



绿色世界 你我共创

Green world, you and I create together

清新气息 你我共享

Fresh breath, you and me share

珠海国敖环保工程有限公司

Zhuhai Guoao Environmental  
Protection Engineering Co., Ltd.





微信公众号



手机微官网

国敖(柬埔寨)环保工程有限公司

Guoao(cambodia)environment Protection Engineering Co.,Ltd.



愿与您一起为改善和维护人类的生存环境  
节约和合理利用水资源而共同努力！

## 国敖产业链 GUOAO INDUSTRIAL CHAIN

INDUSTRY CHAIN  
GUOAO

珠海国敖环保工程有限公司

澳门苹果环保科技有限公司

国敖(柬埔寨)环保工程有限公司

国敖(柬埔寨)建筑工程有限公司

Zhuhai Guoao Environmental Protection Engineering Co., Ltd.

Macao apple Environmental Protection Technology Co., Ltd.

Guoao(cambodia)environment Protection Engineering Co.,ltd.

Guoao(cambodia)construction Engineering Co.,ltd.

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COMPANY

公司简介



ZHUHAI GUOAO

珠海国敖环保工程有限公司隶属于国敖集团，2006年正式成立。专业从事环境污染治理工程设计、施工、设备安装、调试、环保设施运营管理、技术咨询服务、环境在线监测系统服务于一体的高新科技型企业。

Zhuhai Guoao Environmental Protection Engineering Co., Ltd. belongs to Guoao Group, which was formally established in 2006. Professional in environmental pollution control engineering design, construction, equipment installation, commissioning, environmental protection facilities operation and management, technical advisory services, environmental online monitoring system services in one of the high-tech enterprises.

经过十几年的发展，国敖环保集团国内行业众家之所长，积累了许多宝贵的经验；视科技为生命，在全国多所著名高等院校、科研单位的合作和支持下从事新技术新设施产品的研发和制作。公司自主研发的“核心微生物驯化技术”在印染废水处理、造纸废水处理、食品废水、餐饮废水、生活废水、清洗废水、制药废水、医药废水、电镀废水、化工废水、皮革废水等领域取得了显著成效；

After more than ten years of development, Guoao Environmental Protection has accumulated a lot of valuable experience by gathering the strengths of various domestic industries. It regards science and technology as its life and is engaged in the research and development of new technologies and facilities with the cooperation and support of many famous universities and scientific research institutes in the country. The core microbial domestication technology independently developed by the company is used in the treatment of printing and dyeing wastewater, paper-making wastewater and food. The products wastewater, catering wastewater, domestic wastewater, cleaning wastewater, pharmaceutical wastewater, pharmaceutical wastewater, electroplating wastewater, chemical wastewater, leather wastewater and other fields have achieved remarkable results.

公司“以人为本，尊重人才，唯才是举，唯贤是用”，目前已拥有一支年富力强，专业全面，技术精湛的环保团队，实力相当雄厚。公司注重污染治理系统结构的创新优化和运行模式的调节控制。尤其在废水治理方面，公司科研人员潜心研究，深入探索，反复实践，精益求精，总结出了成套投入少、运行费用低、效果好、经久耐用的废水处理技术和系统运行操作模式。公司秉承“诚信、务实、创新”经营理念，“更低成本，中水回用”的经营目标，“零排放”为技术目标，愿与您一起为改善和维护人类的生存环境，节约和合理利用水资源而共同努力！

The company is "people-oriented, respectful of talent, only talent, only talent is used", and has a strong, professional and comprehensive, skilled environmental protection team, with considerable strength. The company pays attention to the innovation and optimization of the structure of the pollution control system and the regulation and control of the operation mode.

Especially in the aspect of wastewater treatment, the company's scientific researchers devoted themselves to research, in-depth exploration, repeated practice and excellence, summed up a set of wastewater treatment technology and system operation mode with less investment, low operating cost, good effect and durability. The company adheres to the business philosophy of "honesty, pragmatism and innovation", "lower cost, reclaimed water reuse" and "zero discharge" as the technical goal. We are willing to work together with you to improve and maintain the living environment of human beings, save and rationally use water resources!

2015年积极响应中国政府“一带一路”的经济对外发展策略，国放环保结合市场需求的趋势发展，拟定在东南亚柬埔寨、孟加拉、越南等国先后成立国放环保海外分公司的公司经营战略计划，立足于做中国境外的国际性环境治理方案供应解决商，提供专业的环保工程咨询和方案服务，为自然生态环境建设贡献力量。

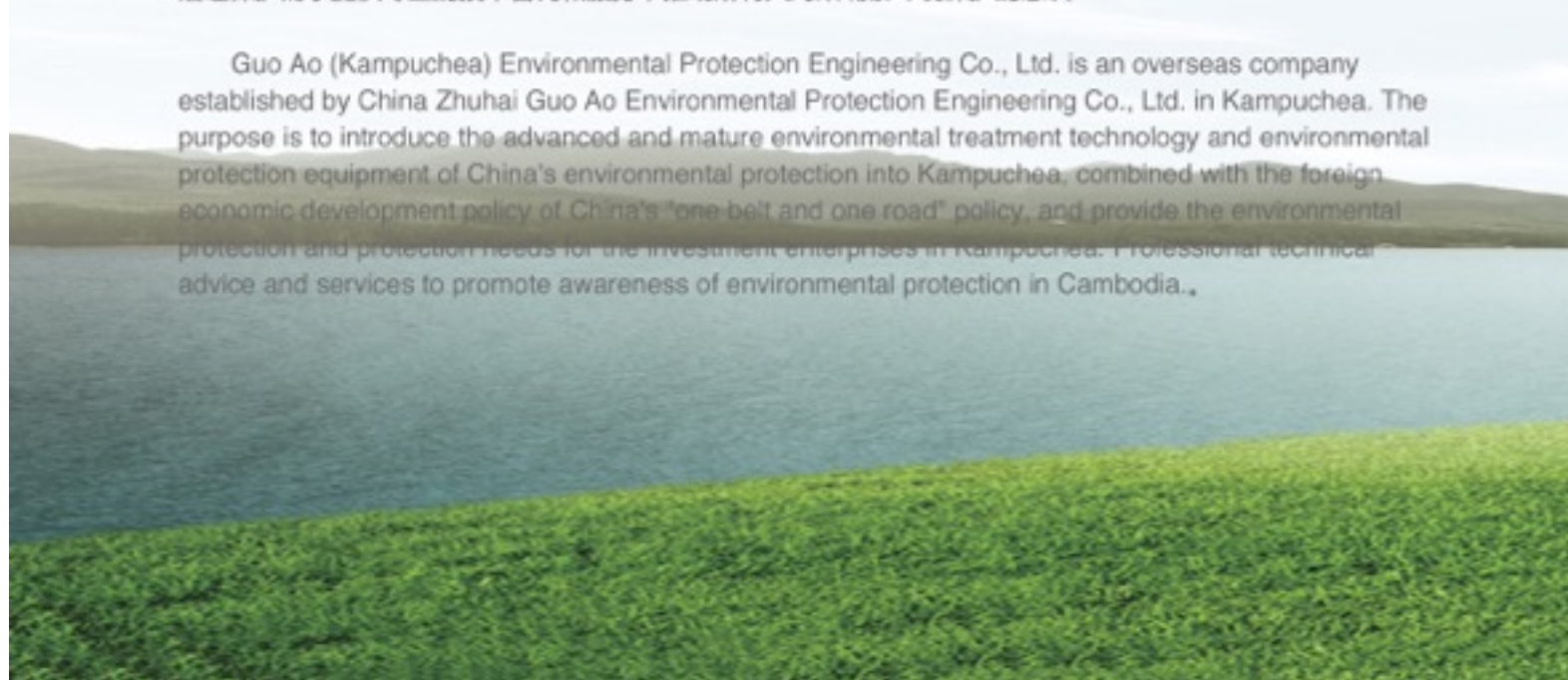
In 2015, we actively responded to the Chinese government's "economic development strategy of" along the way, combined with the development trend of environmental protection and market demand, and formulated a strategic plan for the company's operation in Kampuchea, Bangladesh, Vietnam and other countries in Southeast Asia. It is set up to provide solutions to international environmental governance programs outside China and provide professional environmental protection projects. Consulting and project services contribute to the construction of natural ecological environment.

