



创新驱动 “低碳化工”可持续发展

Developing Sustainable & Low Carbon
Chemical Industry by Innovation



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Gathering Talents and
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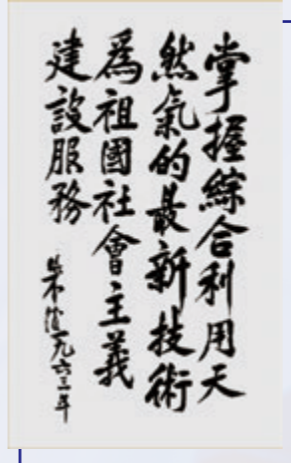
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国际交流 国际合作
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Cooperation

1 Chapter

铸就行业品牌

SWCHEM CREATES INDUSTRY BRAND



- 变压吸附技术专利商
PSA Licenser
- 碳一化工工程总承包商
EPC Contractor in C1 Chemical Industry
- 催化剂产品供应商
Catalyst Supplier

西南化工研究设计院有限公司面向早期国家天然气化工战略需求而建，是我国碳一化工与气体分离技术的引领者。拥有10余个国家级创新平台。获得100余项国家级、省部级科技进步奖，引领我国变压吸附技术、烃类转化和甲醇合成催化剂技术达到先进水平，并应用于国内外近2000套工业装置。在60余年的创新中不断积淀和发展，铸就成为行业知名品牌。

Southwest Institute of Chemical Co., Ltd. is a Chinese spearhead in C1 chemistry and gas separation technologies, which was established to meet the strategic needs of the early national natural gas chemical industry. SWCHEM has more than 10 national innovation platforms. Besides, it has won more than 100 national, provincial and ministerial science and technology progress awards, and facilitated domestic Pressure Swing Absorption (PSA), hydrocarbon conversion and methanol synthesis catalyst technologies to reach the advanced level and have been applied to nearly 2,000 sets of industrial plants at home and abroad. During innovation for more than 60 years, SWCHEM has made unremitting efforts to deposit and develop, and build a well-known brand for the industry.

技术创新能力

Technological Innovation

• 变压吸附技术

PSA Technology

国家科技进步一等奖2项
国家科技进步二等奖3项
四川省科技进步特等奖1项
四川省科技进步一等奖5项
四川省科技进步二等奖2项
比利时第44届布鲁塞尔尤里卡世界博览会特别金奖
全国化学行业优秀工程设计一等奖

• C302型低压甲醇催化剂及其合成工艺

C302 Low-Pressure Methanol Catalyst and Synthetic Process

国家科技进步二等奖
第三届爱因斯坦世界发明博览会国际金奖

• Z111低水碳比转化催化剂

Z111 Low Water-to-Carbon Ratio Reforming Catalyst

国家科技进步二等奖

• 焦炉气制甲醇绿色技术研发及应用

R&D and Application of Green Technology of Coke-Oven Gas to Methanol (CGTM)

四川省科技进步二等奖

• 焦炉气（补CO₂）甲烷化制天然气技术开发及产业化应用

Development and Industrial Application for Technology Producing SNG by Methanation of Coke-Oven Gas (with CO₂ Supplement)

四川省科技进步一等奖
中国石油和化学工业联合会科技进步一等奖

• 焦炉煤气制液化天然气项目

Coke-Oven Gas to Liquefied Natural Gas (LNG) Project

全国优秀工程咨询成果一等奖

• 中国专利优秀奖

Chinese Patent Award of Excellence

由甲醇生产二甲醚的方法
一种焦炉气制备合成天然气的工艺
一种甲醇低压羰基合成醋酸的方法
一种焦炉气补充二氧化碳制液化天然气的工艺

• 国家优质工程金奖

Gold Medal of National Quality Project

渭北煤化工园区180万吨甲醇70万吨聚乙烯项目

• 国家第九届优秀工程设计银奖

Silver Award of the Ninth National Excellent Engineering Design

浙江镇海炼化化工股份有限公司5万标方/时变压吸附氢提纯装置

• 全国工程建设项目优秀设计成果二等奖

Second Prize of Excellent Design Results on Construction Project

神华乌海能源有限责任公司以焦炉气为原料30万吨/年甲醇项目

• 化工行业优秀工程设计一等奖

First Prize of Excellent Engineering Design in Chemical Industry

山东潍焦集团有限公司10万吨/年粗苯精制改造项目

• 优秀工程设计一等奖

First Prize of Excellent Engineering Design

2000吨/年甲醇脱氢路线制二甲基酰胺装置

质检部分析人员正在用顺序扫描式 X 射线荧光光谱仪对催化剂样品进行组分检测

成果转化

Achievements Industrialization

- **建成PSA装置1500余套**
Over 1,500 Sets of PSA Plants Built
- **完成工程项目1000余套**
Over 1,000 Sets of Engineering Projects Completed
- **各类催化剂用户超过500余家**
Over 500 Users of Various Catalysts Attracted

焦炉气制液化天然气装置
COG to LNG plant

焦炉气制LNG及液氨装置
COG to LNG and liquid ammonia plant

黄磷尾气制甲酸装置
Plant for production of formic acid from yellow phosphorus tail gas

焦炉气配转炉气制甲醇
Plant for production of methanol from COG with converter gas

城市垃圾填埋气净化回收甲烷工业化装置
Industrial plant for production of concentrated methane from urban landfill gas by purification and recovery

编写专著《吸附分离工艺与工程》
Compile treatise "Separation Process and Engineering by Adsorption"

参与编写《中国氢能及燃料电池产业白皮书》
Participation in the compiling of the "White Paper on China's Hydrogen Energy and Fuel Cell Industry"

恒逸文莱PMB项目变压吸附提氢装置全面投产
The PSA hydrogen purification plant of Hengyi-Brunei PMB Project put into operation

国家绿色冬奥--中石化北京燕山分公司氢气提纯装置顺利投产
National Green Winter Olympic Games-hydrogen purification plant at Sinopec Yanshan Petrochemical Company smoothly put into operation

PSA分离提纯氢气装置，标志着我国PSA技术实现工业化
PSA hydrogen separation and purification plant, marks the industrialization of PSA technology in China

转让重整富氢气十床真空变压吸附制氢技术，打破国外PSA制氢技术垄断
License & technology provided, for ten beds vacuum PSA hydrogen production plants feeding by H₂-rich reforming gas, breaking the overseas monopoly of PSA hydrogen production technology

吸附净化回收氯乙烯尾气工业装置
Industrial plant for purification and recovery of vinyl chloride tail gas

焦炉煤气制氢装置
COG to hydrogen plant

气雾级二甲醚装置
Aerosol grade dimethyl ether plant

黄磷尾气净化工业装置
Purification of yellow phosphorus tail gas

炼油催化干气回收乙烯装置
Recovery of ethylene from FCC gas from oil refinery

大型PSA脱碳同时回收二氧化碳装置
Scale PSA plant coupling decarbonization and carbon dioxide recovery

陕煤集团榆林化学公司48万标方/小时PSA制氢装置
480,000 Nm³/h PSA hydrogen production plant at Yulin Chemical Co., Ltd. at Shaanxi Coal and Chemical Industry Group Co., Ltd.

