



ZHENGZHOU TIEI EXTRACTION TECHNOLOGY CO.,LTD

**solution provider of
liquid liquid mixing and separation**





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PART 01

Company Introduction

Profile | History | Culture



Zhengzhou Tiei Extraction Technology Co.,Ltd

- Established in 2012
- 140+ Employee, 43 R&D person, also 1 external academician, 3 professors, 4 doctors and 9 masters.
- National specialized and sophisticated "little giant" enterprises,
- National high-tech enterprise,
- Henan Extraction Equipment and Application Engineering Technology Research Center,
- Henan Province "Gazelle" enterprise

A

- R&D cooperation organization
- Harbin Institute of Technology (Weihai)
 - General Research Institute for Nonferrous Metals (GRINM)
 - Zhengzhou University
 - Central South University
 - Zhejiang University
 - Institute of Process Engineering, Chinese Academy of Sciences

B

- More than 10000m² for R&D, experiment base, office and production center.
- One joint extraction application research center
- Three pilot extraction base
- Two production and processing center

C

Focusing on the research and application of liquid liquid mixing and separation technology, providing professional separation and purification solutions for the market.



2012

Established, focusing on the research and application of liquid liquid mixing and separation technology, providing professional separation and purification solutions for the market.

2013

The first generation CWL-M series centrifuge has been successfully developed. Its technical indicators such as power consumption, processing capacity, stability, and corrosion resistance have reached international leading levels. We are the second enterprise which have the technology of centrifuge with integral molding perfluorinated materials after a French company.

2014

Built the world's first centrifugal extractor production line in the lactic acid extraction industry. Pioneering the large-scale industrial application of organic acid extraction, establishing our company's leading position in the field of centrifugal extraction equipment.



2015 ○ Build 3 centrifugal extraction pilot plants. The second generation CWL-M-S centrifugal extractor has been successfully developed and applied.

2016 ○ Cooperated with Beijing Nonferrous Metals Research Institute to establish the first domestic ion type rare earth ore extraction concentration production line in Guangxi , China.

2018 ○ The third generation large-scale centrifugal extractor CWL-M-F has been successfully developed and applied in the organic acid industry.

2019 ○ Established subsidiary “Zhengzhou Tianrui Intelligent Equipment Technology Co., Ltd” , expanded production scale to 10000 units per year, improved the company's comprehensive production level of scale, standardization, and intelligence.



2020



Initiate and implement two strategic plans: "Digital Management System" and "Intelligent Extraction System".

2021



The fourth generation CWL-M-G centrifugal extractor has been launched into the market and successfully applied in the field of comprehensive utilization of salt lake resources.

2022



Officially start company listing work; R&D reserve for the fifth generation centrifugal extractor; Participated in the development of the national key special project.

TIEI makes water, water nourishes everything TIEI extraction, win-win cooperation

Adhering to the business philosophy of "**market-oriented, customer-centric, continuously meeting customer needs, creating value for customers, and reducing risks; value-standardized and striver based**", providing liquid liquid mixing and separation solutions for customers.

PART 02

R&D

R&D team | R&D achievement



Zhengzhou Tiei Extraction Technology Co.,Ltd



R&D team

Owning 140+ employee, 43 R&D person, among them, there are 1 external academician, 3 professors, 4 doctors, and 9 masters. We have established strategic cooperative relationships with Harbin Institute of Technology (Weihai), Beijing Nonferrous Metals Research Institute, Zhengzhou University, Central South University, Zhejiang University, and the Institute of Process Engineering of the Chinese Academy of Sciences.



