中江

能源回收的领导者

A Leader and Pioneer in Energy Recovery

中江能源

Cer Energy

CEO 致辞

当今世界资源紧缺，形势日益严峻。当今的中国在资源紧张的同时还需应对国内化工企业的重度污染。

中江能源回收以国计民生事业为己任，积极参与到中国的资源管理和优化配置中，致力废热能的回收以及尾气的综合处理等高科技领域的研发和市场开拓。

我们拥有无可匹敌的与能源利用和环境相关的产品和服务。我们帮助化工生产者以更高效、更环保的方式生产和配送能量。我们还为相关行业在能源消耗方面提供最佳节约成本的方法。同时也为客户提供国际视野和顶尖水准。

事实上，我们的所有产品帮助我们的客户—企业、政府和消费者—控制其能源需求、降低其生产成本。从尾气排放达标到尾气利用，从污染控制到将废水变为新能源的解决方案，中江能源的创新致力于提高能源利用效率、节约能源和保护环境。

为了帮助我们的客户了解如何分享这些益处，提升他们的竞争力，我们准备了相关技术的内容。希望我们的技术对您有所帮助！

Shortage of resources is more and more serious in the world. For China, it not only needs to face the straining resources but also needs to take action for the heavy pollution of the domestic chemical industry.

CER takes the people's livelihood as their own responsibility; actively participate in the management and optimization of resources allocation in China, committed to high-tech research and development of marketing for waste heat recovery and gas treatment.

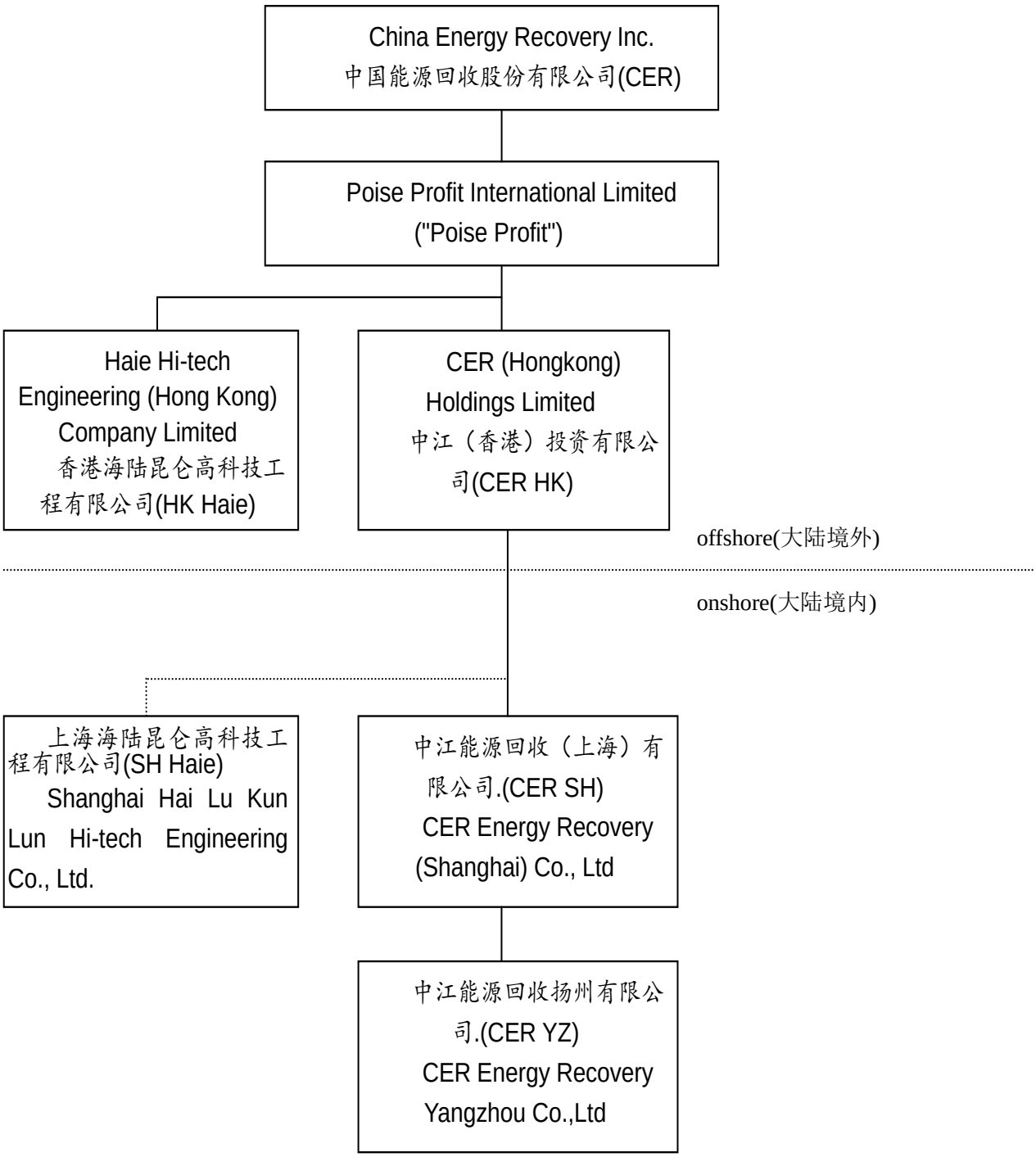
We have unrivalled products and services related to the domains of energy recovery and environment protection. We help chemical producers to produce and distribute energy in the more efficient and more environmental-friendly ways. Simultaneously, we also provide our clients the most cost-saving methods on energy consumption. Based on our strong technical teams, we bring our customers the global vision and top view.

In fact, all of our products do help our customers, Government and consumer to control their energy needs and reduce costs. From exhaust cleaning to the re-utilizing, from pollution control to solutions of changing wastewater into new energy, CER’s innovations are continuously committed to improving energy efficiency, saving energy and protecting the environment

In order to help our customers understand how to share these benefits to enhance their competitiveness, we have prepared the relevant technology documents. Hope it works!

CER 结构关系

Structure



公司由吴清寰先生在 1992 年创建。

公司在2008年4月15日以反向收购(Reverse Merger）方式在美国 OTCBB 成功上市，代号 CGYV。上市公司名称《China Energy Recovery Inc.》、 中文译名《中国能源回收股份有限公司》、简称 CER。

2008 年在香港注册《CER (Hongkong) Holdings Limited》、中文译名《中江（香港）投资有限公司》、简称 CER（HK）。

2008 年在上海注册《中江能源回收（上海）有限公司》、英文译名《CER Energy Recovery (Shanghai) Co., Ltd.》、简称 CER（SH）。这是 CER 的技术研发中心。

2009 年在扬州注册《中江能源回收扬州有限公司》、英文译名《CER Energy Recovery Yangzhou Co., Ltd.》、简称 CER（YZ）。这是 CER 的生产基地。

CER 是一家致力于各种工业生产过程中节能、环保技术的工程公司。能源回收指的是捕捉并回收各种工业生产过程中的被废弃能源，在一个封闭循环系统中产生蒸汽或发电，旨在极大提高工业生产效率，降低有害物质排放。

CER 向中国国内和全球范围内客户提供高度客户化的、节约能源、减少污染和降低成本的解决方案。已完成一系列高质量的，针对不同生产过程的设计、设备制造和工程建设项目。

CER（SH）位于中国的硅谷上海浦东张江高科技工业园区,是 CER 的管理总部和技术研发中心。自有办公用房 2,600 平方米，有工程技术人员 160 名，专业配套齐全，研发手段先进。

CER（YZ）是 CER 的生产基地，位于中国江苏省扬州市仪征北郊，占地 231 亩（折合 15.4 英亩），分为两期建设。建设完成投产的一期工程已建成厂房 13,608 平方米、办公用房 3,024 平方米、辅助用房 4,224 平方米。并于 2011 年 1 月取得中国国家“A 级锅炉”和“A1、A2 级Ⅲ类压力容器”设计、制造资质，2011 年 3 月获得美国 ASME 锅炉 S、压力容器 U1 制造许可证。已形成拥有国内外最高等级设计、制造资质的全能工厂。已经开工的二期将建成中国能源回收设备制造行业最大的单体厂房之一（468 米 x144 米），届时将大大提升 CER 的生产能力。

我们将充份利用工厂的重型厂房和重型装备加工能力、充份利用 CER 超强的设备研发能力，工程设计能力、工程建设管理能力，尽快建成世界一流的大型装备制造基地和工程公司。

关于 CER

About CER

Company was established by the founder Mr. Wu Qinghuan in 1992

The company went public through Reverse Merger as of April 15th 2008 in the OTCBB market, the stock code is CGYV. Named as “China Energy Recovery Inc” “CER” for short

CER (Hong Kong) holdings Limited was established on Hong Kong in 2008, “CER (HK)” for short

CER Energy Recovery (Shanghai) Co.,Ltd was established on Shanghai in 2008. “CER(SH) “for short. This is the R&D center of CER.