恒逸文莱220000Nm³/h重整气提纯氢气装置

产学研用合作

Industry-University

秉承客户至上理念，坚持科技创新

Adhere to Scientific and Technological Innovation by Customer-first Orientation

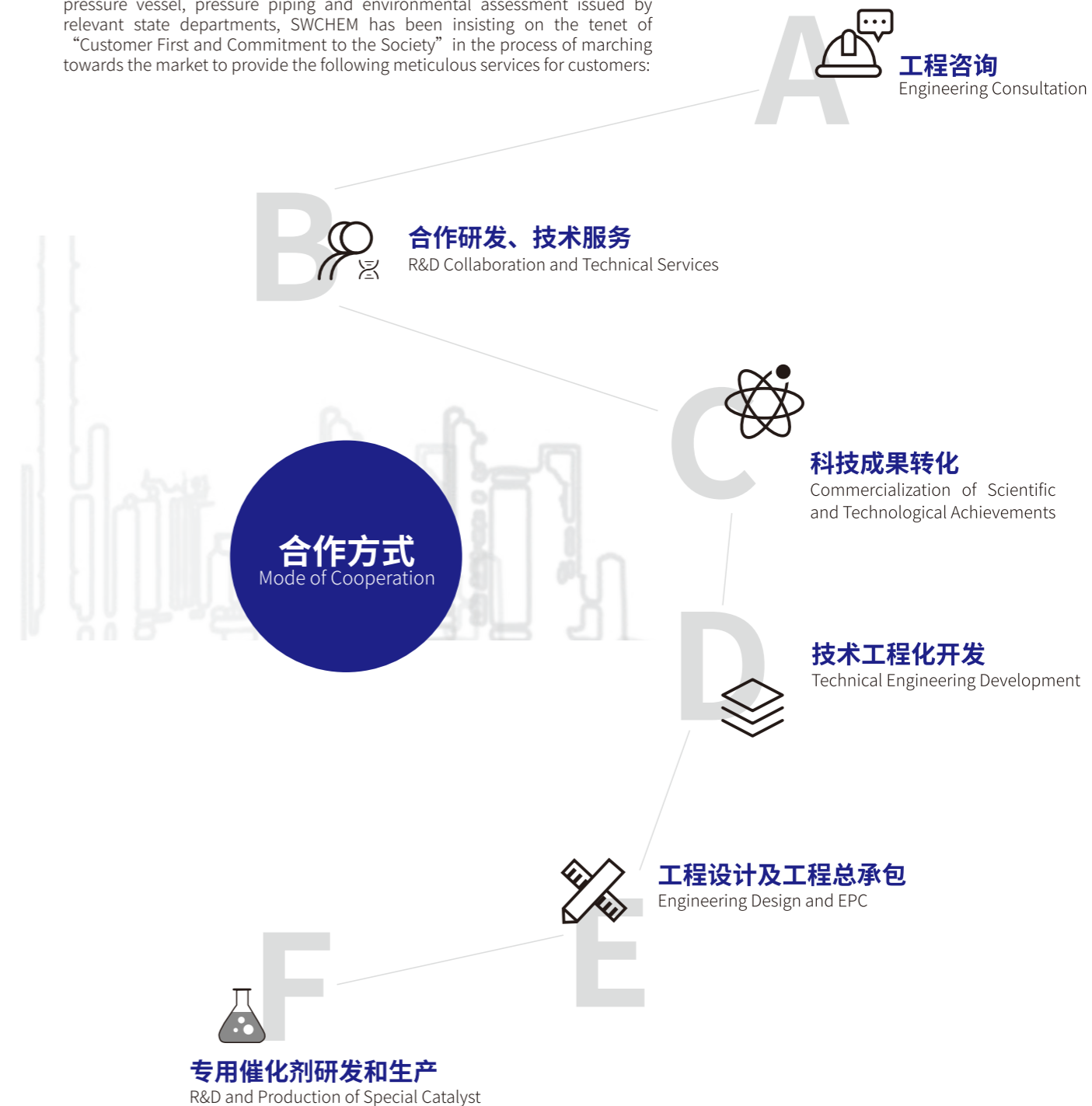
满足客户的不同需求

Meet Diversified Demands of Customers

质检部分析员正对催化剂样品进行比表面积和孔隙度检测

西南化工研究设计院有限公司具有国家有关部门颁发的工程设计、工程咨询、工程总承包、压力容器、压力管道、环境评估等资质证书，在走向市场的过程中，始终坚持“客户至上 服务社会”的宗旨，用心为您提供以下服务：

While obtaining licenses of engineering design, engineering consultation, EPC, pressure vessel, pressure piping and environmental assessment issued by relevant state departments, SWCHEM has been insisting on the tenet of "Customer First and Commitment to the Society" in the process of marching towards the market to provide the following meticulous services for customers:



2 Chapter



引领低碳化工

LEADING LOW-CARBON CHEMICAL INDUSTRY

西南化工研究设计院有限公司作为我国变压吸附气体分离与碳一化工技术的引领者，开展应用基础研究、应用研究、工程开发、工程设计与工程总承包，采取“技术许可-工程设计-工程总承包-催化剂生产-核心装备设计-技术服务”的一体化商业模式开展成果转化与推广，以低碳、环保、清洁能源技术及产品服务国内外客户。

As a pathfinder and leader of PSA gas separation and C1 chemical technology in China, SWCHEM has carried out basic research for application, application research, engineering development, engineering design and EPC. In the meantime, SWCHEM has adopted the business model integrating “technology license, engineering design, EPC, catalyst production, core equipment design and technical service” to realize the achievements transformation and promotion, and been serving domestic and foreign customers with the low-carbon, environmentally-friendly and clean energy technologies and products.

变压吸附气体分离技术及装置

已成功推广1500余套变压吸附工业装置

PSA TECHNOLOGIES AND PLANTS FOR GAS SEPARATION & PURIFICATION
More than 1,500 sets of PSA industrial plants have been successfully promoted

专业从事变压吸附气体分离、氢能工程、
工业排放气治理和资源化利用等方向的研究与开发
国家变压吸附技术研究推广中心
四川省变压吸附气体分离净化工程技术研究中心

Focusing on R&D of Pressure Swing
Adsorption, Hydrogen Engineering and
Industrial Vent Gas Treatment & Utilization
National Research & Popularization Center
of PSA Engineering Technology
Sichuan Research Center of PSA
Engineering Technology



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About More Technical Information

蒲城清洁能源化工有限责任公司70000Nm³/h甲醇弛放气PSA制氢装置

CONTRIBUTION TO THE INDUSTRY 行业贡献

变压吸附气体分离共性技术，相继实现国产化与大型化，已成为流程工业的核心主流程，并拓展应用于工业排放气资源化利用领域，取得了推广业绩，创造了经济效益、环境效益和社会效益。

Following the successive domestication and enlargement, PSA gas separation generic technology has become the core process of the process industry, and has been further applied to the resource utilization of industrial vent gas, which has yielded promotion achievements, and generated economic, environmental and social benefits.