Huang Xiaowei
Academician



Wang Lijun
Founder

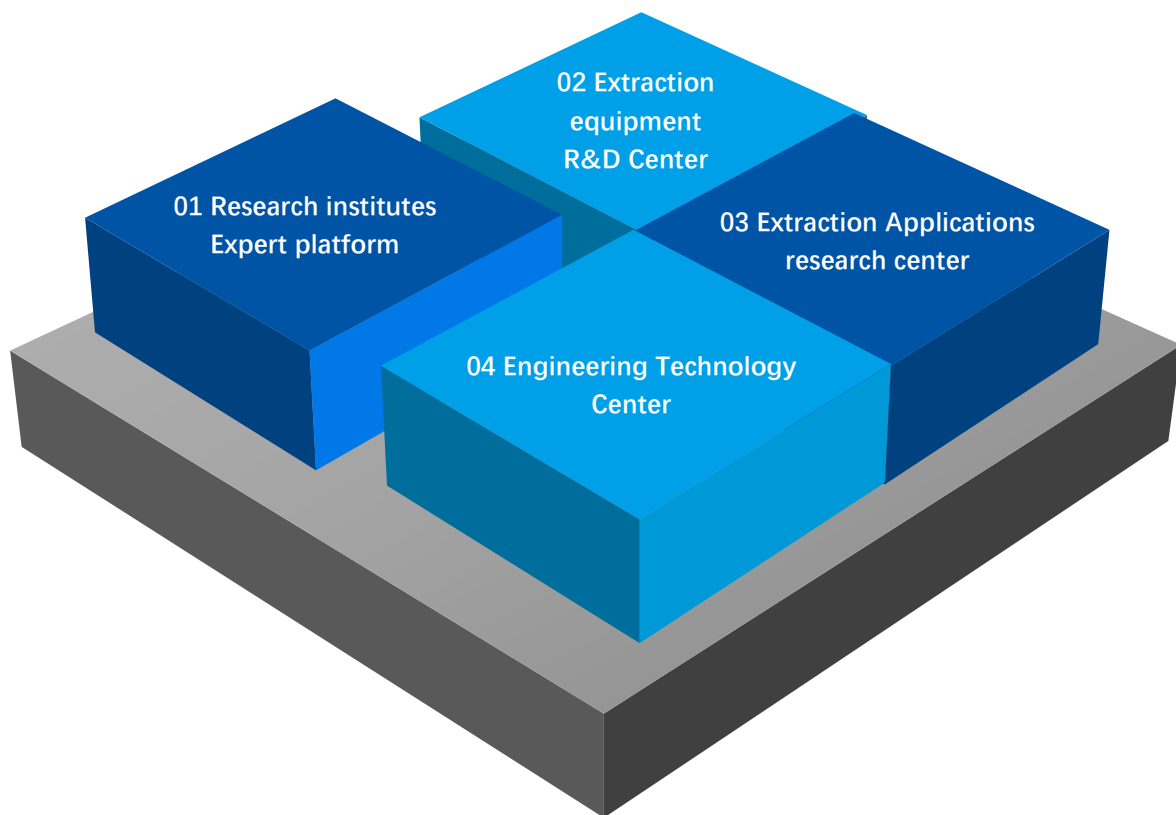


Wei Qifeng
Professor



Ren Xiulian
Professor

R&D Team



01 Research Institutes Expert platform

Established strategic cooperative relationships with multiple universities and research institutes; There is currently one academician workstation.

02 Extraction equipment R&D center

An integrated technology platform for the research and development, design, production, testing, and application of new and efficient extraction equipment.

03 Extraction application research center

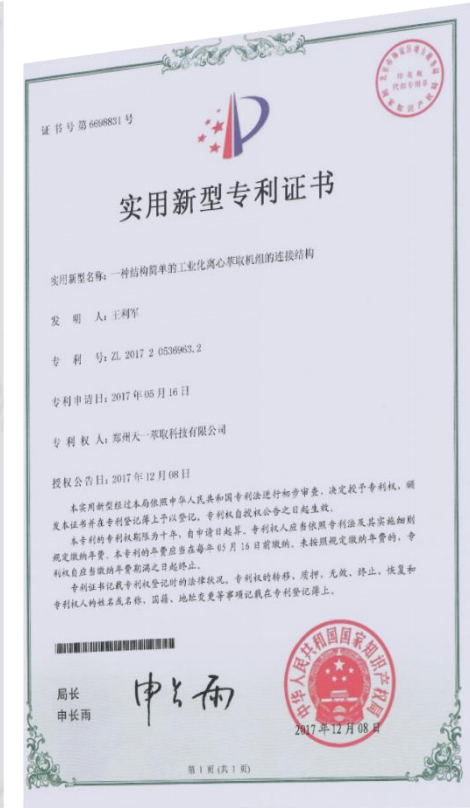
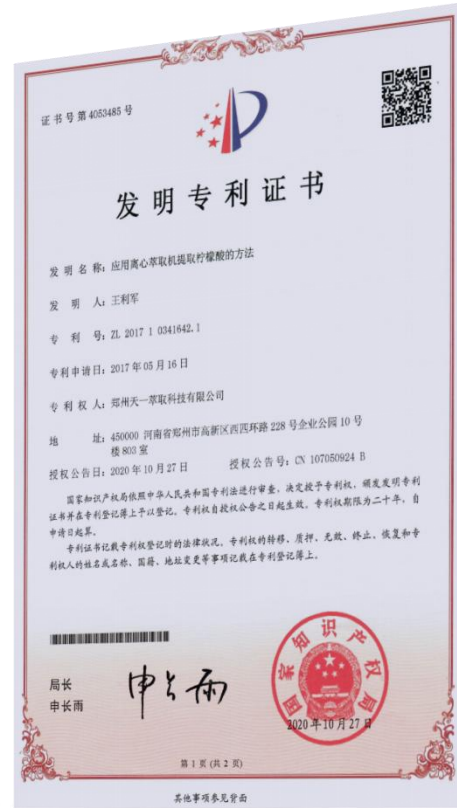
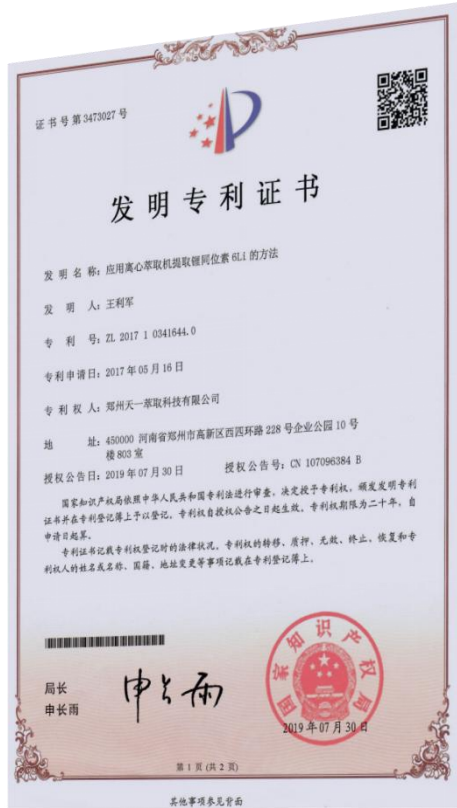
Carry out validation, optimization, research and development, and scaled up application of extraction process technology in many industries and fields. We have currently 3 extraction pilot lines, 1 extraction amplification demonstration line, and 1 basic research analysis and testing center.