CER Energy Recovery Yangzhou CO.,Ltd was established on Yangzhou in 2009. “CER (YZ) “for short. This is the production base of CER

CER is an engineering firm specializing in waste energy recovery across a broad spectrum of industrial processes, including sulfuric acid and fertilizer production, paper production and petrochemicals. Energy recovery involves the capture and recycling of wasted heat energy used to produce steam in a closed loop system that dramatically reduces cost, while reducing pollution. CER has a long track record of engineering excellence due to its quality design, construction and installation of pioneering projects in China and globally. CER provides its clients with customized, cost effective solutions, designed to substantially increase operational efficiency and reduce harmful emissions.

CER provides its worldwide clients with customized, cost effective solutions designed to substantially increase operational efficiency and reduce harmful emissions.CER also has a long record of engineering excellence due to its quality design, construction and installation of pioneering projects

CER (SH) is the R&D Center, located in Shanghai Zhangjiang Hi-tech Park, “the China silicon valley”. It has office area 2,600 square meters; engineer 160, specialty necessary is complete, research and development advanced.

The new production base of CER, located in North Yizheng,Yangzhou, Jiangsu Province, China, is approximately as large as 15.4 acre. The newly build phase one factory has 13608 square meters, with a 3,024 square meters office building and a 4,224 square meters auxiliary building.CER Yangzhou has obtained PRC “A” certificate for boiler and “A1,A2” and “Ⅲ” certificates for pressure vessel on January,2011 and moreover CER Yangzhou has obtained American ASME boiler S and pressure vessel U1 certificates, which will make CER to be a world-class, state-of-the-art facility with the highest design and manufacturing certificates in the world. The phase two starting construction soon will be the largest single facility (468m*144m) in the manufacture industry, which will enhance CER’s production capability greatly.

The company will fully tilize the heavy workshop and processing capability on heavy equipments, the research and development ability and designing &project management discipline to make the factory be the first-class production base for large set of equipments.

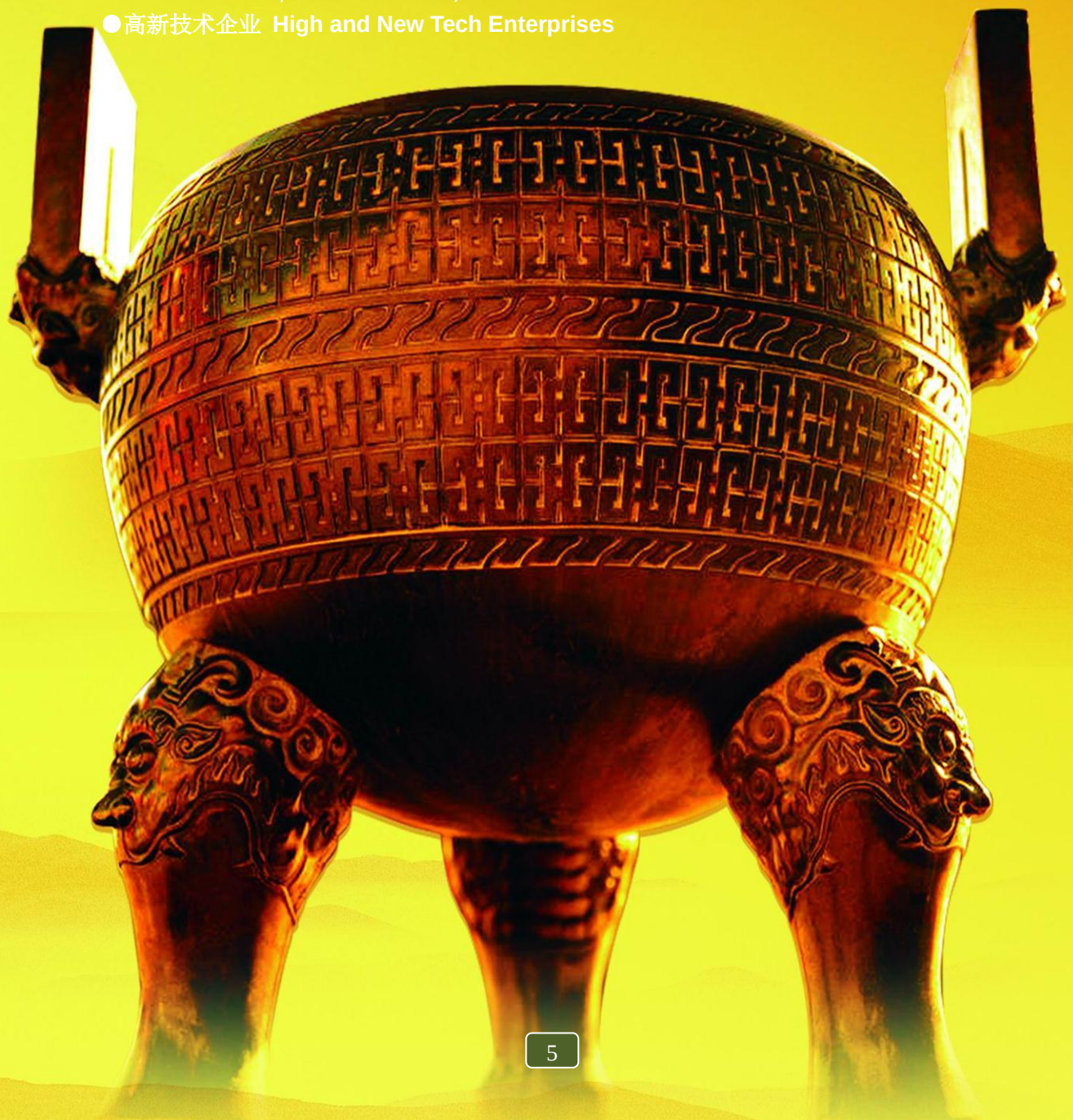
资 质 证 明

License & Certificate

因为实力，所以信任！

Because of the strength, soTrust!

- A1、A2 级Ⅲ类压力容器设计、制造 Pressure Vessels design and manufacturing
- A 级锅炉设计、制造资质 Boiler design and manufacturing
- ASME NB 注册证书 Certificate of authorization for ASME NB
- ASME S 锅炉 ASME S Boiler
- ASME U 压力容器 ASME U Pressure Vessels
- ISO 9001-2008,ISO 14001-2004,OHSAS 18001-2007
- 高新技术企业 High and New Tech Enterprises



License & Certificate

资质证明

中华人民共和国
特种设备制造许可证
Manufacture License of Special Equipment
People's Republic of China

（压力容器）

编号：TS2210C90-2015

单位名称：中江能源回收扬州有限公司
（原单位名称：中江能源回收（扬州）有限公司）
制造地址：江苏省扬州市仪征市汽车工业园中江路 100 号

经审查，获准从事下列压力容器的制造：

级别	品种范围	备注
A1	仅限高压容器	
A2	第三类低、中压容器	

审批机关：国家质量监督检验检疫总局
有效期至：2015 年 1 月 10 日
发证机关：
发证日期：2011 年 1 月 11 日
变更日期：2013 年 1 月 14 日

国家质量监督检验检疫总局制

中华人民共和国
特种设备设计许可证
Design License of Special Equipment
People's Republic of China

（压力容器）

编号：TS1210610-2015

单位名称：中江能源回收扬州有限公司
（原单位名称：中江能源回收（扬州）有限公司）
单位地址：江苏省扬州市仪征市汽车工业园中江路 100 号

经审查，获准从事下列压力容器的设计：

级别	品种范围	备注
A1	高压容器	
A2	第Ⅲ类低、中压容器	

审批机关：国家质量监督检验检疫总局
有效期至：2015 年 7 月 7 日
发证机关：
发证日期：2011 年 7 月 8 日
变更日期：2013 年 1 月 14 日

国家质量监督检验检疫总局制

中华人民共和国
特种设备制造许可证
Manufacture License of Special Equipment
People's Republic of China