国放（柬埔寨）建筑工程有限公司，已获取柬埔寨建筑一级许可证明书（资质证），携手国放（柬埔寨）环保工程有限公司，立足在柬埔寨境内从事工业园区厂房建设规划，设计、施工、及热电联产、环保治理和运营管理——工业整体方案供应服务商。

Guoao (Cambodia) Construction Engineering Co., Ltd. has obtained the certificate of first-class construction permit (qualification certificate) of Cambodia, and cooperated with Guoao (Cambodia) Environmental Protection Engineering Co., Ltd. to engage in Industrial Park plant construction planning, design, construction, cogeneration of heat and power, environmental protection management and operation management in Cambodia, which is the supplier of the overall industrial scheme,

国放（柬埔寨）环保工程有限公司 是国放环保在柬埔寨设立的海外公司，宗旨把中国环境保护的先进成熟的环境治理技术和环保设备引入柬埔寨，结合中国“一带一路”的对外经济发展政策，为在柬埔寨的投资企业对环境治理保护需求提供专业的技术咨询和服务，推动所有人对柬埔寨环境保护的意识

Guo Ao (Kampuchea) Environmental Protection Engineering Co., Ltd. is an overseas company established by China Zhuhai Guo Ao Environmental Protection Engineering Co., Ltd. in Kampuchea. The purpose is to introduce the advanced and mature environmental treatment technology and environmental protection equipment of China's environmental protection into Kampuchea, combined with the foreign economic development policy of China's "one belt and one road" policy, and provide the environmental protection and protection needs for the investment enterprises in Kampuchea. Professional technical advice and services to promote awareness of environmental protection in Cambodia.,





# 公司资质 COMPANY QUALIFICATION

## 珠海国敖环保工程有限公司

ZHUHAI GUOAO ENVIRONMENTAL PROTECTION ENGINEERING CO., LTD.



## 国敖（柬埔寨）环保工程有限公司

GUOAO(CAMBODIA)ENVIRONMENT PROTECTION ENGINEERING CO.,LTD.



# 国敖（柬埔寨）建筑工程有限公司

GUOAO(CAMBODIA)CONSTRUCTION ENGINEERING CO.,LTD.



# 柬埔寨建筑一级许可证明书（资质证）

GUOAO(CAMBODIA)CONSTRUCTION ENGINEERING CO.,LTD.



## 核心微生物驯化技术 BIOLOGICAL ACCLIMATION CORE TECHNOLOGY

### ▲ 核心微生物驯化技术

珠海国放环保工程有限公司十分注重环保科技研发，公司大力发展自主研发新技术（核心微生物驯化技术）在废水生物处理中的应用。

公司通过引进国际上兴起的新型复合微生物菌种制剂结合公司自主研发的菌群驯化技术，利用现代生物技术选育优势菌种，构建基因工程菌，突破了过去传统生物处理反应器的微生物菌种靠生活污水进行培养和驯化的低效模式，这也将会是该领域主要的发展方向之一。

传统的生物处理法大多不是根据特定的污水污染物培养的微生物，而是对自然生长的微生物群体加以驯化，繁殖利用，任其自然降解，污染物的降解率往往较低。难以达到最佳的生化效果。

使用新型复合微生物制剂培育的菌群既含有分解性细菌，又有合成性细菌，既有厌氧菌、兼氧菌，又有好氧菌，作为多种细菌共存的一种生物体，通过激活后立即得以驯化，并在污水中迅速繁殖，以达到最佳的生化效果，大大提高了废水处理中有机物的降解速率，减少污泥的产生，促进营养盐类物质的分解并具有除臭功效。

### ▲ 技术适用范围

主要适用印染废水处理，造纸废水处理；技术逐步推广运用在：食品废水、餐饮废水、生活废水、清洗废水、制药废水、医药废水、电镀废水、化工废水、皮革废水等领域

### ▲ 生物驯化核心技术特点

- 1、工程总体投资省（比同行业省30%左右），占地少；
- 2、出水水质稳定，出水效果好（COD < 50mg/L）；
- 3、系统直接运行费用（电耗/人工/药剂）低，约1.4~1.5元/吨水（比同行业省50%左右）；
- 4、污泥产量少，节省了大量的污泥处理处置费用（比同行业省30%~50%左右）；
- 5、抗冲击负荷强；
- 6、工程自动化程度高，工作强度低；
- 7、操作简便，运行稳定。



## ▲ BIOLOGICAL ACCLIMATION CORE TECHNOLOGY

Zhuhai Guoao Environmental Engineering Co., Ltd. attaches great importance to environmental technology research and development, and the company vigorously develops the application of independent research and development new technology (core microbial domestication technology) in wastewater biological treatment.