INDUSTRY INFLUENCE 行业影响力

- 我国变压吸附技术的开创者及引领者，变压吸附技术处于领先水平；
- 主导制定国际标准和国家标准10余项；
- 拥有100余项变压吸附气体分离与净化技术领域的国家发明专利；
- 获得国家科技进步奖一等奖2项，国家科技进步二等奖3项。
- The pathfinder and leader of PSA technology in China, positioning as leading level ;
- Led and made over 10 international and national standards;
- The owner of more than 100 national invention patents of PSA technology for gas separation & purification;
- The winner of two First Prizes of National Science and Technology Progress Award, three Second Prizes of National Science and Technology Progress Award.

APPLICATION AREA 应用领域	氢气分离提纯 Hydrogen Separation and Purification	氢能工程 Hydrogen Engineering	轻烃回收 Light Hydrocarbon Recovery
	工业排放气净化及利用 Industrial Vent Gas Purification and Utilization	VOCs综合治理成套技术 Complete Set of Technology for VOCs Comprehensive Treatment	
聚烯烃尾气回收 Polyolefin Tail Gas Recovery	甲烷回收 Methane Recovery	天然气净化 Natural Gas Purification	一氧化碳分离提纯 CO Separation and Purification
二氧化碳提纯/捕集 CO ₂ Purification/Capture		空气制O ₂ /N ₂ O ₂ /N ₂ Production by Air Separation	

**PSA-
CORE TECHNOLOGIES
AND PRODUCTS**
**变压吸附
核心技术及产品**

变压吸附气体分离成套技术
PSA Complete Set of Technology for Gas Separation & Purification

氢能工程
Hydrogen Engineering

吸附剂
Adsorbent

催化剂
Catalyst

高性能特种程控阀门
High-performance Special Program Control Valve

**变压吸附
氢气分离提纯**

Hydrogen Separation and Purification

根据用户需求，分离提纯纯度为95%~99.9999%的氢气，回收率最高可达98%以上。

**变压吸附
氢能工程**

Hydrogen Engineering

提供氢能工程中的氢气制备、储存、输配、应用等环节的EPC业务。

**变压吸附
轻烃回收**

Light Hydrocarbon Recovery

在常温状态下回收炼厂干气中C₂及C₂以上组份，运行能耗低、适用范围广。

**变压吸附
工业排放气净化及利用**

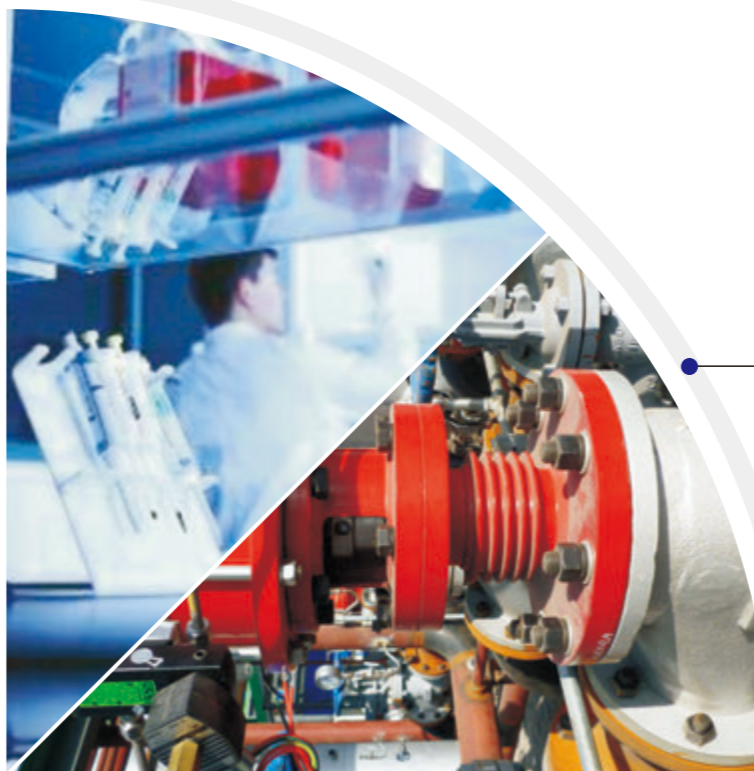
Industrial Vent Gas Purification and Utilization

荒煤气、焦炉煤气、黄磷尾气、电石炉尾气、转炉气PVC尾气回收等工业排放气的净化及分离提纯。

**变压吸附
甲烷回收**

Methane Recovery

沼气、垃圾填埋气、煤层气等气体的净化及分离提纯，回收甲烷。



**变压吸附
VOCs综合治理成套技术**

Complete Set of Technology for VOCs Comprehensive Treatment

变压吸附、变温吸附、膜分离、冷凝、吸收、催化燃烧（RCO）等单一技术或多种技术耦合，应用于炼化行业油气回收、其他行业有机挥发气体（VOCs）治理，实现达标排放。

**变压吸附
聚烯烃尾气回收**

Polyolefin Tail Gas Recovery

变压吸附和催化技术结合，应用于聚烯烃尾气处理，达到零排放、全回收。

**变压吸附
二氧化碳提纯/捕集**

CO₂ Purification/Capture

从富含二氧化碳的混合气中分离提纯工业级、食品级、电子级二氧化碳。

**变压吸附
一氧化碳分离提纯**

CO Separation and Purification

从各类富含一氧化碳的混合气中分离提纯一氧化碳。

**特种阀门
Special Valve**

PSA专用高性能程控截止阀、三偏心蝶阀、两偏心蝶阀，气动抗生素截止阀等。公称口径DN15~DN1600，公称压力1.6~11.0MPa。通过CE、SIL3认证。

**ACHIEVEMENT
DEMONSTRATION**
成果展示



韩国鲜都化学100000t/a提浓CO₂装置



恒逸文莱220000Nm³/h重整气提纯氢气装置



中国神华煤制油化工有限公司280000Nm³/h煤制氢变压吸附提纯氢气装置



镇海炼化30000Nm³/h干气回收乙烯装置



安徽昊源200000Nm³/h脱碳同时回收CO₂装置

氢气分离提纯
Hydrogen Separation and Purification

中国神华煤制油化工有限公司280000Nm³/h煤制氢变压吸附提纯氢气装置
恒逸实业（文莱）有限责任公司220000Nm³/h重整气提纯氢气装置
中化泉州石化有限公司220000Nm³/h重整气提纯氢气装置
中石油云南石化有限公司100000Nm³/h重整气PSA提氢装置