（锅炉）

编号：TS2110980-2015

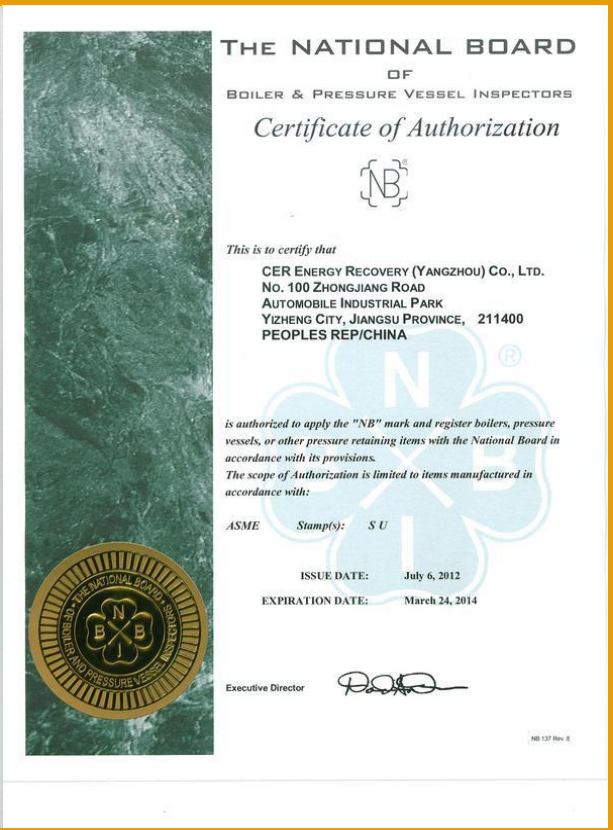
单位名称：中江能源回收扬州有限公司
（原单位名称：中江能源回收（扬州）有限公司）
制造地址：江苏省扬州市仪征市汽车工业园中江路 100 号

经审查，获准从事下列类型锅炉的制造：

A 级锅炉

审批机关：国家质量监督检验检疫总局
有效期至：2015 年 1 月 23 日
发证机关：
发证日期：2011 年 1 月 24 日
变更日期：2013 年 1 月 14 日

国家质量监督检验检疫总局制



THE NATIONAL BOARD
OF
BOILER & PRESSURE VESSEL INSPECTORS

Certificate of Authorization

This is to certify that

CER ENERGY RECOVERY (YANGZHOU) CO., LTD.
NO. 100 ZHONGJIANG ROAD
AUTOMOBILE INDUSTRIAL PARK
YIZHENG CITY, JIANGSU PROVINCE, 211400
PEOPLES REP/CHINA

is authorized to apply the "NB" mark and register boilers, pressure vessels, or other pressure retaining items with the National Board in accordance with its provisions.
The scope of Authorization is limited to items manufactured in accordance with:

ASME *Stamp(s):* *S U*

ISSUE DATE: July 6, 2012
EXPIRATION DATE: March 24, 2014

Executive Director

License & Certificate

资质证明

The American Society of Mechanical Engineers

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

CER Energy Recovery Yangzhou Co., Ltd.
No. 100 Zhongjiang Road
Automobile Industrial Park
Yizheng City, Jiangsu Province 211400
People's Republic of China

SCOPE:

Manufacture and assembly of power boilers at the above location only

AUTHORIZED: March 24, 2011 REVISED: March 13, 2013
EXPIRES: March 24, 2014
CERTIFICATE NUMBER: 40,510

Vice President, Conformity Assessment

Director, Conformity Assessment

The American Society of Mechanical Engineers

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

CER Energy Recovery Yangzhou Co., Ltd.
No. 100 Zhongjiang Road
Automobile Industrial Park
Yizheng City, Jiangsu Province 211400
People's Republic of China

SCOPE:

Manufacture of pressure vessels at the above location only

AUTHORIZED: March 24, 2011 REVISED: March 13, 2013
EXPIRES: March 21, 2014
CERTIFICATE NUMBER: 40,511

Vice President, Conformity Assessment

Director, Conformity Assessment

sira Sira Certification Service UKAS

QUALITY SYSTEM CERTIFICATE

This is to Certify that the Quality Management System of

SHANGHAI HAI LU KUN LUN HI-TECH ENGINEERING CO., LTD
7/F, No.267, Quyang Road
Shanghai 200081
P.R.China

has been assessed by Sira Certification Service
and found to comply with

ISO 9001:2008
for the

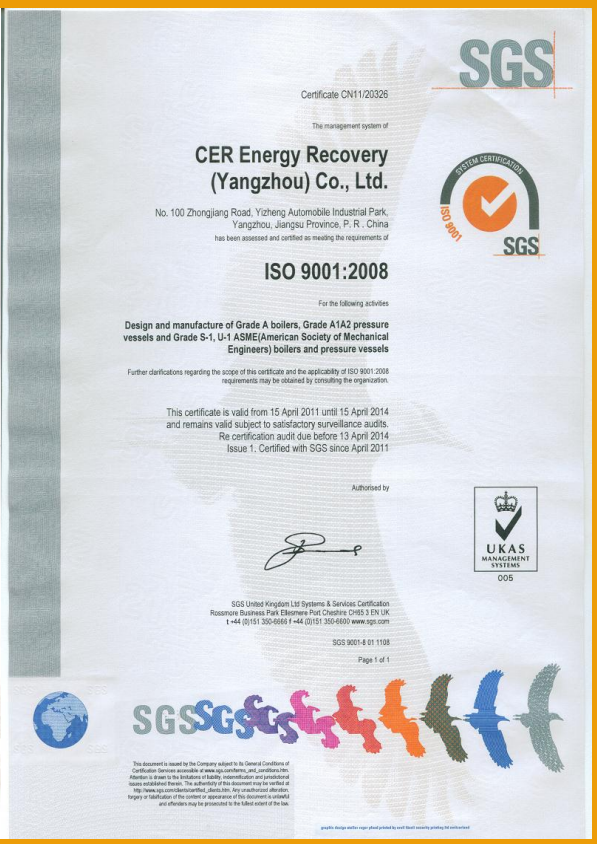
Design and sale of waste heat boilers and auxiliary equipments

Certificate No: 093513
Date of Initial Certification 14 October 2009
Date of Issue/Reissue 14 October 2009
Renewal Due 01 September 2012

Managing Director

This certificate is subject to the company maintaining its system to the required standards, which will be monitored by Sira. The use of this Certificate and the Sira Certification Mark are subject to the Regulations Applicable to Holders of Sira Certificates.

Sira Certification Service
12 Acorn Industrial Park,Crayford Road,Crayford,
Dartford,Kent,United Kingdom,DA1 4AL



SGS

Certificate CN11/20326

The management system of

CER Energy Recovery (Yangzhou) Co., Ltd.

No. 100 Zhongjiang Road, Yizheng Automobile Industrial Park, Yangzhou, Jiangsu Province, P. R . China

has been assessed and certified as meeting the requirements of

ISO 9001:2008

For the following activities

Design and manufacture of Grade A boilers, Grade A1A2 pressure vessels and Grade S-1, U-1 ASME(American Society of Mechanical Engineers) boilers and pressure vessels

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2008 requirements may be obtained by consulting the organization.

This certificate is valid from 15 April 2011 until 15 April 2014 and remains valid subject to satisfactory surveillance audits.
Re certification audit due before 13 April 2014
Issue 1. Certified with SGS since April 2011

Authorised by

UKAS MANAGEMENT SYSTEMS 005

SGS United Kingdom Ltd Systems & Services Certification
Rossmore Business Park Ellesmere Port Cheshire CH65 3 EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

SGS 9001-8 01 1108

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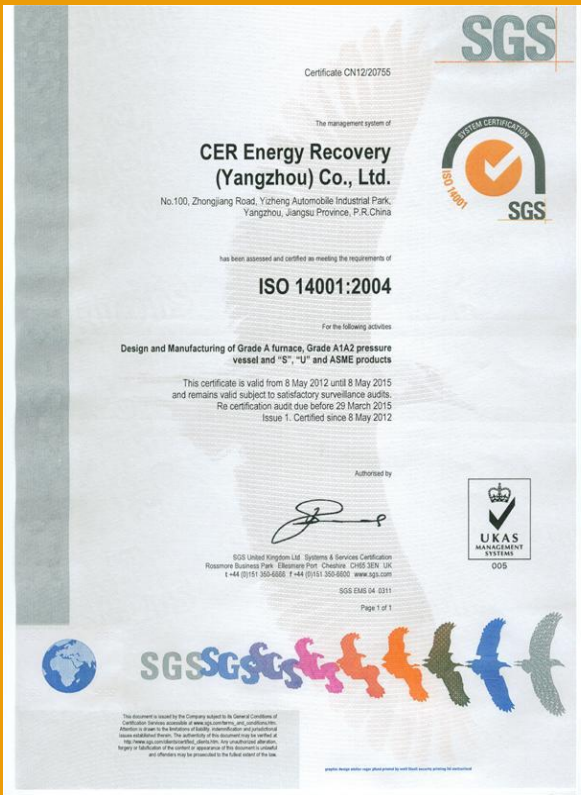
License & Certificate

资质证明



SGS

Certificate CN12/20755

The management system of

CER Energy Recovery (Yangzhou) Co., Ltd.