The company introduced the new type of compound microbial strains developed internationally and combined with the company's self-developed microbial domestication technology, Using modern biotechnology to select dominant strains and construct genetically engineered bacteria, breaking through the inefficient mode of cultivation and domestication of microbial strains in traditional biological treatment reactors by domestic sludge, This will also be one of the main development directions in this field.

Traditional biological treatment methods are mostly not based on specific sewage pollutants, Naturally growing microbial populations are domesticated, propagated and utilized, and naturally degraded, and the degradation rate of pollutants is often low. It is difficult to achieve the best biochemical effects.

The flora cultivated with the new composite microbial preparation contains both decomposing bacteria and synthetic bacteria, including anaerobic bacteria, facultative bacteria, and aerobic bacteria, It greatly improves the degradation rate of organic matter in wastewater treatment, reduces the production of sludge, promotes the decomposition of nutrient salts and has deodorizing effect.

## ▲ BIOLOGICAL ACCLIMATION CORE TECHNOLOGY

Mainly used in printing and dyeing wastewater treatment, papermaking wastewater treatment; technology is gradually promoted in: food wastewater, food wastewater, domestic wastewater, cleaning wastewater, pharmaceutical wastewater, pharmaceutical wastewater, electroplating wastewater, chemical wastewater, leather wastewater, etc.

## ▲ BIOLOGICAL DOMESTICATION CORE TECHNICAL CHARACTERISTICS

1. The total investment of the project (about 30% compared with the same industry), with less land;
2. The effluent water quality is stable and the effluent effect is good (COD<50mg/L);
- 3, the system direct operating costs (power consumption / artificial / pharmaceutical) is low, about 1.4 ~ 1.5 yuan / ton of water (about 50% of the same industry);
4. The sludge production is small, saving a lot of sludge treatment and disposal expenses (about 30% to 50% of the same industry);
5. Strong anti-shock load;
6. High degree of engineering automation and low work intensity;
- 7, easy to operate, stable operation.

# 核心工艺

## CORE TECHNOLOGY



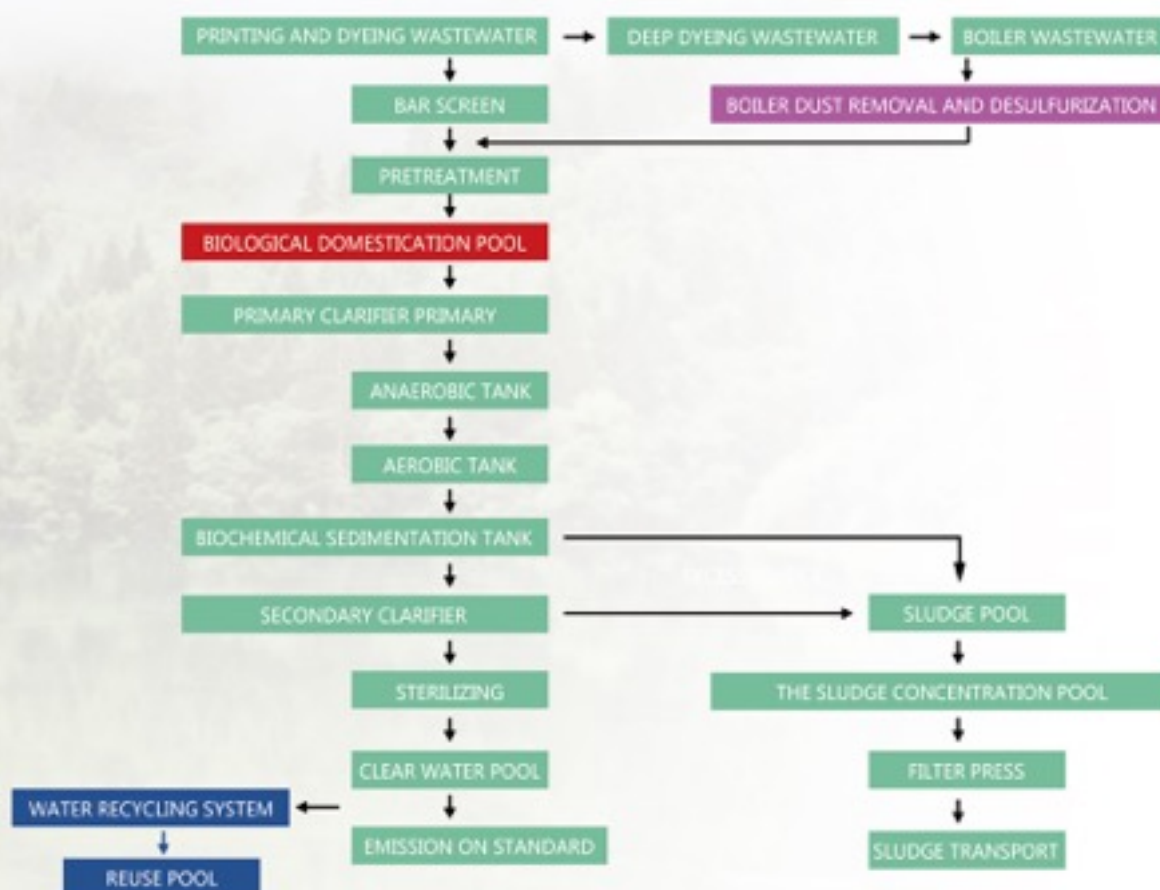
我公司核心工艺植入公司自主研发的复合微生物菌种和核心微生物驯化技术。在印染、造纸行业广泛应用，取得了显著的成果，得到厂家、检测及环保部门的多方认可及推广。

排水水质指标达到“广东省地方标准”水污染物排放限值》(DB44/26-2001)之第二时段二级标准 $COD \leq 50$ 。

项目	$COD_{CR}$ (mg/L)	$BOD_5$ (mg/L)	SS(mg/L)	色度(倍)	PH
排放标准	$\leq 50$	$\leq 20$	$\leq 30$	$\leq 40$	6.0~9.0

# 核心工艺

## CORE TECHNOLOGY



The core microbial strain and core microbial domestication technology independently developed by our company's core technology implant company. It has been widely used in the printing and dyeing and papermaking industries, and has achieved remarkable results. It has been recognized and promoted by manufacturers, testing and environmental protection departments.

Drainage water quality indicators meet the "Guangdong Provincial Standard" water pollutant discharge limit (DB44/26-2001) for the second period of secondary standard COD < 50.