04 Engineering technology center

Provide engineering design, supporting, implementation, delivery, operation, and engineering consulting services



Invention Patent



A total of 78 patents have been applied for, including 7 authorized inventions, 38 utility models, and 7 industrial designs

Honors

Attestation of Conformity
No. MSA 18 04 03757 001

Holder of Certificate: Zhengzhou Tianyi Extraction Technology Co., Ltd.
Floor 9, Building 10
Erpingfang Park, No. 228 West 4th Ring
Hitech Zone
450002 Zhengzhou City, Henan Province
PEOPLE'S REPUBLIC OF CHINA

Product: Centrifuges
Centrifugal Extractor

Model(s): CWL-150-M, CWL-250-M, CWL-350-M, CWL-450-M,
CWL-550-M, CWL-650-M, CWL-800-M

Parameters:
Rated Power: 1.5kW, 1.5kW, 2.2kW, 4kW,
4kW, 6.5kW, 7.5kW
Voltage: 380V
Weight: 220kg, 320kg, 520kg, 680kg,
1300kg, 2000kg, 2000kg

Tested according to: EN ISO 12100:2010
EN ISO 12100-1:2009
EN ISO 14120:2015

Test report no.: 70201803201-00

Data: 2018-05-23 (Qing Zhang)

CE After preparation of the necessary technical documentation as well as the EC declaration of conformity, the required CE marking can be affixed on the product. Other relevant directives have to be observed.

Page 1 of 1
TUV SUD Product Service GmbH · Zähringstraße · Rittersstraße 65 · 80333 München · Germany · TUV®

知识产权管理体系认证证书
【证书编号】537191P0052R05

兹证明：
郑州天一萃取科技有限公司
知识产权管理体系符合标准：GB/T 29490-2013

通过认证范围：
离心萃取机的研发、销售（有国家专项要求的除外）、上述过程相关架构的知识产权管理。

统一社会信用代码：914101000522959555
注册地址：郑州高新区国园环路228号企业公园10号楼803室
办公地址：郑州高新区国园环路228号企业公园10号楼803室

首次发证日期：2019年11月05日
本次发证日期：2019年11月05日
有效日期截至：2022年11月04日

认证范围不包括未有效的国家规定的法律法规许可、资质许可的产品、服务类型。
本证书的有效性依赖于获证企业，并由获证企业管理员和获证企业一并负责维护其有效性。
本证书信息可在国家认证认可监督管理委员会网站（www.cnca.gov.cn）查询。

签发：程云川
知产认证

知产（北京）认证服务有限公司
CNCA, www.cnca.gov.cn, 认证、检测、培训、咨询

市级
企业技术中心
郑州市工业和信息化委员会

郑州市萃取装备与应用工程
技术研究中心
郑州市科学技术局

高新技术企业证书

企业名称：郑州天一萃取科技有限公司 证书编号：GR201941001199
发证时间：2019年12月3日 有效期：三年
批准机关：

河南省萃取装备与应用
工程技术研究中心
河南省科学技术厅
二〇一八年

0057661

河南省科学技术进步奖证书

为表彰河南省科学技术进步奖获得者，特颁发此证书。

项目名称：定向分馏纯化制备高品质L-乳酸新技术研发与应用

奖励等级：二等奖
获奖者：王利军

证书号：2016-J-78-R07/10
2016年12月26日

中国有色金属工业科学技术奖证书

为表彰中国有色金属工业科学技术奖获得者，特颁发此证书。

项目名称：离子型稀土原矿绿色高效浸萃一体化新工艺

奖励等级：一等奖
获奖者：郑州天一萃取科技有限公司

2017年12月22日
证书号：中色协科学[2017]213-2017009-004

授予：郑州天一萃取科技有限公司
“专精特新”企业
郑州市中小企业服务局
二〇一九年八月

中国有色金属产业技术创新战略联盟
副理事长单位
二〇一九年九月

PART 03

Product & Service

Product Introduction | Production management |
Deliver&After-sale | Process development