No.100, Zhongjiang Road, Yizheng Automobile Industrial Park, Yangzhou, Jiangsu Province, P.R.China

has been assessed and certified as meeting the requirements of

ISO 14001:2004

For the following activities

Design and Manufacturing of Grade A furnace, Grade A1A2 pressure vessel and "S", "U" and ASME products

This certificate is valid from 8 May 2012 until 8 May 2015 and remains valid subject to satisfactory surveillance audits.
Re certification audit due before 29 March 2015
Issue 1. Certified since 8 May 2012

Authorised by

SGS United Kingdom Ltd Systems & Services Certification
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

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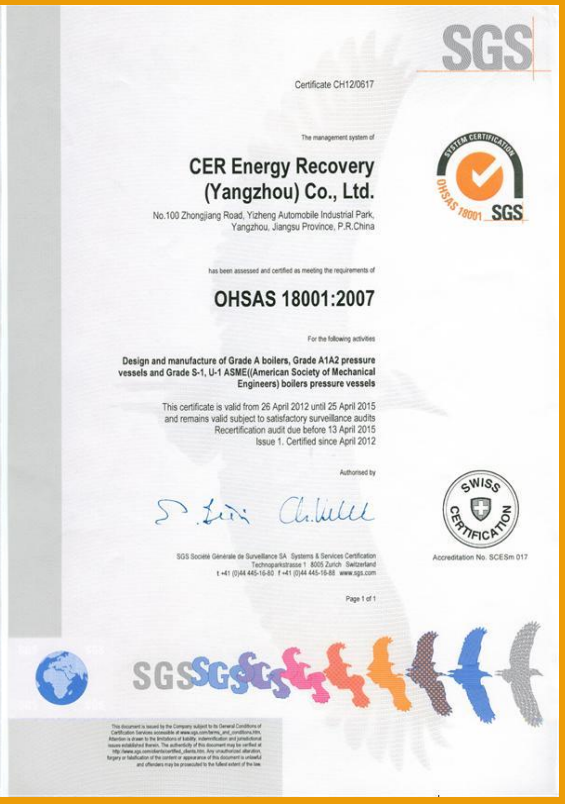

SGS

Certificate CH12/0617

The management system of

CER Energy Recovery (Yangzhou) Co., Ltd.

No.100 Zhongjiang Road, Yizheng Automobile Industrial Park, Yangzhou, Jiangsu Province, P.R.China

has been assessed and certified as meeting the requirements of

OHSAS 18001:2007

For the following activities

Design and manufacture of Grade A boilers, Grade A1A2 pressure vessels and Grade S-1, U-1 ASME((American Society of Mechanical Engineers) boilers pressure vessels

This certificate is valid from 26 April 2012 until 25 April 2015 and remains valid subject to satisfactory surveillance audits
Recertification audit due before 13 April 2015
Issue 1. Certified since April 2012

Authorised by

SGS Société Générale de Surveillance SA Systems & Services Certification
Technoparkstrasse 1 8005 Zurich Switzerland
t +41 (0)44 445-16-80 f +41 (0)44 445-16-88 www.sgs.com

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Accreditation No. SCESm 017

高新技术企业

证书

企业名称：中江能源回收（上海）有限公司　　证书编号：GR201131000163

发证时间：2011 年 11 月 28 日　　有 效 期：三年

批准机关：

上海市科学技术委员会　上海市财政局　上海市国家税务局　上海市地方税务局

工厂及设备

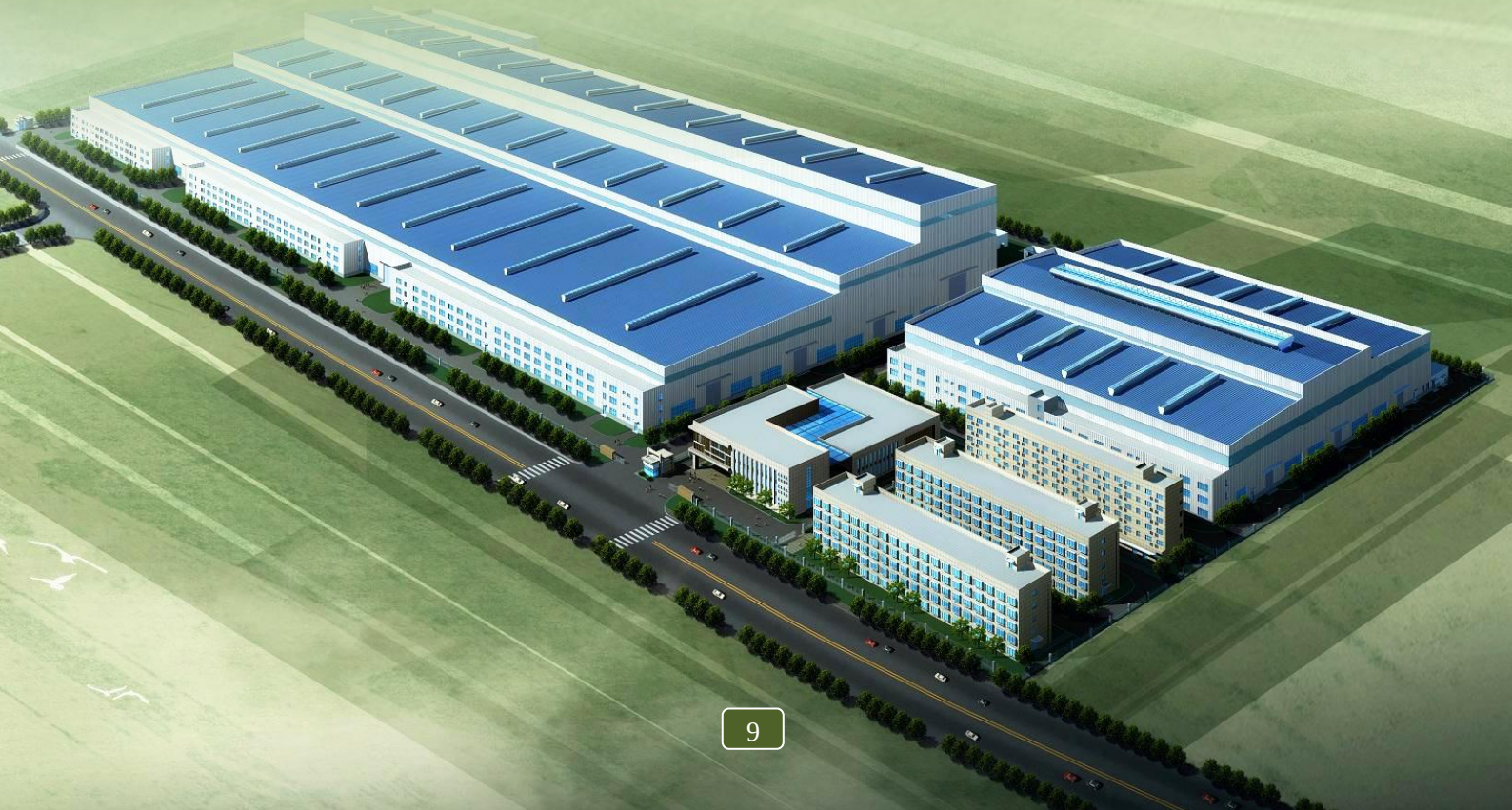
Factory and Equipments

CER 工厂占地 231 亩，分为两期建设。建设完成投产的一期工程已建成厂房 13,608 平方米、办公用房 3,024 平方米、辅助用房 4,224 平方米。已经开工的二期将建成中国能源回收设备制造行业最大的单体厂房之一（468 米 x144 米）。

一期厂房安装设备包括 8 台最大载重 100T 行车、最大弯管能力达 76mm 的蛇形管生产线、12m 铣边机、80×3200mm 四辊卷板机等各类生产设备近二百台套，设有探伤室、化学分析室、机械性能分析室等。

The CER factory covers an area of 231 acres and the construction is divided into two phases. The built phase one ,which has been in production , has 13608 square meters, with a 3024 square meters office building and a 4224 square meters auxiliary building. The phase two which has started construction will be the largest single facility(468mx144m) in the manufacture industry.

The equipments in phase one including 8 traveling crane whose maximum load is 100T, serpentine pipe production line whose maximum bending capacity is 76mm, 12m milling machine, 80x3200mm four roller bending machine and so on . These production equipments have a total number of 200 sets. There also set flaw detection room, chemical analysis room and mechanical performance analysis room and so on.