PROJECT	COD <sub>CR</sub> ( mg/L )	BOD <sub>5</sub> (mg/L)	SS(mg/L)	色度 ( 倍 )	PH
EMISSION STANDARDS	≤50	≤20	≤30	≤40	6.0~9.0



# 印染部分成功案例 DEMONSTRATION CASE

## 佛山市顺德金纺集团有限公司 Foshan City Shunde Goldtex Group Co., Ltd

佛山市顺德金纺集团有限公司，注册资本80000万元，员工2000余人，厂区面积10多万平方米，固定资产原值超80000万元。主要产品的生产能力：生产商务男装、职业服装80万件/年，服装面料360万米/年；印染加工各类针织物25000吨/年，各类梭织物16000万米/年；发电15000万度/年。

Production capacity of main products: production of commercial men's and professional clothing 800,000 pieces / year, clothing fabrics 3.6 million meters / year; printing and dyeing processing all kinds of knitted fabrics 25,000 tons / year, all kinds of woven fabrics 160 million meters / year; power generation 150 million Degree / year.

处理规模：20000m<sup>3</sup>/d COD<sub>s</sub>60mg/L



## 中山南邦纺织有限公司 Zhongshan Nanbang Textile Co., Ltd.

中山南邦纺织有限公司是一所港商独资企业。主要经营各种针织布料整染业务。公司成立于1990年，面对未来更大的商机和竞争，公司大量更新引进德国、日本、台湾等国家（地区）的先进生产设备和检测技术，不断提高品质及技术管理水平。公司拥有20多台大型染缸及先进的后整设备，年产量可达900万磅。

Zhongshan Nanbang Textile Co., Ltd. is a Hong Kong-owned company. Mainly engaged in all kinds of knitted fabric finishing business. The company has more than 20 large dyeing tanks and advanced finishing equipment, with an annual output of 9 million pounds.

处理规模：7200M<sup>3</sup>/d COD<sub>s</sub>50Mg/L + (中水回用)



## 冠星（柬埔寨）纺织有限公司 Guanxing (Cambodia) Textile Co., Ltd.

冠星纺织有限公司，是一家在东南亚柬埔寨境内主要生产经营针织物整染加工的企业。原有印染废水处理系统早已建成，但不能适应满足柬埔寨环保部门处理印染废水治理水质COD<sub>s</sub>50Mg/L的排放要求，2015年污水处理系统升级改造为5000吨/天，并获得柬埔寨环保署验收。2017年产能翻倍进行提标升级改造7000吨/天。

The company mainly produces and manages the processing of knitted fabrics. In 2015, the sewage treatment system was upgraded to 5,000 tons/day and was accepted by the Cambodian Environmental Protection Agency. In 2017, the production capacity doubled and the upgrade was upgraded to 7,000 tons/day.

处理规模：7000m<sup>3</sup>/d COD<sub>s</sub>50mg/L



# 印染部分成功案例 DEMONSTRATION CASE

## 桦阳环保工业园 Huayang Industrial Park

佛山市顺德金纺集团有限公司，注册资本80000万元，员工2000余人，厂区面积10多万平方米，固定资产原值超80000万元。主要产品的生产能力：生产商务男装、职业服装80万件/年，服装面料360万米/年；印染加工各类针织物25000吨/年，各类梭织物16000万米/年；发电15000万度/年。

According to the development needs and the current status of wastewater treatment, the company plans to upgrade the second and third phases of the project to increase the wastewater treatment capacity to 50,000 tons/day. At the same time, the effluent quality, operation management and economic benefits of the system are very large. Upgrade.

处理规模：50000m<sup>3</sup>/d COD<sub>s</sub>60mg/L



## 英德市实益长丰纺织有限公司 Yingde Shiyi Changfeng Textile Co., Ltd.

实益长丰纺织有限公司座落在素有珠三角“后花园”之称的英德市华侨工业园，是集纺、织、染于一体大型综合面料生产企业，是一家针织布专业生产厂家，厂区占地面积500亩。根据发展需要及现有废水处理现状，该司拟对废水处理工程进行升级改造，使废水处理能力提升至18000吨/天。

The company is a large-scale integrated fabric manufacturer integrating spinning, weaving and dyeing. It is a professional manufacturer of knitted fabrics. According to the development needs and the current status of wastewater treatment, the company plans to upgrade the wastewater treatment project and upgrade the wastewater treatment to 18,000 tons / day.

处理规模：18000M<sup>3</sup>/d COD<sub>s</sub>60Mg/L



## 汕头市锦鸿电脑印花有限公司 Shantou Jinhong Computer Printing Co., Ltd.

汕头市锦鸿电脑印花有限公司主要经营纺织印花制造，公司位于汕头市潮南区两英镇龙岭工业区。由于现有废水处理系统已不能满足公司发展需要及环保新排放标准该司拟对废水处理工程进行升级改造，使废水处理能力提升至3600吨/天。

Shantou Jinhong Computer Printing Co., Ltd. is mainly engaged in textile printing manufacturing. The company is located in Longling Industrial Zone, Liangying Town, Chaonan District, Shantou City. As the existing wastewater treatment system can no longer meet the company's development needs and new environmental protection standards, the company plans to upgrade the wastewater treatment project to increase the wastewater treatment capacity to 3,600 tons / day.

处理规模：3600m<sup>3</sup>/d COD<sub>s</sub>50mg/L





# 印染部分成功案例 DEMONSTRATION CASE

## 江门市宝发纺织服饰制造有限公司 Perfect Textile & Garment Manufacturer Co., Ltd.

江门市宝发纺织服饰制造有限公司成立于2005年，占地面积160余亩，现有员工近1000人，是Calvin Klein、Diesel、Guess、Insight、Ksubi、Levi's、SilverJeans等国际一线品牌的ODM生产商，是中国最优秀的牛仔生产供应商之一

Established in 2005, Jiangmen Baofa Textile Apparel Manufacturing Co., Ltd. covers an area of more than 160 acres and employs nearly 1,000 people. It is the ODM production of international first-line brands such as Calvin Klein, Diesel, Guess, Insight, Ksubi, Levi's and SilverJeans. Shang, one of the best denim production suppliers in China

处理规模：15000m<sup>3</sup>/d COD≤50mg/L+（中水回用）



## 江门康普织染有限公司 Jiangmen Kangpu Weaving & Dyeing Co., Ltd.

公司位于新会区沙堆镇金门工业园区，主要从事服装制造等领域的经营。现有员工200-500人，且员工团队实力不断加强；实缴注册资金49074(单位万元)，且在加大投入。在上级部门的正确领导下，企业结合对宏观经济形势、市场环境和发展趋势的分析，制定了中长期战略规划。

The company is located in Jinmen Industrial Park, Shatu Town, Xinhui District, and is mainly engaged in the business of garment manufacturing. The existing staff is 200-500 people, and the strength of the staff team is continuously strengthened; the actual registered capital is 490.74 million yuan, and the investment is increasing.