氢能工程
Hydrogen Engineering

中石化北京燕山分公司2000Nm³/h氢气提纯装置
北京2022年冬奥会官方合作伙伴

VOCs综合治理成套技术
Complete Set of Technology for VOCs
Comprehensive Treatment

四川石化装车栈台及芳烃罐区VOCs尾气治理项目

聚烯烃尾气回收
Polyolefin Tail Gas Recovery

中国石油化工股份有限公司广州分公司900Nm³/h聚乙烯尾气回收装置

甲烷回收
Methane Recovery

香港中华煤气公司15000Nm³/h垃圾填埋气回收甲烷装置
香港中华煤气公司8000Nm³/h堆填气回收甲烷及1200Nm³/h制氮装置

轻烃回收
Light Hydrocarbon Recovery

中国石化股份有限公司北京燕山分公司30000Nm³/h浓缩回收乙烯装置
镇海炼化30000Nm³/h干气回收乙烯装置
四川石化30000Nm³/h轻烃回收装置

工业排放气净化及利用
Industrial Vent Gas Purification
and Utilization

茂县鑫新能源有限公司80000吨/年甲醇、50000吨/年二甲醚项目
贵州开阳磷都集团化工有限公司3100Nm³/h 黄磷尾气净化并提纯CO

二氧化碳提纯/捕集
CO₂ Purification/Capture

韩国鲜都化学100000t/a提浓CO₂装置
韩国东光化学株式会社100000t/a 提浓CO₂装置

一氧化碳分离提纯
CO Separation and Purification

中石化长城能化(宁夏)有限公司10000Nm³/h CO回收装置
河南煤业集团22000Nm³/h PSA提纯CO装置

工程设计与总承包

已完成1000余套工程项目，
致力于为客户提供项目建设整体解决方案

ENGINEERING DESIGN AND EPC

More than 1,000 sets of engineering projects have been completed, SWCHEM committed to providing customers with system solutions for various projects

提供工程咨询、工程化开发、工程设计及工程总承包等工程项目全过程服务。服务于碳一化工、煤化工、天然气化工、氢能、工业排放气综合利用、新材料、精细化工等领域。

SWCHEM is a full-process service provider of engineering projects that covers engineering consultation, engineering development, engineering design and EPC. Its services have stepped into fields like C1 chemical industry, coal chemical industry, natural gas chemical industry, hydrogen energy, comprehensive utilization of industrial vent gas, new material, fine chemicals integration.



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About More Technical Information

河北金牛旭阳化工有限公司200kt/a甲醇装置

CONTRIBUTION TO THE INDUSTRY 行业贡献

- 在碳一化工、工业排放气、新材料等领域拥有系列自主知识产权的工艺技术。
- 在多领域开发建设了工业装置。

- SWCHEM is in possession of a series of independent intellectual property rights in fields of C1 chemical industry, industrial vent gas and new material and so on.
- In multiple fields, SWCHEM has developed and constructed industrial plant .

INDUSTRY INFLUENCE 行业影响力

- 我国碳一化工、工业排放气综合利用技术领域的开拓者和引领者；
- 荣获国家级、省部级工程设计奖、优秀工程奖、工程咨询奖及科技进步奖等53项；
- 拥有200余项国家发明专利；
- 参与主持起草制定5项国家标准、行业标准。

- The pioneer and leader in the comprehensive utilization technologies of the C1 chemical industry and industrial vent gas in China;
- The Winner of 53 Awards including National and Provincial & Ministerial Engineering Design Awards, Excellent Engineering Awards, Engineering Consulting Awards and Science and Technology Progress Awards;
- The owner of more than 200 national invention patents;
- The main developer of five national standards and industry standards.

APPLICATION AREA 应用领域

碳一化工
C1 Chemical Industry

煤化工
Coal Chemical Industry

天然气化工
Natural Gas Chemical Industry

甲醇及烃类转化制氢技术及工程
Hydrogen Generation from Methanol and Hydrocarbon Reforming

工业排放气综合利用
Comprehensive Utilization of Industrial Vent Gas

新材料
New Material

深冷技术
Cryogenic Technology

精细化工
Fine Chemicals



内蒙古兴圣
200X10⁴Nm³/d天然气液化装置

制氢技术

Hydrogen Production Technology

烃类转化制氢技术
Hydrocarbon Reforming to Hydrogen Technology

甲醇制氢技术
Methanol to Hydrogen Technology

深冷技术

Cryogenic Technology

天然气液化技术
Natural Gas Liquefaction Technology

深冷提氦技术
Cryogenic Helium Extraction Technology

深冷CO分离技术
Cryogenic CO Separation Technology

深冷制食品级CO₂技术
Technology for Cryogenic Food-Grade CO₂ Separation

新材料合成

Synthesis of New Materials

聚苯硫醚装置
Polyphenylene Sulfide Plant

聚醚醚酮装置
PEEK Plant

聚芳醚腈装置
Polyaryl Ether Nitrile Plant

精细化学品

Fine Chemicals

乙炔化工技术
Acetylene Chemical Technology

胺类化学技术
Amine Chemical Technology

污水治理

Sewage Treatment



山西同世达
200kt/a焦炉气制甲醇装置



邯郸裕泰
30000Nm³/h焦炉气制CNG装置

河南开祥
100kt/a甲醇气相催化脱水制二甲醚装置

工程设计与总承包

ENGINEERING TECHNOLOGIES Engineering Design and EPC
工程技术

工业排放气综合利用

Comprehensive Utilization of Industrial Vent Gas

焦炉气综合利用
Comprehensive Utilization of Coke Oven Gas

电石炉尾气综合利用
Comprehensive Utilization of Tail Gas of Calcium Carbide Furnace

转炉气综合利用
Comprehensive Utilization of Converter Gas

黄磷尾气综合利用
Comprehensive Utilization of Yellow Phosphorus Tail Gas

煤层气综合利用
Comprehensive Utilization of Coal Bed Gas

碳一化学

C-1 Chemistry

甲醇合成技术
Methanol Synthesis Technology

甲醇制二甲醚技术
Technology for Producing DME (Dimethyl Ether) from Methanol

乙醇合成技术
Ethanol Synthesis Technology

甲烷化技术
Methanation Technology

烃类转化合成气技术
Technology for Syngas Producing by Hydrocarbon Reforming

甲醇制醋酸技术
Technology for Acetic Acid Synthesis from Methanol

碳酸二甲酯合成技术
Dimethyl Carbonate Synthesis Technology

焦化副产品综合利用

Comprehensive Utilization of Coking By-products

粗苯加氢精制技术
Crude Benzol Hydrofining Technology

煤焦油加氢技术
Coal Tar Hydrogenation Technology

煤沥青制针状焦、炭微球技术
Technology for Producing Needle Coke and Mesocarbon Microbeads from Coal Pitch

KEY ACHIEVEMENTS
重点业绩展示

河北中翔
120000Nm³/h方焦炉气制LNG
并联产合成氨装置

焦炉气甲烷化制天然气 (20余套)
Natural Gas (SNG, CNG, LNG) Production Plants by
Methanation of Coke-Oven Gas (> 20 Sets)