Product Introduction

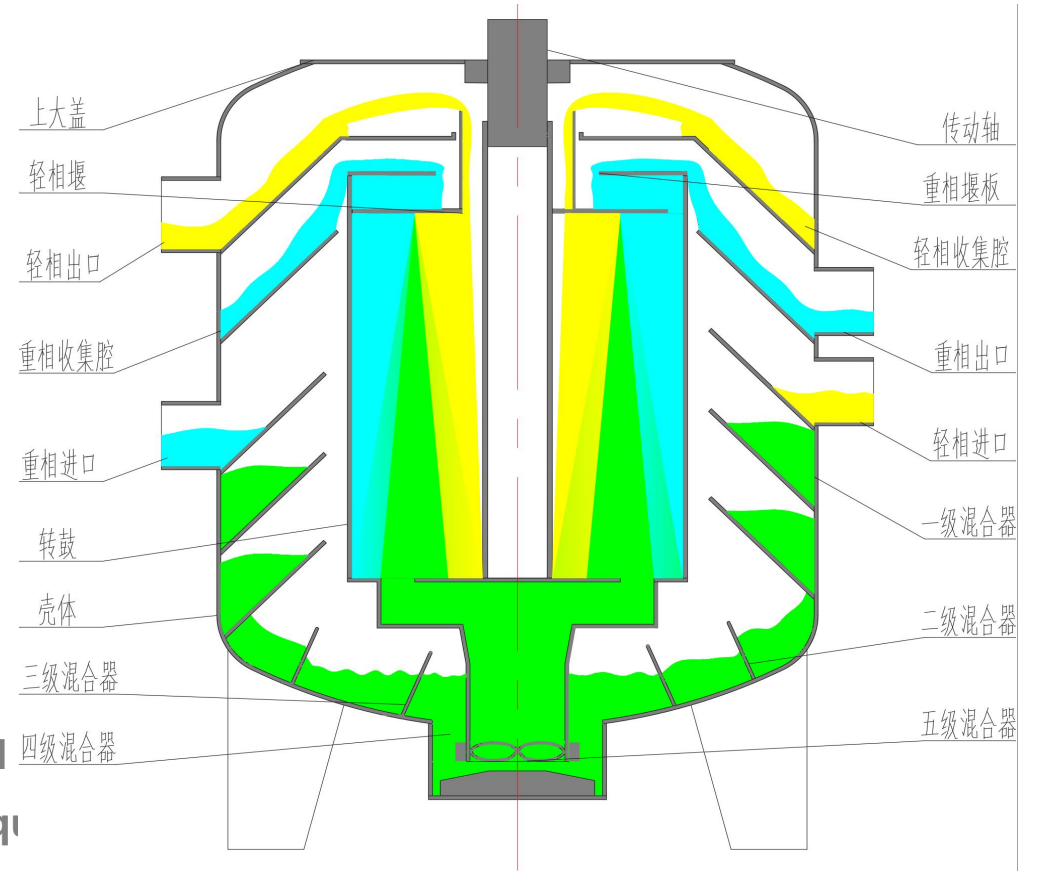
Working process

1. Mixing and Mass Transfer Process

Light and heavy phases of solution enter into the inside of shell separated from two feed inlets, then rapidly mixing and dispersed.

2. Separation Process

Under the centrifugal force, the mixed liquid enter into the rotational bowl, the heavy liquid is away from the bowl center, towards to the wall bowl, while the lighter liquid is towards to the bowl center. Clarified liquid enter into the collecting chamber through respective weirs and discharge from separated outlets



轻相 重相 混合相

CWL—M型离心机萃取机工作原理图

Product description

Top- suspension structure, no leakage risk, Low power consumption

Polymer hybrid materials, resistant to strong corrosion

Multiple mixing strength options, Flexible and adaptable for different liquid



high degree of automation, perfect operation environment

replace the heavy phase weir plate without disassembling machine , easy to operate and maintain

Compact structure , low liquid hold up, high extraction rate.

Product Introduction

Mini centrifugal extractor

Meet the needs of laboratories and small-scale industrial production for low flow, high-speed, fast, and variable extraction.

Small and flexible in size, easy to adjust and operate, capable of precise feeding at fixed times and quantities, with high rotational speed and separation factor, suitable for a wide range of flow ratios, good separation and extraction effects, suitable for various extraction systems, and has wide applicability.



