangement, correct selection of equipment, advanced

technologies, main project processes and necessary ancillary items being complete.

\* The shop buildings being simple in structure and full of nice artistic effect.

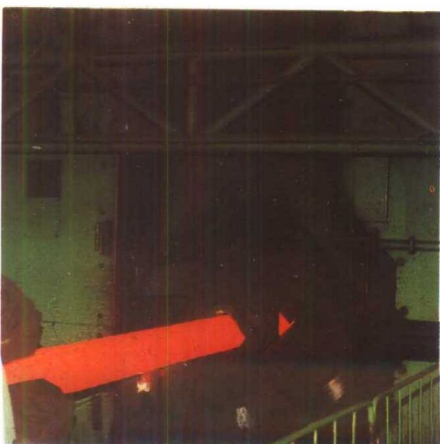
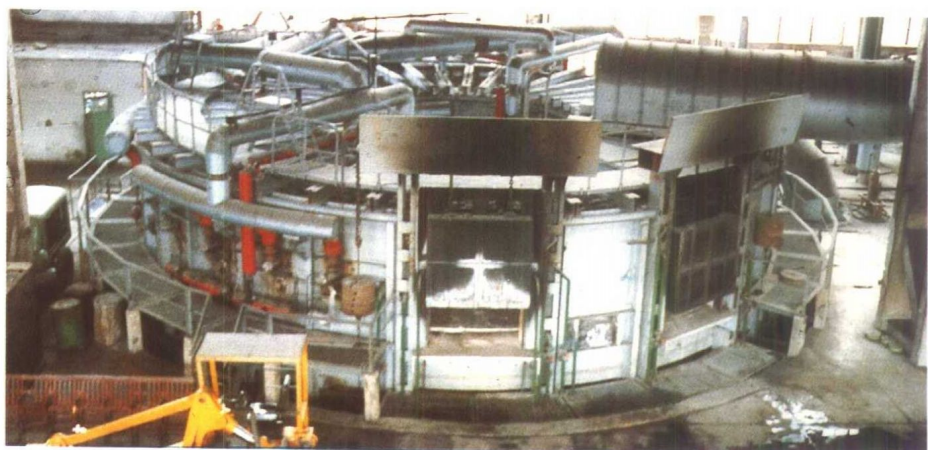
\* The reheating and heat treatment furnaces being suitable for different grades of steel and different batches of production; proper energy saving measures being adopted with an overall remarkable effect.

\* The environmental protection

measures being complete.

All of these form a complete forging production system with advanced level of 80's. Besides, the possibility for further development has been considered and kept in the project.

It has produced a lot of grades of products urgently needed for aviation, national defence, electronics, nuclear energy and machinery industries, thus filling the gaps of domestic products, reducing the imports and saving foreign exchange expenses for the country.



▽ 2000t 快速锻压机  
2000t quick hydraulic forging press  
◁ 1000t 精锻机  
1000t refining forge  
△ 环形加热炉  
Circular Heating Furnace  
▷ 中速中压砂輪修磨機  
Medium Speed and Medium Pressure  
Machine  
◁ 撫順鋼廠精快鍛分廠全景  
Branch Factory of Precision forge press  
and Quick Acting Forge Press



# 上海第三鋼鐵廠15/30噸真空吹氧 脫碳 (VOD) 精爐工程設計

上海第三鋼鐵廠 15/30 噸真空吹氧脫碳 (VOD) 精鍊工程設計，於 1987 年獲全國第三屆優秀工程設計金質獎。設計單位為冶金部北京鋼鐵設計研究總院。1984 年 7 月建成投產。

該工程是我國自行設計製造的精鍊不銹鋼的新型成套裝備。總體設計工藝和設備設計、真空、電控、自動化和水處理係統設計合理，功能齊全。精鍊裝置可在真空下吹氧脫碳、脫氣、加合金調整成份以及測溫、取樣。設計規模年產不銹鋼 4 萬噸。

經技術鑒定和生產實踐證明：主要工藝參數合理，可靠，冶鍊過程穩定，與電爐雙聯提高電爐生產率 30%，可經濟和方便地生產低碳及超低碳不銹鋼； $[H]$  降到 2-3 PPM，精鍊爐鎢的回收率可達 98%，不銹鋼純淨度及性能明顯提高，達到國內外同類設備的先進水平。成本大幅度降低，經濟效益顯著。



△VOD精鍊爐用蒸汽噴射真空泵  
Steam-Ejection Vacuum Pump  
of the VOD Refining Furnace

◁VOD精爐主體設備  
Main Equipment of VOD  
Refining Furnace