邯郸裕泰30000Nm³/h焦炉气制CNG装置 (国内首套)
迁安九江100000Nm³/h焦炉气制LNG装置
河北中翔120000Nm³/h焦炉气制LNG并联产合成氨装置(EPC)

甲醇合成装置 (30余套)
Methanol Synthesis Plants (> 30 Sets)

神华乌海能源300kt/a焦炉气制甲醇装置
四川达兴能源200kt/a焦炉气制甲醇装置
新疆拜城200kt/a焦炉气制甲醇装置 (EPC)

甲醇制二甲醚 (80余套)
DME Synthesis Plants from Methanol (> 80 Sets)

广东中山5kt/a甲醇制二甲醚 (国内首套)
东莞九丰200kt/a甲醇制二甲醚 (EPC)
土耳其TARKIM公司10kt/a甲醇制二甲醚 (EP)

制氢工程—烃类制氢 (30余套)
Hydrogen Production Engineering - Hydrocarbon
Reforming to Hydrogen (> 30 Sets)

抚顺石化60000Nm³/h干气制氢装置
山东尚能24000Nm³/h天然气制氢气装置
易高张家港10000Nm³/h天然气制氢气装置 (EPC)

制氢工程—甲醇制氢 (70余套)
Hydrogen Production Engineering -
Methanol to Hydrogen (> 70 Sets)

广州金珠江600Nm³/h甲醇制氢装置 (国内首套)
山东尚能30000Nm³/h甲醇制氢装置
宁夏宝利28000Nm³/h甲醇制氢装置

焦化副产品综合利用 (30余套)
Comprehensive Utilization of Coking
by-products (> 30 Sets)

山东潍焦集团2x100kt/a粗苯精制装置
内江天科100kt/a粗苯精制装置
枣庄振兴能源200kt/a煤焦油加氢装置

工业废气综合利用 (30余套)
Comprehensive Utilization of Industrial
Vent Gas (> 30 Sets)

四川茂县鑫新能源电石炉尾气净化制80kt/a甲醇及50kt/a二甲醚装置
贵州开阳磷都集团黄磷尾气综合利用合成20kt/a甲酸装置
黑龙江建龙焦炉气+转炉气制100kt/a甲醇装置

深冷工程 (30余套)
Cryogenic Engineering (> 30 Sets)

四川空分200万方天然气/d液化装置 (国产化最大)
太原燃气60x10⁴Nm³/d天然气液化装置
宁夏新珂源50x10⁴Nm³/d天然气液化项目装置



黑龙江建龙
100kt/a焦炉气转炉气制甲醇装置

山东潍焦
100kt/a粗苯精制装置

催化剂研发与生产

立足碳一化工催化应用研究，
拓展能源、环保催化前沿，
推动绿色催化技术的工业实践，
为客户定制解决催化应用技术难题。

R&D AND PRODUCTION OF CATALYSTS

Benefit from a long history of research in C1 chemical catalysis and its application, SWCHEM is pushing the front edge of energy and environment-friendly catalysis technology and promoting the industrial practice of green catalysis technology. Based on these efforts, SWCHEM committed to providing customized solutions and problem shooting in catalytic applications for clients.

具有60多年专业的催化剂研究、生产和应用经验。
拥有两个催化剂生产基地，年产能超过9000吨。催化剂已广泛应用在能源、化工、炼油、钢铁、环保等行业。

SWCHEM boasts more than 60 years of professional experience in catalyst research, production and application. It owns two catalyst production bases with an annual production capacity of more than 9,000 tons. Catalysts have been used in a wide range of industries, including energy, chemical, oil refining, steel, and environmental protection.



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CONTRIBUTION TO THE INDUSTRY 行业贡献

拥有国家碳一化学工程技术研究中心，多项催化剂填补国内技术空白。在20世纪80年代，烃类蒸汽转化催化剂成功应用于国内13套天然气合成氨装置。成功开发甲醇合成工艺及催化剂，应用于多套百万吨甲醇装置。国内原创焦炉气(补CO₂)制天然气甲烷化催化剂、二甲醚催化剂、甲醇制氢催化剂。

SWCHEM has the National Research Center of C1 Chemical Engineering Technology, and developed multiple catalysts to fill the technology gaps domestically. In the 1980s, hydrocarbon steam reforming catalysts were successfully applied to 13 ammonia synthesis plants from natural gas in China. SWCHEM is also the one who successfully develop methanol synthesis processes and catalysts, which have been applied to many million-tons methanol plants. China's original methanation catalysts for producing natural gas from coke oven gas (with CO₂ supplement), catalysts for dimethyl ether and catalysts for methanol to hydrogen are also developed by SWCHEM.

INDUSTRY INFLUENCE 行业影响力

在催化剂领域深耕细作，取得了大量的研究成果，荣获国家科技进步二等奖3项，获得省部级奖励20余项，授权发明专利200余项。

我国碳一化工催化技术引领者。各类催化剂销售业绩超过3500份，国内烃类蒸汽转化催化剂用户超过230家，市场占有率超过80%；甲醇合成催化剂用户130多家，多次在甲醇装置上完成进口替代；焦炉气甲烷化技术许可40多套，甲烷化催化剂市场占有率60%；甲醇制氢/二甲醚技术及催化剂用户150余家。

在环保领域研发应用烟气脱硫及低温脱硝催化剂、超净化剂、脱毒剂等新产品。

With a commitment to the catalyst industry, SHWCHEM has made a large number of research achievements advanced. It has won 3 second prizes for national scientific and technological progress, more than 20 provincial & ministerial awards, and holds over 200 authorized invention patents.

SWCHEM plays a leading role in catalytic technology of the C1 chemical industry in China. With more than 3,500 sales orders of various catalysts and more than 230 domestic users of hydrocarbon steam reforming catalysts, SWCHEM occupies over 80% market share; with more than 130 users of methanol synthesis catalysts, SWCHEM has achieved multiple import substitutions in methanol plants; SWCHEM licensed its coke oven gas methanation process to more than 40 clients, with a market share of methanation catalysts reaching up to 60%; the number of users of technologies and catalysts for hydrogen production/dimethyl ether from methanol surpasses 150.

SWCHEM has successfully developed and applied new products in the field of environmental protection, such as flue gas desulfurization and catalyst for low-temperature denitration, super-fine purifying agent, and detoxication agent.