Model : CWL25-M

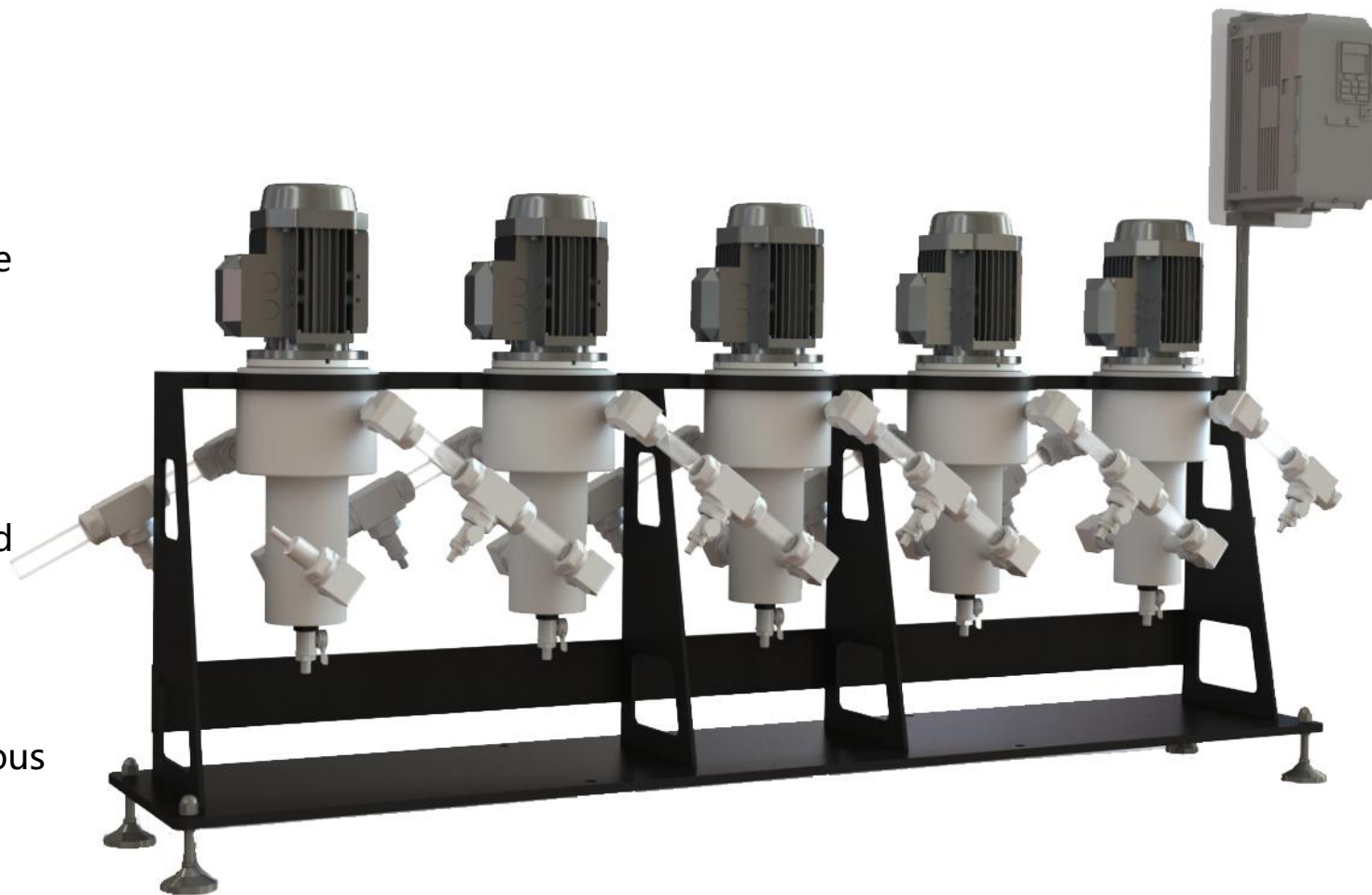
Product Introduction

Small centrifugal extractor

Meet the needs of small and medium-size extraction experiments and production.

It can accurately feed and simulate the industrial extraction process, making adjustment and operation convenient and fast.

Good effect of extraction and separation, wide range of flow ratio, suitable for various extraction systems and environments.



CWL50-M

● Product Introduction

Medium-sized centrifugal extractor

Meet with the industrial production with moderate processing capacity or medium scale test verification.

Suitable for a wide range of flow ratios, good separation and extraction efficiency, and suitable for various extraction systems and production environments.

The mixing strength, separation strength and material are optional, provide heating/cooling jackets etc special design.



CWL150-M

Product Introduction

Big size centrifugal extractor

Meet large-scale industrial applications with large processing capacity and high production requirements. Customized services can be provided based on the process and extraction system, with various mixing strengths, separation strengths, and material options.

Adjustable heavy phase weir and variable speed motor meet the requirements of different density and viscosity feed liquid systems, providing the flexibility required to handle specific gravity differences, and flexibly adapting to extraction systems.



CWL650-M

Product introduction



CWL-M series centrifugal extractor

Model	Dia. of bowl (mm)	Max. mixing flux (L/h)	inlet and outlet dia. (mm)	Power (kw)	Size(L×W×H)mm)	Weight (kg)
CWL25-M	25	10	φ10	0.09	230×230×800	5.5
CWL50-M	50	50	DN20	0.37	400×370×900	32
CWL150-M	150	1000	DN40	1.1	620×630×1250	220
CWL250-M	250	3000	DN50	2.2	750×750×1400	240/320
CWL350-M	350	8000	DN65	3.0	950×950×1600	410/520
CWL450-M	450	15000	DN80	4.0	1070×1070×1800	820/860
CWL550-M	550	30000	DN100	4.0	1200×1200×1760	1320
CWL650-M	650	60000	DN150	5.5	1380×1380×2250	2000
CWL900-M	900	150000	DN200	11	1690×1690×2480	2500

Note:

1. The materials of machine include 304, 316L, polymer composite hybrid materials, fluorine materials, etc. Customzer can select equipment material based on the properties of the liquid.
2. The above table is a conventional parameter, and there may be some difference between the specific equipment parameters and the above table. Please refer to the final proposal quotation.
3. The flux in the above table is the theoretical maximum obtained under ideal conditions, and the actual operating flux is related to the properties and operating conditions of the feed liquid system.

Product Introduction

-----Application-----



Pharmaceutical and pesticide industries

Preparation of pharmaceutical/pesticide intermediates, extraction of traditional Chinese medicine substances



Hydrometallurgy

Extraction of elements such as nickel, cobalt, copper, zinc, rubidium, cesium, manganese, lithium, boron, and rare earth elements



Food fermentation

Extraction of lactic acid fermentation broth, citric acid fermentation broth, natural plant pigment extraction (chlorophyll), etc

Fine chemical Petrochemical

Spices, cosmetics raw materials, extraction of organic solvents such as DMF and DMAC, and lube oil purification.



Waste water treatment

such as phenolic wastewater, printing and dyeing wastewater, DMF wastewater, naphthalene sulfonic acid wastewater etc.