处理规模：5000M<sup>3</sup>/d COD≤50Mg/L



## 江门裕泰织染制衣有限公司 Jiangmen Yutai Weaving & Dyeing Garment Co., Ltd.

广东省江门裕泰织染制衣有限公司是一家主要生产经营织物整染加工的企业。随着政府环保政策对纺织印染业废水排放标准的提升及裕泰公司整体业务的不断扩展，公司原有处理规模为3600m<sup>3</sup>/d的废水处理系统，升级改造9000m<sup>3</sup>/d。

Guangdong Jiangmen Yutai Weaving & Dyeing Garment Co., Ltd. is a company mainly engaged in the production and processing of fabric dyeing and processing. With the government's environmental protection policy to improve the wastewater discharge standards of the textile printing and dyeing industry and the continuous expansion of Yutai's overall business, the company's original treatment scale of 3600m<sup>3</sup> / d of wastewater treatment system, upgraded 9000m<sup>3</sup> / d.

处理规模：9000m<sup>3</sup>/d COD≤60mg/L





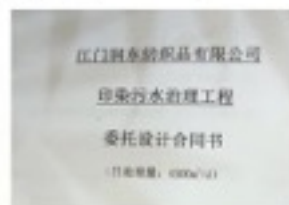
# 印染部分成功案例 DEMONSTRATION CASE

## 江门润东纺织品有限公司（二期） Jiangmen Rundong Textile Co., Ltd. (Phase II)

江门润东纺织品有限公司经营范围包括生产、加工、销售：纺织品、服装、布料；纺织品印染及整理等。根据发展需要及现有废水处理现状，该公司拟对废水处理工程进行升级改造，使废水处理能力提升至4500吨/天。

The business scope of Jiangmen Rundong Textile Co., Ltd. includes production, processing and sales: textiles, garments and fabrics; textile printing and dyeing and finishing. According to the development needs and the current status of wastewater treatment, the company plans to upgrade the wastewater treatment project to increase the wastewater treatment capacity to 4,500 tons / day.

处理规模：15000m<sup>3</sup>/d COD≤50mg/L+（中水回用）



经营理念：诚信、务实、创新

经营目标：更低成本，中水回用

技术目标：零排放

Business philosophy: integrity, pragmatism, innovation

Business objectives: lower cost, reuse of water

Technical target: zero emissions

# 造纸部分成功案例 DEMONSTRATION CASE

## 七堡潭江造纸厂 Qibao Tanjiang Paper Mill

江门市新会区七堡潭江造纸厂每天排出生产废水近2000m<sup>3</sup>，为实现保护周边环境，节约水资源，公司决定改善原废水处理系统进行升级改造，提高处理排放标准，废水经处理后75%中水回用于生产，25%的处理水排放，实现循环利用清洁生产效益。

In order to protect the surrounding environment and save water resources, the company decided to improve the original wastewater treatment system for upgrading and upgrading, and improve the treatment discharge standards. After the wastewater is treated, 75% of the water is recycled for production, and 25% of the treated water is discharged to achieve recycling. Production efficiency.

处理规模：2000m<sup>3</sup>/d COD<sub>s</sub>≤40mg/L

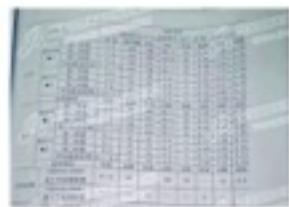


## 江门鸿祥纸业有限公司 Jiangmen Hongxiang Paper Co., Ltd.

江门鸿祥纸业有限公司，主要经营采购各种纸巾包装材料，包括纸箱、纸巾彩盒、拷贝纸、卷纸芯、胶袋等等。鸿祥纸业有限公司每天排出生产废水近1000m<sup>3</sup>，为实现保护周边环境，节约水资源，公司决定改善原废水处理系统进行升级改造，提高处理排放标准，废水经处理后70%中水回用于生产，30%的处理水排放，实现循环利用清洁生产效益。

The company mainly deals in the purchase of various paper towel packaging materials, including carton, paper towel box, copy paper, roll core, plastic bag and so on. In order to protect the surrounding environment and save water resources, 70% of the wastewater will be reused for production after treatment, and 30% of the treated water will be discharged to achieve recycling and clean production benefits.

处理规模：2000M<sup>3</sup>/d COD<sub>s</sub>≤40Mg/L



## 江门市洋汇纸业有限公司 Jiangmen Yanghui Paper Co., Ltd.

洋汇纸业有限公司每天排出生产废水近2000m<sup>3</sup>，为实现保护周边环境，节约水资源，公司决定改善原废水处理系统进行升级改造，提高处理排放标准，废水经处理后75%中水回用于生产，25%的处理水排放，实现循环利用清洁生产效益。

Yanghui Paper Co., Ltd. discharges nearly 2000m<sup>3</sup> of production wastewater every day. In order to protect the surrounding environment and save water resources, the company decided to improve the original wastewater treatment system to upgrade and improve the treatment discharge standard. The wastewater will be reused after 75% of the treated water. Production, 25% of treated water discharge, to achieve recycling and clean production benefits.

处理规模：1000m<sup>3</sup>/d COD<sub>s</sub>≤40mg/L



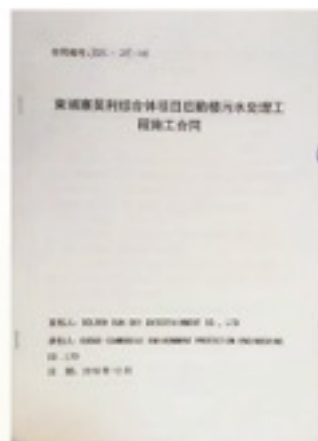
## 在建项目

## PROJECT UNDER CONSTRUCTION

### 柬埔寨昊利综合体项目后勤楼 污水处理工程

Sewage Treatment Project of Logistics Building  
of Haoli Complex Project in Cambodia