3项
国家科技进步奖
二等奖

20余项
省部级奖励

200余项
授权发明专利

SERIES PRODUCTS
系列产品

环保净化催化剂 Environmentally-friendly Cleaning Catalysts

超精净化剂
Super-fine Purifying Agent

干法烟气脱硫剂
Dry Flue Gas Desulfurization Agent

中低温脱硝催化剂
Catalyst for Low-Medium Temperature Denitration

特种活性炭脱硫剂
Special Active Carbon Desulfurization Agent

氧化锌脱硫剂
Zinc Oxide
Desulfurization Agent

铁锰脱硫剂
Fe-Mn Desulfurization
Agent

脱氯剂
Dechlorination
Catalyst

其他催化剂 Other Catalysts

PDH脱氢催化剂
Propane Dehydrogenation (PDH) Catalyst

加氢脱硫催化剂
Hydrodesulfurization Catalyst

乙二醇催化剂
Glycol Catalyst

钯碳催化剂
Palladium Carbon Catalyst

MTP催化剂
Methanol to Propylene (MTP) Catalyst

改性林德拉催化剂
Modified Lindlar Catalyst

钢厂直接还原铁催化剂 DRI Catalysts for Midrex Process

氢能燃料电池催化剂 Hydrogen Fuel Cell Catalyst

专用化学品 Specialty Chemicals

烃类蒸汽转化催化剂 Hydrocarbon Steam Reforming Catalysts

典型应用案例
Typical Application
Cases

中石油宁夏石化分公司45万吨/年天然气合成氨装置
450,000 TPY Ammonia Synthesis Plant from Natural Gas at Petrochina Ningxia Petrochemical Co.
中海油富岛30+45万吨/年天然气合成氨装置
300,000+450,000 TPY Ammonia Synthesis Plant from Natural Gas at CNOOC Fudao Co.
中石油云南石化分公司120000Nm³/h制氢装置
120,000 Nm³/h Hydrogen Plant at Petrochina Yunnan Petrochemical Co.

甲醇合成催化剂 Methanol Synthesis Catalyst

典型应用案例
Typical Application
Cases

国家能源集团180万吨/年煤制甲醇装置
1,800,000 TPY Methanol Plant from Coal Of CHN ENERGY.
山东华鲁恒升化工股份有限公司100万吨/年煤制甲醇装置
1,000,000 TPY Methanol Plant from Coal at Shandong Hualu-hengsheng Chemical Co., Ltd.
久泰能源内蒙古有限公司100万吨/年煤制甲醇装置
1,000,000 TPY Methanol Plant from Coal at Jiutai Energy Inner Mongolia Co., Ltd.
安徽华谊化工有限公司60万吨/年煤制甲醇装置
600,000 TPY Methanol Plant from Coal at Anhui Huayi Chemical Co., Ltd.

甲烷化催化剂 Methanation Catalyst

典型应用案例
Typical Application
Cases

庆华能源集团13.75亿Nm³/年煤制天然气项目
Qinghua Energy Group 1,375,000,000 Nm³/ Annual Coal-to-natural Gas Project.
迁安市九江煤炭储运有限公司100000Nm³/h焦炉煤气制LNG装置
100,000 Nm³/h LNG Plant from Coke Oven Gas at Qian'an Jiujiang Coal Storage and Transportation Co., Ltd.
河北中翔能源有限公司120000Nm³/h焦炉煤气制LNG并联合合成氨装置
120,000nm³/h LNG & Ammonia Synthesis Plant from Coke Oven Gas at Hebei Zhongxiang Energy Co., Ltd.
河北安丰钢铁有限公司110000Nm³/h焦炉煤气甲烷化制LNG装置
110,000nm³/h LNG Unit from Coke Oven Gas at Hebei Anfeng Iron and Steel Co., Ltd.

甲醇制氢催化剂 Catalyst for Methanol to Hydrogen

典型应用案例
Typical Application
Cases

山东东方华龙工贸集团有限公司60000Nm³/h甲醇制氢装置
60,000 Nm³/h Hydrogen Plant from Methanol at Shandong Dongfang Hualong Group Co., Ltd.
山东寿光鲁清石化有限公司60000Nm³/h甲醇制氢装置
60,000 Nm³/h Hydrogen Plant from Methanol at Shandong Shouguang Luqing Petrochemical Co., Ltd.
山东尚能实业有限公司30000Nm³/h甲醇制氢装置
30,000 Nm³/h Hydrogen Plant from Methanol at Shandong Super Energy Co., Ltd.

二甲醚催化剂 Dimethyl Ether Catalyst

典型应用案例
Typical Application
Cases

国家能源集团宁夏煤业烯烃公司150万吨/年二甲醚装置
1,500,000 TPY Dimethyl Ether Plant at China Energy Investment Co. (China Energy)
河南龙宇煤化工20万吨/年二甲醚装置
200,000 TPY Dimethyl Ether Plant at Henan Longyu Coal Chemical Industry Co., Ltd.
东莞九丰20万吨/年二甲醚装置
200,000 TPY Dimethyl Ether Plant at JOVO Group Ltd.



3 Chapter

建设科技型企业

BUILDING TECHNOLOGY DRIVEN ENTERPRISE

不忘初心，砥砺前行。历经60年的发展，西南化工研究设计院有限公司探索出一条从创业到创新发展再到跨越的新路子。目前，拥有国家级科技创新平台和以政府特殊津贴专家等为代表的创新领军人物，践行“科学至上”理念，成为绿色化工领域科技型企业。

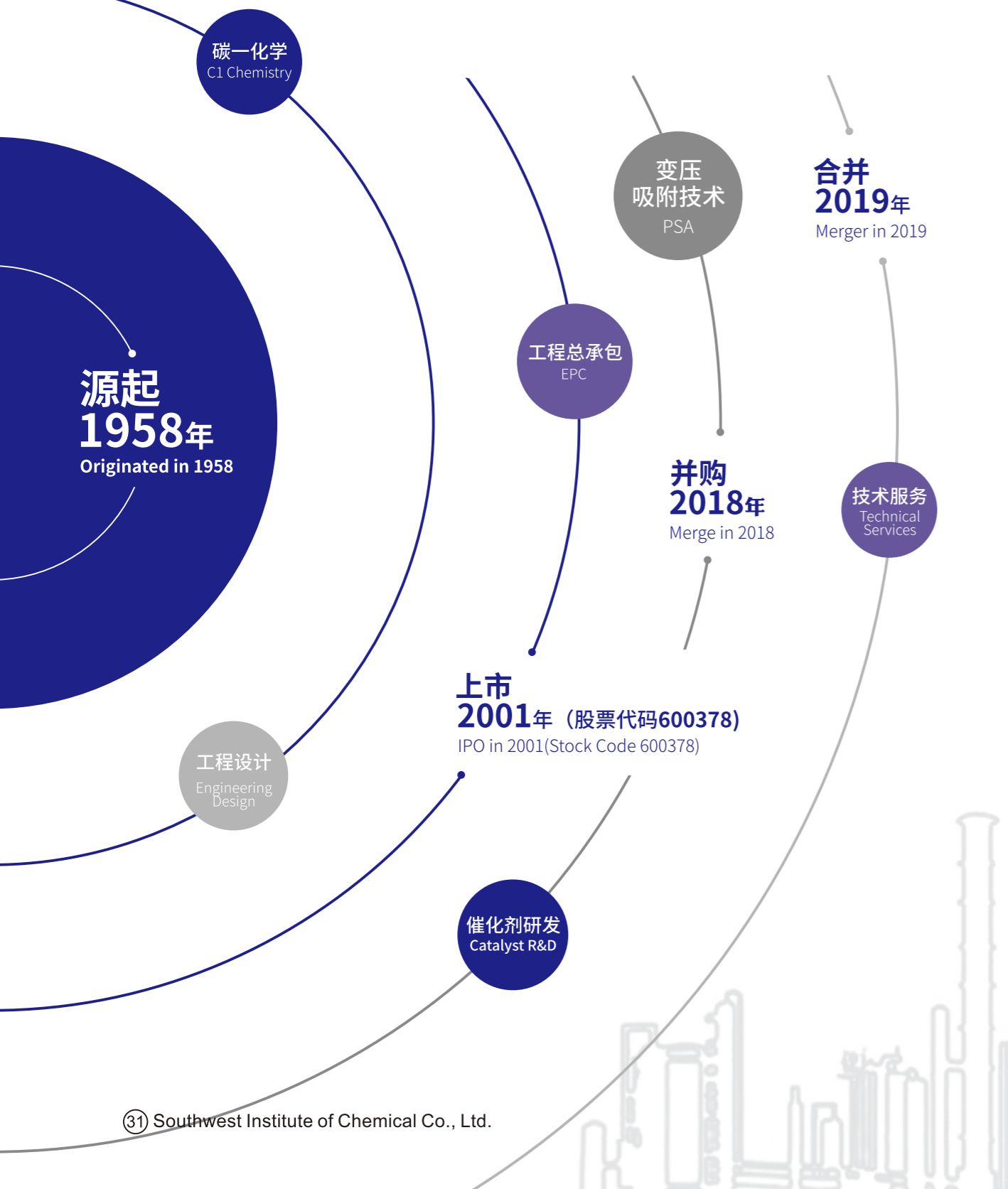
西南化工研究设计院有限公司面向产业重大需求，积极承担国家重点研发计划、973计划、863计划、科技支撑计划及横向合作等重大任务，开展技术研发与成果转化。变压吸附（PSA）技术、烃类转化催化剂、合成甲醇工艺及催化剂、甲醇制二甲醚工艺及催化剂等远销海内外，国际化经营不断拓展，业绩持续稳步增长。