Equipment

设备

100T 行车
100T traveling crane

蛇形管生产线
Serpentine pipe production line

12 米铣边机
Milling machine(12m)

Equipment

设备

膜式壁焊接机-埋弧焊
Membrane wall welding machine

200 等离子切割机
200Plasma cutting machine

360 等离子切割机
360Plasma cutting machine

Equipment

设备

四辊筒卷板机
Four roller bending machine

100 钻床
100 drilling machine

绕翅片机
Around the fin machine

Equipment

设备

机械包扎机
Mechanical dressing machine

射线探伤与退火炉
Ray flaw detection and annealing furnace

Equipment

设备

试样加工间
Test specimen processing room

化学分析室
Chemical analysis room

机械性能分析室
Mechanical performance analysis room

产 品 Products

全方位地为客户提供技术咨询、设计、制造、安装、调试等服务！

Our scope of service includes:

-technical consultancy,

-design

-manufacture

-Erection

-commissioning and so on.

CER 产品－硫磺制酸余热锅炉

Products-Waste heat boiler for sulfuric acid

硫酸余热锅炉是 CER 的强项之一，技术领先，服务上乘，是国内硫酸余热回收系统设备的主要供货商。由 CER 成套或承包的硫酸余热回收和发电工程，已遍布全国各地。主要设备包括锅壳、过热器、省煤器及汽包等

Waste heat boiler for sulfuric acid production is one of the strengths of CER, with its leading technologies and good service. It is also one of the main suppliers of such products in China. The waste heat recovery and power generation projects for sulfuric production contracted by CER, either in turn key form or with all equipment supplied in a complete set, can be found all over the country.The main equipment includes the boiler shell, superheater, Economizer and steam drum.

锅壳

Boiler shell

低温过热器

Low temperature superheater

热管省煤器

Economizer

汽包

Steam drum

CER 产品－硫铁矿制酸余热锅炉

Products-Waste heat boiler for Sulfuric acid production based on pyrites

技术特点：

锅炉为水平烟道式，对流受热面为蛇形管结构，通过顶盖箱组装垂直悬吊在烟道内，烟气横向冲刷受热面，传热效果好；对流受热面采用弹簧锤击式振打除灰装置，除灰效果明显；受压元件在制造厂完成组装，现场安装工作量大幅度减少，锅炉整体安全性大幅度提高。

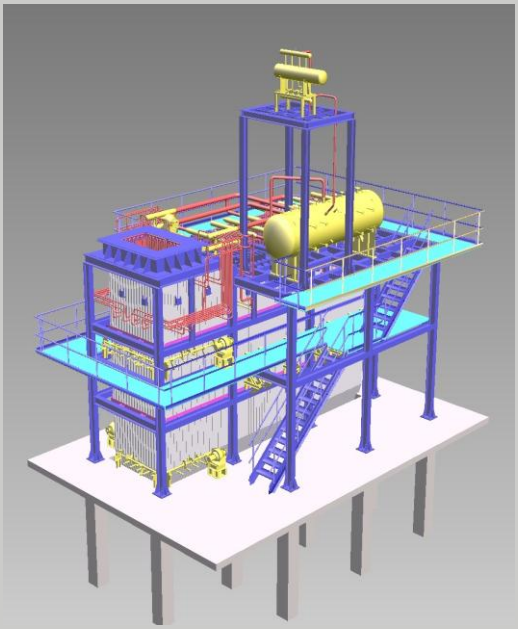
特别推荐：全膜式水冷壁结构

□ 省去笨重的炉墙砌体，锅炉总重量轻，无需为锅炉烘炉；

□ 锅炉启、停运行快速，方便；

□ 没有炉体蓄热，锅炉散热损失少，余热回收效率高；

□ 安装、检修方便，施工周期短；



Technical features:

The boiler is horizontal flue type. The convection heating surface is coil structure and assembling by using head cover box to vertically suspend in the flue. The flue gas cross-flow scrub the heating surface, the effect of heat transfer is good.

We use spring hammer oscillating-type blower unit in the convection heating surface, the ash removal effect is obvious

The pressure components will be completed the assembly at the factory which will reduce the workload of site installation and improve the overall security significantly.

Special Recommend: Membrane wall structure

No Furnace wall masonry! The boiler is in light weight and no need for baking.It is easy and quick to run and stop the boiler.No heat storage of furnace body! Less heat loss! Higher efficiency of waste heat recovery.It is convenient for installation and maintenance. The period of the construction is short.

轻型炉墙

Light of the boiler wall

重型炉墙

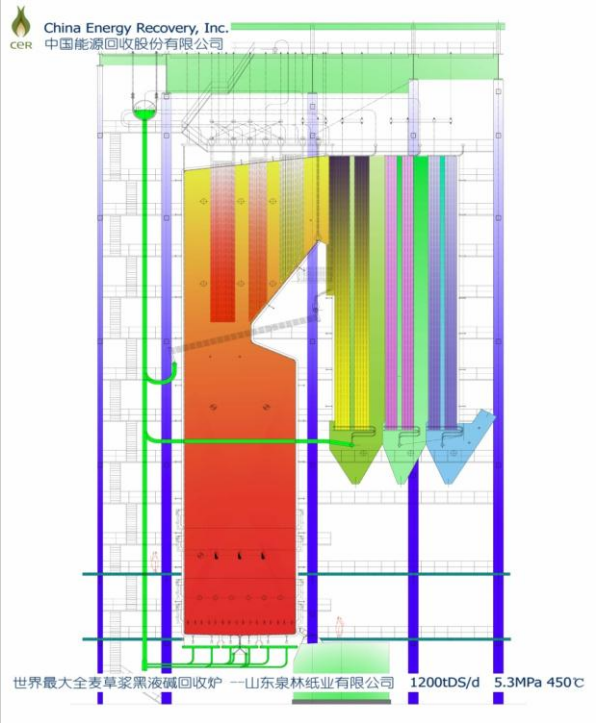
Heavy of the boiler wall

CER 产品—碱回收炉

Products-Alkali recovery boiler

造纸碱回收是国家重点开发推广的环保、节能工程项目。本公司拥有成熟、可靠的碱回收系统工程经验，坚持以客户为中心，与国内各相关轻工设计院紧密合作，发挥高科技工程公司专业人才济济的特长，全方位地为客户提供碱回收系统工程的技术咨询、设计、制造、安装、调试以及燃烧工段或碱回收系统的总承包交钥匙工程服务。

Alkali recovery in papermaking industry is an important project related to environmental protection and energy saving, which China has exerted great efforts to develop and popularize over the years. Our company possesses proven and reliable experiences regarding engineering technology for alkali recovery. By focusing our attention on serving the clients and staying in close cooperation with related design institutes for light industry in China. Our scope of service includes:- technical consultancy, design, manufacture, erection, commissioning for alkali recovery projects- turnkey contract service for combustion section or alkali recovery system.