Salt brine

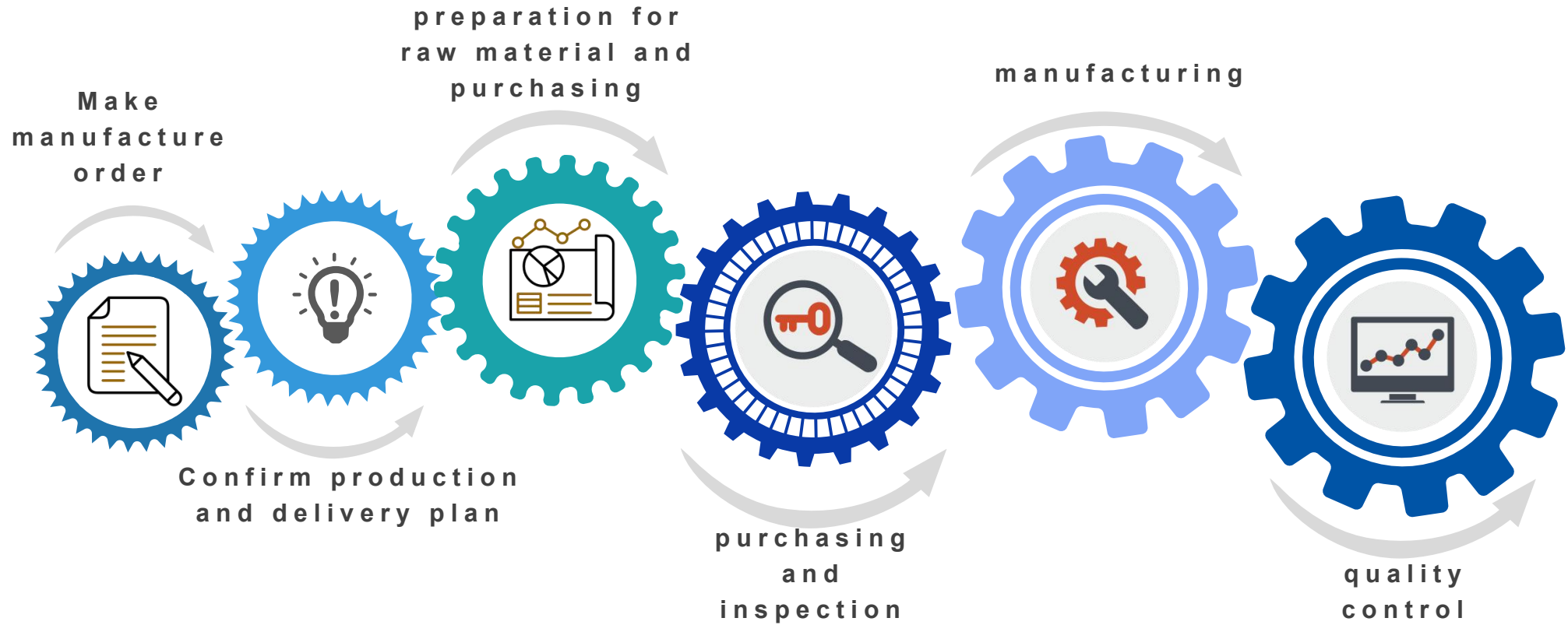
Extracting the lithium, Boron etc. from the salt brine water.