We remain true to our original aspiration and work hard to press ahead. After 60 years of effort, SWCHEM has explored a new way from start-up to rapid expansion and then to great-leap-forward development. It boasts national scientific & technological innovation platforms and innovative leaders headed by experts enjoying the special government allowance. Adhering to the concept of "scientism", SWCHEM has become a scientific & technological enterprise in the green chemical industry.

To meet the major needs of the industry, SWCHEM has actively undertaken significant projects such as National Key R&D Program of China, "973 Program", "863 Program", "National Science and Technology Infrastructure Program" and horizontal cooperation projects, and carries out technological R&D and the achievements industrialization. The Pressure Swing Adsorption (PSA) technology, hydrocarbon reforming catalyst, methanol synthesis process and catalyst, methanol to dimethyl ether process and catalyst, are widely used at home and abroad, leading to the growing international business and the steady increase in business performance.

历史沿革 今日现状

HISTORY & TODAY



西南化工研究设计院始建于1958年，是集科研、技术开发、工程设计、工程承包与管理、技术咨询与服务、产品生产和科技贸易为一体的原化工部直属重点技术开发型院所。1999年8月，依托变压吸附技术及成套装置、碳一化学技术及专用催化剂、工程设计与工程总承包等优质资产与核心业务，发起成立四川天一科技股份有限公司（简称“天科股份”），并于2001年成功上市（股票代码600378）。2018年12月，天科股份完成中国昊华化工集团股份有限公司下属11家科研院所并购重组，业务范围及结构实现拓展与优化，并于2019年6月更名为昊华化工科技集团股份有限公司（简称“昊华科技”）。2019年12月，昊华科技收购西南院并将原天科股份的资产、人员及业务划转到西南院，重组整合后，新西南化工研究设计院有限公司业务包括原西南化工研究设计院有限公司和原四川天一科技股份有限公司的全部业务。2020年1月，新西南化工研究设计院有限公司正式运行，开启新的征程。

Established in 1958, Southwest R&D Institute of Chemical Industry (hereinafter referred to as "SWRDICI") was a key technology development institute directly under the former Ministry of Chemical Industry of the PRC, integrating scientific research, technological development, engineering design, project contracting and management, technical consultation and service, manufacturing and trade in technology. In August 1999, Sichuan Tianyi Science & Technology Co., Ltd. (hereinafter referred to as "CTYC") was sponsored and established by SWRDICI based on superior assets and core businesses of SWRDICI including PSA technology and its complete set of units, C1 chemical technology and its dedicated catalysts, engineering design and EPC contracting, and also in 2001, CTYC was IPO and listed on Shanghai Stock Exchange successfully (stock code: 600378). In December 2018, CTYC completed the M&A and reorganization of 11 scientific research institutes of China Haohua Chemical Group Co., Ltd., and expanded the scope of business and optimized its structure. In June 2019, CTYC was renamed as Haohua Chemical Science & Technology Corp., Ltd. (hereinafter referred to as "Haohua Science & Technology"). In December 2019, Haohua Science & Technology acquired SWRDICI and transferred to SWRDICI its assets, personnel and businesses inherited from CTYC. Therefore, the new Southwest Institute of Chemical Co., Ltd. (hereinafter referred to as "SWCHEM") took over all business from SWRDICI and CTYC after acquisition and integration. In January 2020, SWCHEM was officially put into service to start a new journey.



人才汇聚 科技引领

GATHERING TALENTS AND LEADING TECHNOLOGIES

西南化工研究设计院有限公司拥有一支务实创新、造诣深厚的高素质人才团队，建有博士后创新实践基地，主办《低碳化学与化工》中文核心期刊。

SWCHEM owns a high-quality talent team that pursues pragmatic innovation with high accomplishments, sets up a postdoctoral innovation practice base, and sponsors the Chinese core journal "Low-Carbon Chemistry and Chemical Engineering"



现有研发人员**330**人
330 R&D Personnel

享受国务院政府特殊津贴专家**24**人
24 Experts Enjoying the Special Government Allowance from the State Council of China

四川省学术技术带头人及后备人选**11**人
11 Academic and Technological Leaders of Sichuan Province and corresponding Backup Personnel

四川省突出贡献专家**6**人
6 Outstanding Contribution Experts of Sichuan Province

四川省创新团队带头人及青年基金获奖者**4**人
4 Innovation Teams Leaders of Sichuan Province and Winners of the National Science Fund for Distinguished Young Scholars

四川省天府万人计划创新领军人才**4**人
4 Innovation Talent for the "Tianfu Ten Thousand Talents Program"

国家与省部级科技项目（课题）负责人**36**人
36 Personnel in charge of State, Provincial & Ministerial Science and Technology Programs (Projects)

教授级高工**105**人
105 Professor-level Senior Engineers

高级工程师**276**人
276 Senior Engineers

承担重大项目

KEY PROJECTS

西南化工研究设计院有限公司面向国家与行业重大需求，承担了国家重点研发计划、国家973计划、国家863计划、国家科技支撑计划、国家重大科技成果转化、省部级科技计划项目以及横向合作项目。众多成果达到国际先进水平并实现工业化，发挥着重要的产业技术支撑与引领作用。

Faced with major national and industrial demands, SWCHEM has undertaken national key R&D programs, 973 Program, 863 Program, National Science and Technology Support Program, National Major Scientific and Technological Achievements Transformation Project, provincial and ministerial science & technology projects, and horizontal cooperation projects, ministerial and provincial S&T awards. With numerous global cutting-edge achievements that realize industrialization, SWCHEM plays an important role in supporting and leading industrial technology.