处理规模：2000m<sup>3</sup>/d COD<50mg/L



### 柬埔寨凯博公寓项目一期污水 处理工程

Cambodia Kaibo Apartment Project  
Phase I Sewage Treatment Project

处理规模：1500m<sup>3</sup>/d COD<50mg/L



### 柬埔寨金水佳苑一期污水处理 工程

Cambodia Jinshuijiayuan Phase I Wastewater  
Treatment Project

处理规模：1500m<sup>3</sup>/d COD<50mg/L





# 深度处理（中水回用） WATER REUSE

## 深度治理技术 CORE TECHNOLOGY

### ▲ GA™ MBBR移动床生物膜反应器技术

GA™ MBBR移动床生物膜反应器技术采用生物膜原理，并结合了传统流化床的优点，植入国致新型复合微生物菌种制剂及菌群驯化技术，该技术是一种高效深度的微生物生物处理技术工艺之一。该工艺单独使用可以用于节能减排的升级处理工艺；也可以串接BF池或MBR膜生物反应器做中水回用处理工艺。

GA™ MBBR moving bed biofilm reactor technology adopts the principle of biofilm, combined with the advantages of traditional fluidized bed, implanted into the new compound microbial strain preparation and microbial domestication technology of the country, which is a highly efficient deep microorganism. Biological treatment technology. The process can be used as an upgraded treatment process for energy saving and emission reduction, or as a reclaimed water reuse treatment process by connecting BF pool or MBR membrane bioreactor in series.



#### 技术特点

1. 紧凑：容积负荷高，占地面积小
2. 强大：耐冲击性强，运行稳定
3. 操作方便，维护简单
4. 易于升级或扩建
5. 更少的剩余污泥产量
6. 移动式生物载体使用寿命达10年以上
7. 适用于提标减排或中水回用

#### Technical characteristics

1. Compact: high volume load, small footprint
2. Strong: strong impact resistance, stable operation
3. easy to operate, easy to maintain
4. easy to upgrade or expand
5. Less residual sludge production
6. The service life of mobile biological carriers is more than 10 years.
7. Applicable to the reduction of emission reduction or reuse of water

### ▲ GA™ MBFB膜生物流化床工艺技术

工艺以移动生物膜流化床为基础，以粉末活性炭（简称PAC）和移动悬浮填料为载体，结合膜生物反应器工艺（简称MBR）工艺的固液分离技术，植入国致新型复合微生物菌种制剂及菌群驯化技术。该技术是一种高效深度的微生物生物处理技术工艺之一。

该工艺单独使用可以用于节能减排的升级处理工艺或者中水回用深度处理工艺。也可以做为RO脱盐处理的预处理技术，代替原有砂滤、保安过滤、超滤等冗长过滤流程下降COD、NH-N、浊度等目标，同时有机物含量的下降大大提高RO膜使用寿命，节省回用水处理成本。

The process is based on mobile biofilm fluidized bed, with powder activated carbon (PAC) and mobile suspended filler as carriers. Combining with the solid-liquid separation technology of MBR process, a new type of composite microbial preparation and acclimatization technology of Guozao were implanted. This technology is one of the most efficient and deep microbial treatment technologies.

Independent use can be used for energy-saving emission reduction upgrade process or medium water reuse deep treatment process. It can also be used as a pretreatment technology for RO desalination treatment, replacing the original filtration process such as sand filtration, security filtration and ultrafiltration to reduce COD, NH-N and turbidity. At the same time, the decrease of organic matter content greatly increases the service life of RO membrane, saving the cost of recycling water treatment.



#### 技术特点

1. 活性炭粉长期循环再生使用，无需更换；
2. 三相传质混合，反应效率高；
3. 载体不流失；
4. 载体流化性能好；
5. 氧的转移效率高；
6. 污染物高度富集，生物量大；

#### Technical characteristics

1. Activated carbon powder is recycled for a long time without replacement.
2. Three-phase mass transfer and mixing, high reaction efficiency;
3. The carrier is not lost;
4. The carrier fluidization performance is good;
5. High oxygen transfer efficiency;
6. The pollutants are highly enriched and the biomass is large;

7. 对微污染水处理效果好。
8. 适用于提标减排或中水回用

7. Good effect on micro-polluted water treatment.
8. Applicable to the reduction of emission reduction or reuse of water

## ▲ MBR膜生物反应器

膜-生物反应器 ( Membrane Bio-Reactor,MBR ) 为膜分离技术与生物处理技术有机结合之新型态废水处理系统。主要利用沉浸于好氧生物池内之膜分离设备截留槽内的活性污泥与大分子有机物。该技术可以用于节能减排的升级处理工艺或者中水回用深度处理工艺。

Membrane Bio-Reactor (MBR) is a new type of wastewater treatment system that combines membrane separation technology with biological treatment technology. The activated sludge and macromolecular organic matter in the tank are mainly intercepted by a membrane separation device immersed in an aerobic biological pool. This technology can be used for upgrading treatment processes for energy saving and emission reduction or deep treatment processes for water reuse.



### 技术特点

1. 处理效率高,出水可直接回用
2. 系统运行稳定,流程简单,设备少,占地面积小
3. 污泥龄长,剩余污泥量少
4. 操作管理方便,易于实现自动控制
5. 适用于提标减排或中水回用

### Technical characteristics

1. the processing efficiency is high, the water can be directly reused
2. the system is stable, simple process, less equipment, small footprint
3. the sludge is long, the amount of excess sludge is small
4. convenient operation and management, easy to achieve automatic control
5. Applicable to the reduction of emission reduction or reuse of water



## 国敖一体化中水再生净化器 GUOAO INTEGRATED RECLAIMED WATER PURIFIER

公司自主研发的一体化中水再生净化器，是结合MBBR + MBFB + BAF 工艺特点，是一种高效深度处理的中水回用工艺。

工艺以移动生物膜流化床为基础，以粉末活性炭（简称PAC）和移动悬浮填料为载体；结合膜生物反应器工艺（简称MBR）工艺的固液分离技术，使反应器集活性炭的物理吸附、生物反应器的生物净化和无机不锈钢过滤膜的高效分离作用为一体；水体中难以降解的小分子有机物与在曝气条件下处于流化状态的活性炭粉末进行传质、混合，被吸附、富集在活性炭表面，使活性炭表面形成局部污染物浓缩区域；粉末活性炭同时也为微生物繁殖提供了特殊的介质，其多孔的表面吸附了大量微生物菌群，在高溶解氧条件下，微生物对富集在活性炭表面小分子有机物进行氧化分解，通过BAF组合滤池将活性炭沉淀回流前端MBFB池，然后利用不锈钢过滤膜分离系统将水和吸附了有机物的微小粉末活性炭等悬浮颗粒分开通过错流过滤，进一步净化污水，使其达到中水回用标准。该工艺在原有进水的基础上能进一步去除污染水体中部分氨氮、COD、色度和其它难降解小分子有毒有机物等。



The integrated water regenerative purifier independently developed by the company is a combination of MBBR + MBFB + BAF process technology, and is a highly efficient deep treatment process.