过热器
superheater

省煤器
Economizer

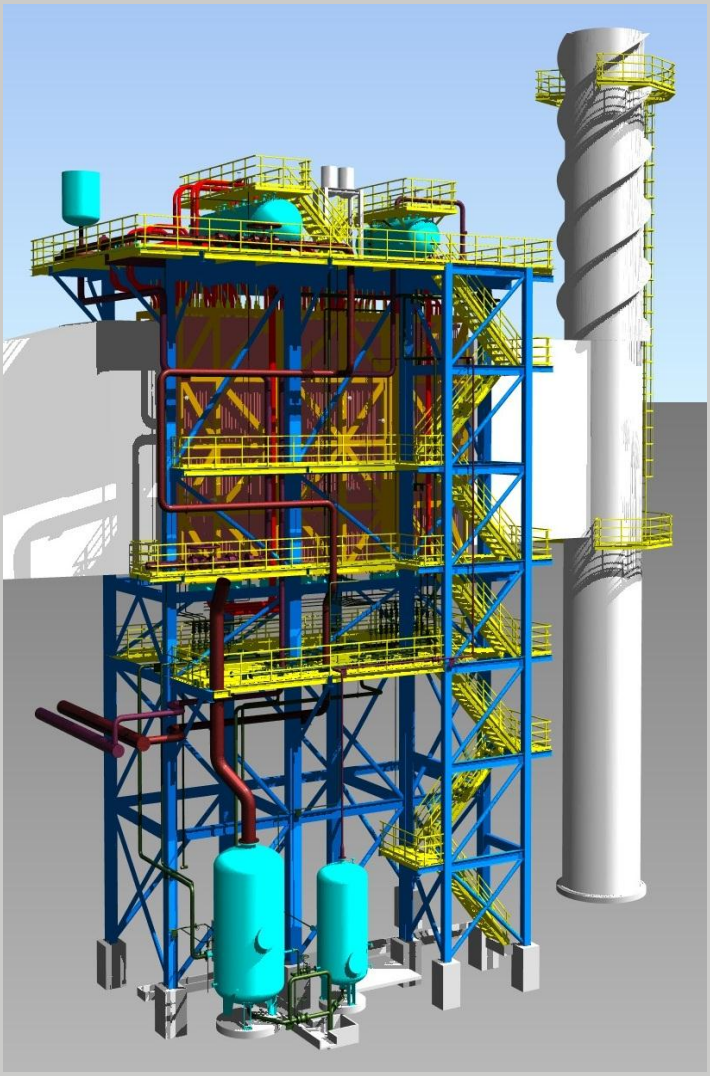
水冷壁
Water wall

CER 产品－燃气轮机排气余热锅炉

Products-Waste heat boiler for gas turbine

在燃气（油）-蒸汽联合循环中，余热锅炉回收燃气轮机排气余热，产生蒸汽推动汽轮机发电或直接供热。分为无补燃的余热锅炉及有补燃的余热锅炉。

无补燃的余热锅炉单纯回收燃气轮机排气的热量，产生一定压力和温度的蒸汽。对于有补燃的余热锅炉，由于燃气轮机排气中含有 14%-18%的氧，可在余热锅炉的恰当位置安装补燃燃烧器，补充天然气或燃油等燃料进行燃烧，提高烟气温度，还可保持蒸汽参数和负荷稳定，以相应提高蒸汽参数和产量，改善联合循环的变工况特性。如果全部利用这部分氧气，蒸汽循环所占的发电份额将上升为联合循环总功率的 70%左右。



In the gas (oil)-steam combined cycle, gas turbine releases waste heat recovery to produce steam to drive steam turbine power generation electricity or direct heating. There are two kinds of waste heat boiler, one is afterburning boiler and another is no-afterburning boiler.

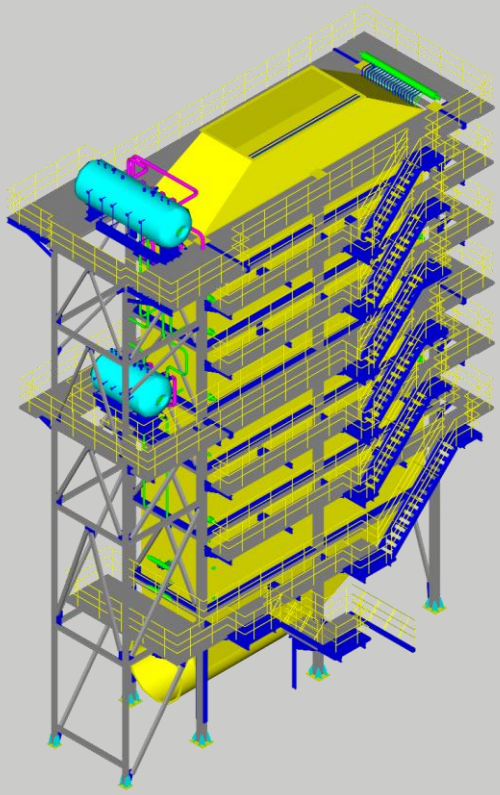
The no-afterburning boiler only cycles the heat from gas turbine to produce a certain pressure and temperature of steam. For afterburning waste heat boiler, we can install the after burner in the proper location of the waste heat boiler as turbine exhaust contains 14%-18% of oxygen. We can add supplementary natural gas or fuel oil for burning to increase flue gas temperature, also keeps the steam parameters and load stability. Increased steam parameters and production in order to improve the characteristics of combined cycle. If use all of this oxygen, Power generation share of steam cycle will rise to about 70% of total combined cycle power.

CER 产品－水泥窑余热锅炉

Products-Waste heat boiler for cement kiln

CER 长期以来一直致力于硫酸余热锅炉的研究，除自行开发了全国产化的水平通道横向冲刷振打除灰结构硫铁矿制酸余热锅炉，还在硫磺制酸余热回收中采用螺旋鳍片管技术进行低温位余热的回收。基于这两项成熟的技术，为水泥窑生产线中的中低温余热的回收利用开发打下了良好的基础。

对水泥窑余热锅炉而言，最大的难题是如何应对烟气的低品位和高灰份。因为低品位意味着巨大的换热面积，只有降低了受热面成本才能提供高性价比的产品;而高灰份带来的是受热面的磨损和粉尘附着造成传热性能降低，甚至恶性堵灰事故造成可靠性降低。对于窑头 AQC CER 解决的办法是采用先进的扩展受热面即螺旋鳍片管，对于窑尾 SP CER 解决方法是采用机械振打清灰技术，这样可以有效的解决磨损和积灰问题，并有效的提高传热效率。



正是基于这些技术的积累，公司在 2010 年成功研发了具有自主知识产权的强制循环水泥窑余热锅炉。

CER has dedicated to the study of sulfuric acid waste heat boiler for a long time, in addition to develop a domestic level horizontal channel horizontal scour vibration structure pyrite waste heat boiler also use spiral finned tube technology in the low temperature waste heat recovery in sulfuric acid. Based on these two mature technologies, it is a good foundation for utilization and development of low temperature waste heat recovery in the cement kiln production line.

For the cement kiln waste heat boiler, the biggest challenge is how to deal with the low and high grade ash content in flue gas. Because the low ash content means a large heat transfer area, only reduce the cost of heating surface offers high quality products. But the high ash content bring the heating surface abrasion and reducing the heat transfer performance caused by dust attached ,even the bad plugging ash accident caused reliability reduces. For the Kiln AQC, CER’s solution is to the use of advanced extension heating surface, that is spiral finned tube; For kiln SP, CER’s solution is to mechanical vibration cleaning techniques, which can effectively solve wear& tear and ash-holding problems, and improve heat transfer efficiency

It is based on the accumulation of these techniques, the company successfully developed independent intellectual property rights for forced recycling cement kiln waste heat boiler in the 2010.

CER 产品—催化裂化余热锅炉

Products-Waste Heat Boiler for Catalytic cracking

催化裂化余热锅炉除回收再生烟气余热、保护环境外，还承担装置全部饱和蒸汽的过热任务。要求过热器的调节范围比普通锅炉大得多。同时承担装置全部产汽设备的给水加热任务。因此，要求余热锅炉设计必须考虑其工艺装置的特点，保证锅炉正常运行，否则，将影响装置正常操作。余热锅炉受热面：过热器、蒸发器、省煤器均为螺旋翅片管，模块化箱体结构，全部受压元件的组焊在锅炉厂完成（管子对接焊缝 100%拍片），整体出厂，现场整体吊装，实现工厂化制造，确保产品质量，缩短现场安装工期。

Waste Heat Boiler for Catalytic cracking is not only utilized for recovery the waste heat of gas to protect environment, but also superheat all the saturated steam of plant. The adjustment range of superheater is required to be much larger than ordinary boiler. Meanwhile, it shall be undertaken the task of heating the feed water of steam generated equipments. Hence, the design of waste heat boiler shall consider the characteristics of process plant to ensure the normal operation of boiler. Otherwise, the operation of plant would be affected.

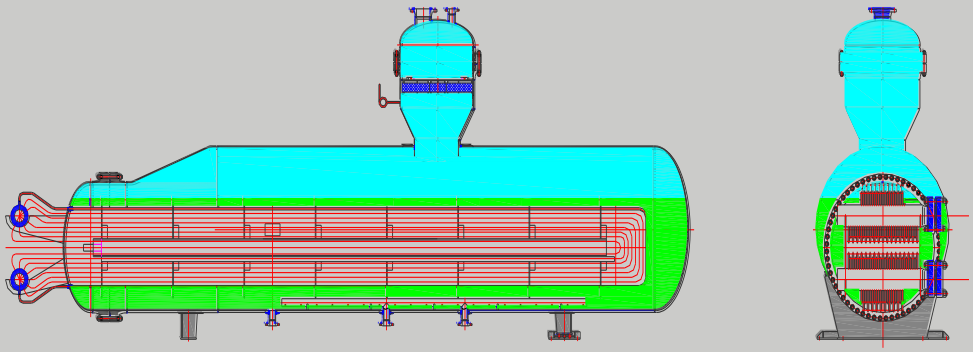
The heating surface: Superheater, evaporator and economizer are spiral finned tubes, modular cabinet structure, in order to implement the factory manufacturing, all the welding of pressure parts shall be completed in the factory (100% films for butt welding of tubes), delivered entirely and overall lifted on site to guarantee the quality of products and shorten the installation period on site.