Production management



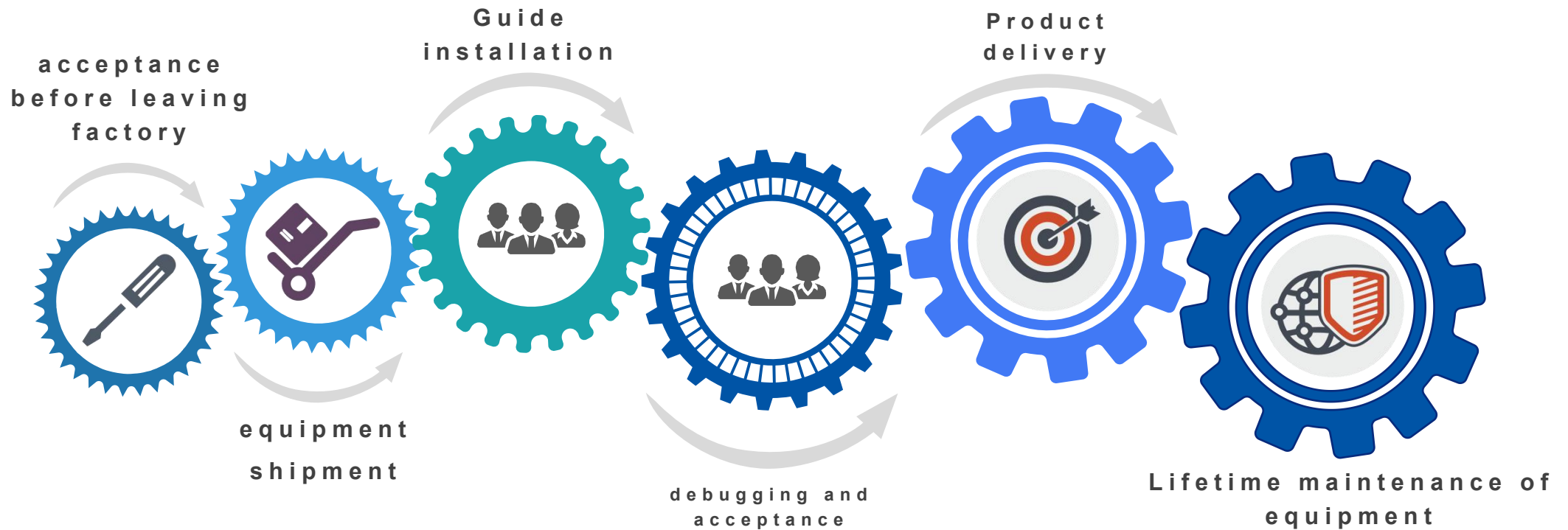
Production and delivery process



Production management



Production and delivery process



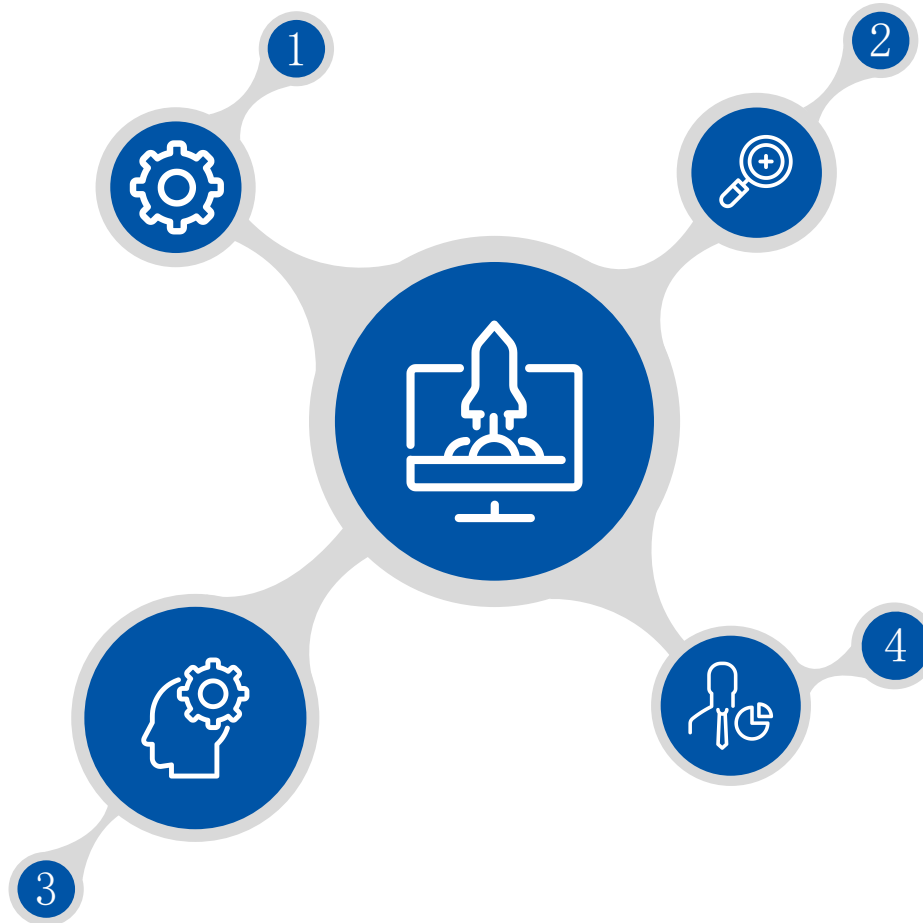
Delivery and after sale service

Professional delivery and after sale service team

Our company has a team with rich engineering experience, strong professional skills, strong service awareness, and quick response for delivery and after-sales service, including professional talents such as mechanical design, processing, installation, and on-site management etc.

Quick response

The after-sales service department has established a 24-hour service hotline, which can provide timely and efficient consultation services for customers during equipment installation, debugging, operation, and other processes. After receiving customer after-sales service requests, they can go to the site for processing within 48 hours.



Training service

Delivery and after-sales engineers provide free on-site training to users' relevant personnel before equipment shipment or during equipment installation and debugging, so that their relevant operators and management personnel can master equipment/system operation, maintenance and other knowledge.

Making file for each project, and visit customers regularly

The after-sales service department establishes a regular follow-up mechanism to promptly understand and remind customers of equipment usage issues, and improve customer satisfaction.

Quality control

检测报告

报告编号: 电学字 20201230-1816

样品名称: 离心萃取机

委托单位: 郑州天一萃取科技有限公司

受检单位: 郑州天一萃取科技有限公司

生产单位: 郑州天一萃取科技有限公司

检测类别: 委托检测

河南省计量科学研究院

检测专用章

江西省钨与稀土产品质量监督检验中心 检验报告

国检XT字(2020)09730

客户名称: 郑州天一萃取科技有限公司

客户地址: /

样品名称: 浸出液 原样编号: 样品3

送检时间: 2020-12-18 15:07:36 报告日期: 2020-12-24

样品等级: / 规格型号: / 样品状态: 液体

检测依据: GB/T 18882.1-2008

检测项目	单位	检测结果	检验项目	单位	检测结果
La ₂ O ₃ /TREO	%	21.77	稀土总量	mg/L	561.67
CaO/TREO	%	1.60	*****以下空白*****		
Fe ₂ O ₃ /TREO	%	5.16			
MgO/TREO	%	17.05			
SiO ₂ /TREO	%	4.47			
Eu ₂ O ₃ /TREO	%	0.68			
Gd ₂ O ₃ /TREO	%	4.72			
TiO ₂ /TREO	%	0.77			
Dy ₂ O ₃ /TREO	%	4.97			
HfO ₂ /TREO	%	0.92			
Er ₂ O ₃ /TREO	%	2.69			
Ta ₂ O ₅ /TREO	%	0.38			
Tb ₂ O ₃ /TREO	%	2.37			
Lu ₂ O ₃ /TREO	%	0.34			
Y ₂ O ₃ /TREO	%	32.12			