The process is based on mobile biofilm fluidized bed, with powder activated carbon (PAC) and mobile suspended packing as carriers; combined with solid-liquid separation technology of membrane bioreactor (MBR) process, the reactor integrates physical adsorption of activated carbon, biological purification of bioreactor and efficient separation of inorganic stainless steel filter membrane; small molecules in water that are difficult to degrade are Organic matter and activated carbon powder in fluidized state under aeration are mass-transferred and mixed, adsorbed and enriched on the surface of activated carbon, thus forming a concentration area of local pollutants on the surface of activated carbon. Powdered activated carbon also provides a special medium for microbial reproduction, and its porous surface adsorbs a large number of microbial flora. Under high dissolved oxygen condition, microorganisms enrich on the surface of activated carbon. Small molecule organic matter on the surface of carbon was oxidized and decomposed. Activated carbon was precipitated and returned to the front MBFB tank through BAF combined filter. Then suspended particles such as water and micro-powder activated carbon adsorbed organic matter were separated by cross-flow filtration using stainless steel filtration membrane separation system to further purify wastewater and make it meet the reuse standard of reclaimed water. Based on the original influent, the process can further remove some ammonia nitrogen, COD, chroma and other refractory small molecule toxic organic substances from polluted water.

### ▲ 国敖“一体化中水再生净化器”特点

- 1、活性炭粉长期循环、再生使用；
- 2、三相传质混合，反应效率高；
- 3、生物载体流失性少；
- 4、载体生物流化性能好；
- 5、氧的转移效率高；
- 6、污染物高度富集，生物活性量高；
- 7、对微污染水/深度处理水效果好；
- 8、反应器对COD、T-N、色度等污染物的去除率高，效果稳定；
- 9、不产生污泥，污泥处理费用低；
- 10、出水精度根据需求调整膜滤芯的目数，满足客户各种水质需求
- 11、直接运行费用（电耗/人工/药剂）低，约0.60元/吨水；



11. 直接运行费用（电耗/人工/药剂）低，约0.60元/吨水；
12. 膜组件使用寿命长，维护费用低；
13. 采用PLC控制系统，自动化管理程度高，人工操作强度低；
14. 可根据客户要求进行标准模块化组合和定制组合。

1. Long-term circulation and regeneration of activated carbon powder;
2. Three-phase mass transfer and mixing, high reaction efficiency;
3. Less loss of biological carriers;
4. The carrier has good fluidization performance;
5. High oxygen transfer efficiency;
6. The pollutants are highly enriched and the biological activity is high;
7. Good effect on micro-polluted water/deep treatment;
8. The reactor has high removal rate of COD, T-N, chroma and other pollutants, and the effect is stable;
9. No sludge is produced, and the sludge disposal cost is low;
10. The accuracy of the water discharge adjusts the mesh number of the membrane filter according to the demand to meet the various water quality requirements of the customers;
11. direct operating costs (power consumption / artificial / pharmaceutical) is low, about 0.60 yuan / ton of water;
12. The membrane module has a long service life and low maintenance cost;
13. using PLC control system, high degree of automation management, low manual operation intensity;
14. Standard modular combination and customized combination according to customer requirements.



## 智能化管控系统

### INTELLIGENT MANAGEMENT AND CONTROL SYSTEM

目前国内污水处理厂多数采用的污水管控系统只有通过仪表数据采集+PLC集中显示，只能起到预警效果没有把运行参数植入控制系统；各个处理单元只能依靠人员的操作管理运行管理，这就导致因专业技术人员的技术等级不同造成的运行的效果不同，人为因素多、稳定性不高。我公司结合十多年的运行管理经验和生物处理技术，自主研发了一套可以适用各种以生物处理为主的污水厂污水运行管控系统。

通过各类仪表的监测数据反馈，结合植入我公司PLC监测系统内各单元池的运行管理数据，自动化调节物化与生化单元池的运行参数、营养比，可以实现物化池自动加药与排泥、生化池内污泥浓度、溶解氧的自动补偿和调节，保障整体污水处理单元池运行的稳定性，减少事故风险和人员的操作失误与管理上的技术失误，大大提高生化的处理效率、污泥系统内的自我硝化强度高、出水水质稳定。

At present, most of the sewage control systems used in domestic sewage treatment plants can only be displayed through instrument data collection + PLC centralized display, which can only serve as an early warning effect without embedding operational parameters into the control system;

Each processing unit can only rely on the operation management of personnel to manage the operation, which results in different operational effects caused by different technical levels of professionals, many human factors and low stability.

With more than ten years of operation and management experience and biological treatment technology, our company has independently developed a set of sewage treatment and control system for wastewater treatment plants that can be applied to various biological treatments.

Through the monitoring data feedback of various instruments, combined with the operation and management data of each unit pool implanted in our PLC monitoring system, the physical parameters and nutrient ratio of the physical and chemical unit pool can be automatically adjusted, and the materialized pool can be automatically added and drained. The sludge concentration and dissolved oxygen in the biochemical pool are automatically compensated and adjusted to ensure the stability of the operation of the whole sewage treatment unit pool, reduce the risk of accidents, the operational errors of personnel and the technical errors in management, and greatly improve the biochemical treatment efficiency and sludge. The self-nitrification intensity in the system is high and the effluent water quality is stable.

#### ▲ 污水治理智能管控系统 根据客户需要定制全套系统或选配组合模块



# 耗材代理

## PRODUCT CATALOG



水草填料  
WATER GRASS FILLER



多孔型球型悬浮球  
SUSPENDED BALL



组合式双环填料  
COMBINED PACKING



纤维球  
FIBER BALL



六角蜂窝斜管填料  
INCLINED TUBE PACKING



活性生物悬浮填料  
SUSPENDED PACKING



聚丙烯酰胺  
PAM



聚合氯化铝  
PAC



活性炭  
ACTIVATED CARBON



硫酸亚铁  
FERROUS SULFATE



聚合硫酸铁  
POLYFERRIC SULFATE



脱色剂  
DECOLORANT



# 招商加盟

## MERCHANTS JOIN

招商类别：设计施工、设计+施工+运营托管共同出资+运营托管、PPP模式。

Types of investment attraction: design and construction, design + construction + operation custody joint investment + operation custody, PPP mode.