CER 产品—合成氨装置余热锅炉

Products-Synthetic ammonia WHB

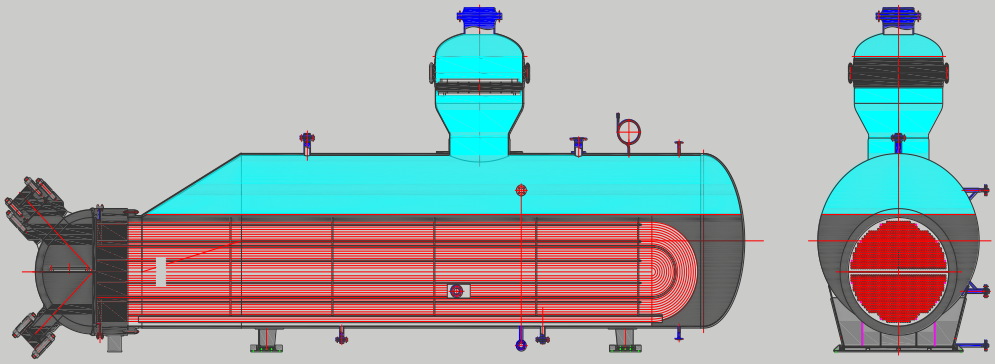
在一、二段转化炉以及氨合成塔后均设有余热锅炉，利用生产过程中的工艺余热产生蒸汽，能给企业节能降耗、提高效益供装置工艺使用；此类余热锅炉的特点为管程压力为高压，壳程为中、低压，本公司此类产品具有结构紧凑、密封性能好、无环境污染、系统阻力小、操作方便、安全可靠、可保证余热充分回收。

There are WHB at the outlet of converter section 1&2, and Synthetic ammonia tower, It utilize the process waste heat during production to generate the steam to reduce the energy consumption of enterprise, and also improve the efficiency; The characteristics of such waste heat boiler is that the tube side is high pressure, and media/low pressure for shell side. Our company produce this kind of product with the compact structure, good sealing performance, no pollution, small system resistance, easy to operate, safe and reliable, fully guaranteed waste heat recovery.



集箱式余热锅炉

Waste heat boiler of box type



管板式余热锅炉

Waste heat boiler of tube type

CER 产品－循环流化床锅炉

Products-Circulating fluidized bed boiler

循环流化床锅炉是一种采用洁净燃烧技术的新型锅炉，具有燃烧效率高和低污染的典型特点，在吸取其它循环流化床锅炉经验基础上通过优化设计而成。由于其适应性好，能显著降低二氧化硫的排放，同时由于低温燃烧，使得 NOx 的排放量也明显降低，减轻了对设备的腐蚀和烟气对环境的污染，具有良好的发展前景。

简介如下：

□ 循环流化床为系自然循环水管锅炉，M 型布置，框架支吊结构，锅炉按半露天布置进行设计

□ 在吸取其它循环流化床锅炉经验基础上通过优化设计而成,使得此锅炉具有燃烧效率高和低污染的典型特点

□ 采用带旋风分离器的循环燃烧系统，炉膛为膜式水冷壁，过热器分高、低二级布置，中间设喷水减温器，尾部设省煤器和一、二次风预热器

□ 有极好的负荷适应性和运行可靠性

The Circulating Fluidized Bed Boiler of a new type, employing a clean combustion technology. It is designed through optimization by drawing on the experiences of other similar CFB boilers, featuring high combustion efficiency and low pollution. And as it is operated under low temperature, NOx emission is reduced too. Thus, not only there is less corrosion to the equipment, but the environmental pollution from the gas is minimized.

Brief as bellowing:

□ The boiler is of water tube type with natural circulation. It has an M type arrangement with a framed supporting structure and designed for semi-outdoor layout

□ It is designed through optimization by drawing on the experiences of other similar CFB boilers, featuring high combustion efficiency and low pollution.

□ The circulating combustion system employs a cyclone separator. The furnace is enclosed with water-tubed membrane wall. The superheater system is composed of two stages, namely, a high temperature superheater and a low temperature superheater, with a spray-type attemperator installed in between. The economizer and the primary and secondary air pre-heaters are at the rear part of the boiler.

□ The circulating combustion system is provided with unexceptionable loading flexibility and operation reliability.

CER 产品－压力容器

Products-Pressure vessel

CER 积累了多年高压容器的设计、制造经验。拥有美国机械工程师学会（ASME）U-压力容器钢印制造许可证及国家技术监督检验检疫总局颁发的Ⅲ类压力容器设计制造许可证。

CER 工厂拥有先进的检验和制造设备以及高素质的压力容器设计专业工程师，具备设计及制造单层和多层高压设备的能力，能为石油和化工装置提供Ⅰ、Ⅱ、Ⅲ压力容器和各种非标设备。主要容器产品有合成塔、换热器、各种分离装置和贮存设备等。

已累计生产各类压力容器四百多台，产品销售遍及全国各地并远销国外，深受用户好评。

多层高压设备

Multilayer High Pressure Equipment

CER has accumulated many years of experience in pressure vessel design, manufacture. CER also has the ASME U-steel seal of pressure vessel manufacturing license and Ⅲ class pressure vessel design and manufacture license issued by General Administration of Quality Supervision, Inspection and Quarantine.

CER factory has advanced testing and manufacturing equipment, and high-quality pressure vessel designing engineers. CER factory has the designing and manufacturing capacity of single layer and multilayer high pressure equipment, which can provide oil and chemical plant Ⅰ、Ⅱ、Ⅲ class pressure vessel and all kinds of non-standard equipment. The mainly vessel products include synthesizing tower, heat exchanger and separation devices and storage equipment.

we have produced more than 400 sets of various types of pressure vessels. Products are sold throughout the country and exported to abroad, well received by user.

蒸发器

Evaporimeter

工程实景 Major Project Experience

立足中国，走向世界！

Based on China, to the world!

CER 工程实景—硫磺制酸

Major Project Experience-Sulfuric Acid

双狮（张家港）精细化工有限公司硫磺制酸装置
3000MTPD Sulfuric Acid Plant (Zhangjiagang) Two Lions

浙江嘉化工业园投资发展有限公司硫磺制酸工程
1200MTPD Sulfuric Acid Plant Jiaxing Fine Chemical

云南江川天湖化工有限公司硫磺制酸工程
900MTPD Sulfur Acid Plant Yunnan Jiang Chuan Phosphoric Chemical Co,Ltd

CER 工程实景—硫磺制酸

Major Project Experience-Sulfuric Acid

湖北三宁化工股份有限公司 80 万吨/年硫酸装置
0.8 Million tons /year Sulfuric Acid of Hubei Sanning Chemical Co.,Ltd

湖北宜化肥业有限公司 80 万吨/年硫酸装置
0.8 Million tons /year Sulfuric Acid of Hubei Yihua fertilizer Co.,Ltd

无锡格林艾普化工股份有限公司 60 万吨/年硫磺制酸
0.6million tons /year sulfuric acid of Wuxi Greenapple Chemical Co.,Ltd

CER 工程实景—硫磺制酸

Major Project Experience-Sulfuric Acid

镇江凯林热能有限公司 **80** 万吨/年硫磺制酸
0.8 million tons /year sulfuric acid of Zhenjiang Clean thermal Co.,Ltd

宁波新福钛白粉有限公司 **60** 万吨/年硫磺制酸
0.6 million tons /year sulfuric acid of Ningbo Xinfu titanium pigment Co.,Ltd

印尼 **PJA** 公司
60 万吨/年硫磺制酸
0.6 million tons /year sulfuric acid of PT Petro Jordan Abadi, Indonesia

CER 工程实景—碱回收

Major Project Experience-Alkali Recovery

山东省泉林纸业 1200tds/d 碱回收燃烧工段工程
1200tds/d Alkali Recovery Boiler Combustion Workshop Section of Shandong Quanlin Paper

武汉晨鸣纸业 280tdspd 碱回收锅炉工程
Alkali Recovery of Burning Section of Wuhan Chenmin Paper Mill 280tdspd EPC

云南云景林纸 300tdspd 碱回收锅炉工程
Alkali Recovery of Burning Section of Yunnan Yunjing Paper Mill 300tdspd EPC

胜达集团江苏双灯纸业有限公司芦苇漂白浆黑液碱回收燃烧工段
220tds/d Reed Pulp Black Liquid Alkali Recovery Boiler Combustion Workshop Section of Shengda Group Jiangsu Shuangdeng Paper Co.Ltd