累计完成科研项目**900**余项
Over 900 Scientific Research Projects Completed

申请专利**769**项
769 Patents Applied

获得授权专利**460**余项
More than 460 Authorized Patents Obtained

制修订国家标准**150**余项
Over 150 National Standards Edited

获得国家与省部级科技奖励**100**余项
Over 100 National, Provincial & Ministerial S&T Awards.

国家级创新平台

NATIONAL INNOVATION PLATFORMS

国家碳一化学工程技术研究中心
National Research Center for C1 Chemical Engineering Technology

国家变压吸附气体分离技术研究推广中心
National Research & Popularization Center of PSA Technology for Gas Separation

全国气体标准化技术委员会
National Technical Committee 206 on Gas of Standardization Administration of China

全国煤化工标准化技术委员会煤制化学品分技术委员会
Subcommittee 2 on Chemical Products of National Technical Committee 469 on Coal Chemical Industry of Standardization Administration of China

国家认定企业技术中心
State-certified Enterprise Technology Center

国家技术创新示范企业
National Technology Innovation Demonstration Enterprise

全国创新型试点企业
National Pilot Enterprise for Innovation

国家知识产权示范企业
National Intellectual Property Demonstration Enterprise

国家专利运营试点企业
National Pilot Enterprise for Patent Operation



资质证书

QUALIFICATION CERTIFICATES

工程设计甲级资质证书
Grade A License of Engineering Design

工程咨询甲级资质证书
Grade A License of Engineering Consultation

特种设备设计许可证书（压力容器）
Design License of Special Equipment (Pressure Vessel)

特种设备生产许可证书（压力管道设计）
Manufacture License of Special Equipment (Pressure Piping Design)

知识产权管理体系认证证书
Intellectual Property Management System Certificate

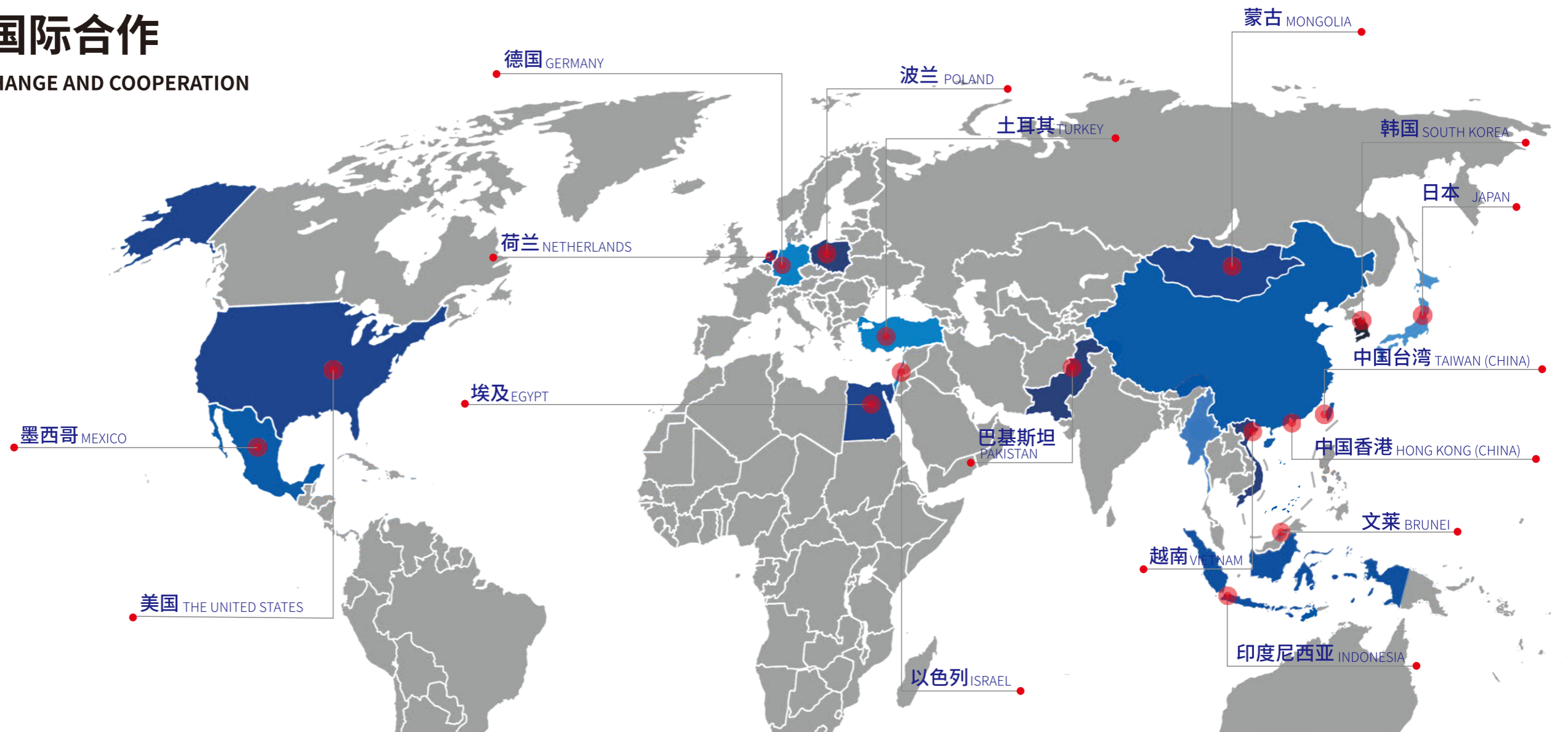
制造计量器具许可证
Manufacture License of Measuring Instruments

质量、环境、职业健康安全管理体系认证证书
Certificates of Quality, Environment, and Occupational Health and Safety Management Systems



国际交流 国际合作

INTERNATIONAL EXCHANGE AND COOPERATION



2019年，与波兰JSW（COG提纯燃料电池氢）项目合作及FSR签约



2019年，与BASF（一步法合成乙醇）新技术合作开发签约仪式



2012年荷兰Technip公司来访洽谈PSA-H₂项目合作




2014年参观印度JSW公司Dolvi钢厂并进行COG-SNG项目技术交流



2014与韩国东光Dongkwang关于PSA提浓CO₂装置合同签字仪式



2018年第15届莫斯科国际石油&天然气展览会



**在实干中创造历史
在奋进中续写辉煌**

**Making History with Diligence
Striving for Glory Forever**