附注: /

主检: 肖石妹 审核: 李津 批准: 阮文

联系电话: 0791-8368030 传真: 0791-8368492 网址: <http://www.nst.gov.cn>

江西省钨与稀土产品质量监督检验中心 检验报告

国检XT字(2020)09728

客户名称: 郑州天一萃取科技有限公司

客户地址: /

样品名称: 萃取液 原样编号: 样品1

送检时间: 2020-12-18 15:07:36 报告日期: 2020-12-22

样品等级: / 规格型号: / 样品状态: 液体

检测依据: JJ 637-2018

检测项目	单位	检测结果	检验项目	单位	检测结果
总砷	mg/L	309	*****以下空白*****		

附注: /

主检: 钟莹 审核: 李津 批准: 阮文

联系电话: 0791-8368030 传真: 0791-8368492 网址: <http://www.nst.gov.cn>

江西省钨与稀土产品质量监督检验中心 检验报告

国检XT字(2020)09729

客户名称: 郑州天一萃取科技有限公司

客户地址: /

样品名称: 分相后萃取液 原样编号: 样品2

送检时间: 2020-12-18 15:07:36 报告日期: 2020-12-22

样品等级: / 规格型号: / 样品状态: 液体

检测依据: GB/T 18882.5-2017

检测项目	单位	检测结果	检验项目	单位	检测结果
砷	mg/L	1.34	*****以下空白*****		

附注: /

主检: 阮文 审核: 李津 批准: 阮文

联系电话: 0791-8368030 传真: 0791-8368492 网址: <http://www.nst.gov.cn>

江西省钨与稀土产品质量监督检验中心 检验报告

国检XT字(2020)09732

客户名称: 郑州天一萃取科技有限公司

客户地址: /

样品名称: 混合氯化稀土 原样编号: 样品5

送检时间: 2020-12-18 15:07:36 报告日期: 2020-12-24

样品等级: / 规格型号: / 样品状态: 液体

检测依据: GB/T 14035-2008

检测项目	单位	检测结果	检验项目	单位	检测结果
La ₂ O ₃ /TREO	%	23.98	稀土总量	g/L	259.40
CaO/TREO	%	2.05	三氧化二铁	mg/L	24.68
Fe ₂ O ₃ /TREO	%	6.52	三氧化二铝	g/L	1.62
MgO/TREO	%	21.30	硫酸根	mg/L	30.38
SiO ₂ /TREO	%	5.58	*****以下空白*****		
Eu ₂ O ₃ /TREO	%	0.84			
Gd ₂ O ₃ /TREO	%	5.82			
Er ₂ O ₃ /TREO	%	0.90			
Dy ₂ O ₃ /TREO	%	5.21			
HfO ₂ /TREO	%	0.84			
Er ₂ O ₃ /TREO	%	1.73			
Ta ₂ O ₅ /TREO	%	0.12			
Tb ₂ O ₃ /TREO	%	0.26			
Lu ₂ O ₃ /TREO	%	<0.10			
Y ₂ O ₃ /TREO	%	24.83			

附注: /

主检: 肖石妹 审核: 李津 批准: 阮文

联系电话: 0791-8368030 传真: 0791-8368492 网址: <http://www.nst.gov.cn>

At different stages of project implementation, organize third-party testing agencies to conduct inspections various aspects of the production process and issue testing reports.

Process development

Confirm the proposal plan and lab testing condition according to the application field of extraction.

1

Establish the plan and conditions for the lab test

Optimization and data collection, making plan for each modules of automated extraction system

2

Establish pilot plan

Build a pilot line, establish an automated extraction system, and optimize various data

3

pilot test, scale up test

Optimization and development of industrial intelligent extraction equipment, integrated automation and information extraction software platform

4

Development of Industrial Intelligent Equipment

Establishing an industrial intelligent extraction production demonstration line, production debugging, and data collection and analysis

5

Build production demonstration lines

Intelligent extraction system matched engineering technology and industrial application promotion

6

Industrial application promotion

PART 04

Project cases

Lithium extracton from brine | Rare Earth |
Organic acid | Partners



Zhengzhou Tiei Extraction Technology Co.,Ltd



● lithium extraction from salt

brt



System: Lithium Extraction

Model: CWL650-M

 **Rare Earth**



System: Ionic Rare Earth
Model: CWL650-M

Organic acid Industry



System: food additives

Model: CWL650- M

课题编号: 2021YFC2902203

密 级: 公开

国家重点研发计划
课题任务书

课题名称: 稀土浸出液离心萃取富集回收技术及大型可移动装备

所属项目: 离子吸附型稀土矿绿色高效开发关键技术与装备

所属专项: 战略性矿产资源开发利用

项目牵头承担单位: 有研稀土新材料股份有限公司

课题承担单位: 有研稀土新材料股份有限公司

课题负责人: 彭新林

执行期限: 2021 年 12 月 至 2025 年 11 月

中华人民共和国科学技术部制

2021 年 12 月 23 日



20210550A

开发(委托)合同



行): 郑州天一萃取科技有限公司

行): 郑州大学

2021 年 10 月 1 日

郑州



郑州大学印制

中核矿业科技集团有限公司
郑州天一萃取科技有限公司

战略合作框架协议

中国·北京

2022 年 4 月

Partners



Thank you !

ZHENGZHOU TIEI EXTRACTION TECHNOLOGY CO.,LTD

Add: 9 Floor Building 10, Enterprise Park, No. 228 West 4th Ring Road,High-Tech

District, Zhengzhou City, China 450000

T: 0086 13283803997 F: 0371-67896631

E-mail: megan@tieiextraction.com [Http://www.tyextractor.com](http://www.tyextractor.com)