CER 工程实景—HRS

Major Project Experience-HRS

威顿达州化工有限公司 80 万吨/年硫磺制酸 HRS 总承包
0.8 Million tons /year Sulfuric Acid with HRS of Weidun Dazhou Chemical Co.,Ltd

镇江索普化工新发展有限公司 30 万吨/年硫磺制酸装置(BOT)
HRS 工程技改项目
0.3 Million tons /year Sulfuric Acid HRS Reconstruction Project Zhenjiang SOPO Chemical

CER 工程实景—HRS

Major Project Experience-HRS

贵州翁福集团公司 2 x40 万吨/年硫磺制酸 HRS 装置技改工程
2*0.4 Million tons /year Sulfuric Acid with HRS Reconstruction project of Guizhou Wenfu Group

湖北大峪口化工有限公司 80 万吨/年硫酸装置 HRS 装置国内配套工程
0.8 Million tons /year Sulfuric Acid with HRS auxiliary projects of Hubei Dayukou Chemical Co.,Ltd

湖北三宁化工股份有限公 35 万吨/年硫磺制酸 HRS 装置技改工程
0.3 million tons /year sulfuric acid With HRS Reconstruction project of Hubei Sanning Chemical Co.,Ltd

CER 工程实景—HRS

Major Project Experience-HRS

宜都兴发股份有限公司
80 万吨/年硫酸装置 HRS 装置国内配套工程
0.8 million tons /year sulfuric acid with HRS auxiliary projects of Yidu Xinfa Co.,Ltd

绍兴明业化纤有限公司
30 万吨/年硫磺制酸装置 HRS 装置技改工程
0.3 million tons /year sulfuric acid Reconstruction project of Shaoxing Mingye chemical fiber Co.,Ltd

湖北西部化工有限公司
30 万吨/年硫酸装置 HRS 装置国内配套工程
0.3 million tons /year sulfuric acid with HRS auxiliary projects of Hubei western Chemical Co.,Ltd


专利 Patent
创新设计让世界更美！
Innovation design to make the world more beautiful!

Patent

专利

截至 2012 年底，CER 已申请获批专利近 30 件

To the end of 2012, CER has approved nearly 30 patents

实用新型专利证书

证书号 第 664396 号

实用新型名称：双锅筒共用一个汽包的火管式余热锅炉

设计人：吴清寰

专利号：ZL 2003 2 0107834.X

专利申请日：2003 年 11 月 7 日

专利权人：上海海陆昆仑高科技工程有限公司

授权公告日：2004 年 12 月 15 日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

本专利的专利权期限为十年，自申请日起算。专利权人应当依照专利法及其实施细则规定缴纳年费。缴纳本专利年费的期限是每年11月7日前一个月内，未按照规定缴纳年费的，专利权自应当缴纳年费期满之日起终止。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

专利号

局长 王景川

2004 年 12 月 15 日

第 1 页（共 1 页）

双锅筒共用一个汽包的火管式余热锅炉

Fire tube boiler of double drum share a drum

实用新型专利证书

证书号 第 622988 号

实用新型名称：锅筒分段式硫磺制酸火管锅炉

设计人：吴清寰;王泗清;庄永华;陈齐

专利号：ZL 03 2 30953.8

专利申请日：2003 年 5 月 7 日

专利权人：上海海陆昆仑高科技工程有限公司

授权公告日：2004 年 6 月 30 日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

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专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

专利号

局长 王景川

2004 年 6 月 30 日

第 1 页（共 1 页）

锅筒分段式硫磺制酸火管锅炉

Drum segmented fire tube boiler for sulfuric acid

Patent

专利


证书号第690839号

发明专利证书

发 明 名 称：氯磺酸制备工艺及其设备

发 明 人：刘纪状；夏小勇；洪伟；周杨；刘勇；沈新华；沈高庆；邓建军

专 利 号：ZL 2007 1 0045499.8

专利申请日：2007 年 08 月 31 日

专 利 权 人：上海海陆昆仑高科技工程有限公司
浙江嘉化工业园投资发展有限公司

授权公告日：2010 年 10 月 20 日

本发明经过本局依照中华人民共和国专利法进行审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

本专利的专利权期限为二十年，自申请日起算。专利权人应当依照专利法及其实施细则规定缴纳年费。本专利的年费应当在每年 08 月 31 日前缴纳。未按照规定缴纳年费的，专利权自应当缴纳年费期满之日起终止。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长

2010 年 10 月 20 日

第 1 页 （共 1 页）

氯磺酸制备工艺及其设备

Preparation technology and equipment for chlorosulfonic acid


实用新型专利证书

一种改进的转底炉烟气余热锅炉装置

An waste heat boiler that improved rotary hearth furnace flue gas


证书号第778809号

实用新型专利证书

实用新型名称：三锅筒共用一个汽包的火管式余热锅炉

设 计 人：吴清寰；陈齐

专 利 号：ZL 2005 2 0039369.X

专利申请日：2005 年 1 月 31 日

专 利 权 人：上海海陆昆仑高科技工程有限公司

授权公告日：2006 年 5 月 3 日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

本专利的专利权期限为十年，自申请日起算。专利权人应当依照专利法及其实施细则规定缴纳年费。缴纳本专利年费的期限是每年1月31日前一个月内。未按照规定缴纳年费的，专利权自应当缴纳年费期满之日起终止。

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局长

2006 年 5 月 3 日

第1页（共1页）

三锅筒共用一个汽包的火管余热锅炉

Fire tube boiler of three drum share a drum


实用新型专利证书

强制循环型水泥窑余热锅炉

Waste heat boiler for cement kiln of forced circulation type

Patent

专利

证书号第2326209号

实用新型专利证书

实用新型名称：锌精矿制酸余热锅炉

发　明　人：王渭清;许胜利;顾春华

专　利　号：ZL 2011 2 0435544.2

专利申请日：2011年11月07日

专 利 权 人：中江能源回收（扬州）有限公司

授权公告日：2012年07月25日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

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局长

2012年07月25日

第1页（共1页）

锌精矿制酸余热锅炉

Waste heat boiler for zinc concentrate sulfuric acid

证书号第2044919号

实用新型专利证书

实用新型名称：自动控制硫磺制酸中高温余热回收系统

发　明　人：王渭清;边振云;宋美昌;刘纪钦

专　利　号：ZL 2011 2 0087900.7

专利申请日：2011年03月29日

专 利 权 人：中江能源回收（上海）有限公司

授权公告日：2011年12月21日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

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局长

2011年12月21日

第1页（共1页）

自动控制硫磺制酸中高温余热回收系统

Auto control of high temperature waste heat recovery system of sulphuric acid

证书号第2324211号

实用新型专利证书

实用新型名称：熔硫设备片状蒸汽加热器

发　明　人：陈金祥;夏小勇;王渭清

专　利　号：ZL 2011 2 0435542.3

专利申请日：2011年11月07日

专 利 权 人：中江能源回收（扬州）有限公司

授权公告日：2012年07月25日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

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局长

2012年07月25日

第1页（共1页）

熔硫设备片状蒸汽加热器

Steam heater for the sulfur melting equipment of sheet type

证书号第1581324号

实用新型专利证书

实用新型名称：蒸汽空气加热器

发　明　人：王渭清

专　利　号：ZL 2010 2 0144268.X

专利申请日：2010年03月29日

专 利 权 人：中江能源回收(上海)有限公司

授权公告日：2010年11月10日

本实用新型经过本局依照中华人民共和国专利法进行初步审查，决定授予专利权，颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

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局长

2010年11月10日

第1页（共1页）

蒸汽空气加热器

Steam air heater

合作伙伴

Cooperation Partners

CER 在硫酸工程中与美国 MECS 公司有长期的合作历史，是 MECS 公司硫磺制酸成套技术在中国的主要合作对象。CER has a long history of cooperation with MECS of USA in the construction of sulfuric acid projects. Besides, CER is MECS's mainly partner in China for the technology of construction of complete sets of sulfuric acid projects.

CER 在开拓国内外市场过程中，与中国长城工业集团有限公司和中广核节能产业发展有限公司等央企建立起紧密合作伙伴关系，以 BT 和 EMC 模式承接和参与了众多项目。 In the process of developing domestic and foreign markets, CER has built the further and deeper relationships with some central enterprises, including China Great Wall Industry Corporation and China Guangdong Nuclear Energy Saving Industry Development Co., Ltd and so on .Moreover, CER undertook or participated in many projects with BT and EMC model .

CER 正努力成为国际知名工程公司成套设备的供应商，已与韩国 SEWON 等公司建立了紧密联系。CER is trying to become the supplier of engineering equipments for internationally renowned engineering companies and established close ties with Korea SEWON Group and others.

合作 共贏

Cooperation, win-win

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