联系电话：郭行平 (+86) 13823079288 (中国) 0183103103(柬) zhgahb@163.com

( Contact number: Guo Yanping, (+86) 13823079288 (China)

0183103103(Cambodia) zhgahb@163.com )

柬埔寨公司地址：金边俄罗斯大道269号，菩提小区A-201、202

( Address: 269 Russian Avenue, Phnom Penh, Bodhi District A-201, 202 )

珠海公司地址：珠海市斗门区珠峰大道1288号E栋 05 商铺

( Zhuhai Company Address: Shop E, Block 05, 1288 Zhufeng Avenue, Doumen District, Zhuhai )

### ▲ 加盟支持 AFFILIATE SUPPORT

- 1、全程技术服务指导
- 2、业务培训
- 3、上下游信息资源共享
- 4、区域业务平台利益保障
- 5、PPP项目运作模式支持

1. Full technical service guidance
2. Business training
3. Upstream and downstream information resource sharing
4. Benefit protection of regional business platform
5. PPP project operation mode support



### ▲ 加盟条件 JOIN CONDITIONS

- |                    |  |
|--------------------|--|
| 1、有志在环保行业发展；       | 1. Aspiring to develop in the environmental protection industry;   |
| 2、具有良好的市场和社会资源；    | 2. Have good market and social resources;                          |
| 3、具备强烈的社会责任感和服务意识； | 3. Have a strong sense of social responsibility and service;       |
| 4、积极跟公司学习有关环保技术知识。 | 4. Actively learn about environmental technology from the company. |

### ▲ 加盟流程 JOINING PROCESS

- |                |                                       |
|----------------|---------------------------------------|
| 1、通过电邮电话联系提出意向 | 1. Contact by email to make an intent |
| 2、合作模式细谈       | 2. Cooperation mode                   |
| 3、签署合作协议       | 3. Signing a cooperation agreement    |

# 售后支持

## AFTER SALES SUPPORT

为了对用户负责，为创造名牌，提高企业知名度，树立企业形象，我们本着“一切追求高质量，用户满意为宗旨”的精神，以“最优惠的价格、最周到的服务、最可靠的产品质量”的原则向您郑重承诺

In order to be responsible to the users, in order to create famous brands, enhance corporate reputation, and establish corporate image, we adhere to the spirit of "all pursuit of high quality, customer satisfaction", "the most favorable price, the most thoughtful service, the most reliable products." The principle of "quality" is a solemn promise to you

### ▲ 质量保证承诺 QUALITY ASSURANCE COMMITMENT

1、为了保证产品质量，促进企业的稳步发展。企业从加强内部管理人手，认真培训人员，严格把好每道关，在生产过程中按初检、中检、末检的质量控制规程进行抽检和全检，确保产品出厂合格率100%，使客户放心、满意。

2、产品的制造和检测均有质量记录和检测资料。

3、对产品性能的检测，我们诚请用户亲临对产品进行全过程、全性能检查，待产品被确认合格后再装箱发货。

1. In order to ensure product quality, promote the steady development of the company. The company strengthens internal management personnel, carefully trains personnel, strictly controls each pass, and conducts random inspection and full inspection in the production process according to the quality control procedures of initial inspection, intermediate inspection and final inspection to ensure that the product pass rate is 100%. Customers are assured and satisfied.

2, the product manufacturing and testing have quality records and testing data.

3, for the detection of product performance, we sincerely invite users to go through the whole process, full performance inspection of the product, after the product is confirmed to be qualified, then boxed and shipped.

### ▲ 产品价格承诺 PRODUCT PRICE COMMITMENT

1、为了保证产品的高可靠性和先进性，系统的选材均选用国内或国际优质名牌产品。

2、在同等竞争条件下，我公司在不以降低产品技术性能、更改产品部件为代价的基础上，真诚以最优惠的价格提供给贵方。

1. In order to ensure the high reliability and advancement of the products, the selection of the system uses domestic or international high-quality brand-name products.

2. Under the same competitive conditions, our company will provide you with the best price at the best price without reducing the technical performance of the products and changing the parts of the products.



# 售后支持

## AFTER SALES SUPPORT

### ▲ 交货期承诺 DELIVERY COMMITMENT

1、产品交货期尽量按用户要求，若有特殊要求，需提前完工的，我公司可特别组织生产、安装，力争满足用户需求。

2、产品交货时，我公司向用户提供下列文件

- ①设备说明书及技术保养维修手册；
- ②安装总图；
- ③外购件说明书及制造厂家；
- ④提供易损件、备件清单。

1. The delivery time of the product should be as far as possible according to the requirements of the user. If there are special requirements and need to be completed in advance, our company can specially organize production and installation, and strive to meet the needs of users.

2. When the product is delivered, our company provides the following documents to the user.

- ① equipment manual and technical maintenance manual;
- ② installation master map;
- ③ purchased parts instructions and manufacturers;
- ④ provide a list of wearing parts and spare parts.

### ▲ 技术支持 TECHNICAL SUPPORT

国敖公司技术部门拥有自己的工程师和运营管理团队，我们的团队将协助客户在满足预算的要求和相关标准的前提下，提供创造性的解决方案，

The company's technical department has its own engineers and operations management team, and our team will assist customers to provide creative solutions while meeting budgetary requirements and relevant standards.

这些服务包含并不限于：

- 1、项目可行性分析
- 2、工艺流程建议
- 3、清洁生产节能建议
- 4、施工图设计、预算

These services are not limited to:

- 1. Project feasibility analysis
- 2. process recommendations
- 3. Clean production and energy saving suggestions
- 4. Construction drawing design and budget

### ▲ 售后服务 AFTER SALES SERVICE

国敖公司所实施的项目交付使用后，定期跟踪服务，发现问题及时提出相应的解决和优化方案。

为新老客户的治理设施系统扩容升级提供技术支持。

After the project implemented by Guoao Company is delivered and used, the service will be tracked regularly, and the problems will be solved and optimized accordingly.

Provide technical support for the expansion and upgrading of the governance facilities of new and existing customers.





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手机微官网

珠海公司地址：珠海市斗门区珠峰大道1288号E栋 05 商铺  
( Zhuhai Company Address: Shop E, Block 05, 1288 Zhufeng Avenue,  
Doumen District, Zhuhai )

柬埔寨公司地址：金边俄罗斯大道269号，菩提小区A-201、202  
( Address: 269 Russian Avenue, Phnom Penh, Bodhi District A-201, 202 )

0756-5599556 ( 中国 )    (+ 86 ) 13823079288 ( 中国 )    0183103103(柬)  
0756-5599556 (China)    (+ 86 ) 13823079288 ( China )    0183103103 (Cambodia)  
zhgahb@163.com        http://www.zhguoao.com