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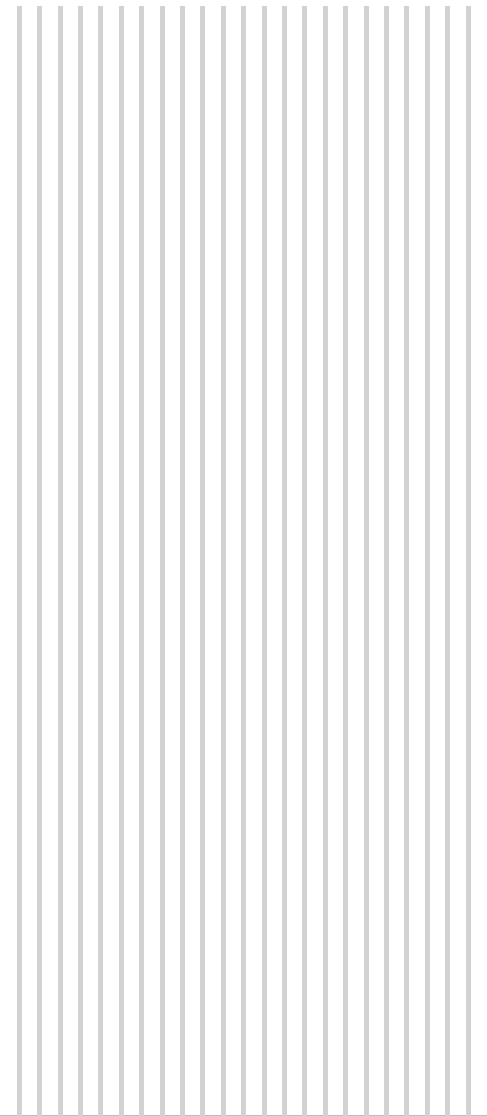


通威农发
TWAD CO., LTD.

绿色产业 创新转型

Green Industry
Innovative
Transformation

通威·为了生活更美好
TONGWEI·FOR BETTER LIFE



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刘汉元主席

全国人大代表
全国工商联副主席
通威集团董事局主席

Chairman Liu Hanyuan

Deputy to the NPC
Vice Chairman of CFIC
Board Chairman of Tongwei Group

刘汉元主席 寄语

MESSAGE FROM CHAIRMAN
LIU HANYUAN

岁月不居，天道酬勤。通威全力延伸并不断完善水产及畜禽产业链条，致力打造世界级健康安全食品供应商这一战略目标的同时，通威更自觉肩负起促进人类可持续发展的历史责任，稳步进入高纯晶硅及太阳能光伏产业，致力打造世界级清洁能源运营商。在加快主业发展的同时，通威集团适度拓展相关多元化领域，在宠物食品、建筑与房地产等其它产业，均保持着良好、蓬勃的发展态势。

通威今天所取得的业绩，是社会各界领导和朋友多年来关心支持的结果，是全体通威人励精图治、奋勇拼搏的结晶，凝聚着大家的智慧和汗水，值得所有通威人欣慰和自豪，并为之继续努力奋斗。

在这个充满机遇与挑战的时代，我们将一如既往地坚持“追求卓越，奉献社会”的企业宗旨，坚定不移地奉行“诚、信、正、一”的经营理念，并矢志不渝地以“世界级健康安全食品供应商和世界级清洁能源运营商”为企业使命和价值诉求，戮力同心，斗志昂扬，一往无前，把通威事业推向更高的平台和更为广阔的天地。

As time goes by, god helps those who help themselves. After thirty-seven years of fighting and endeavour, Tongwei has become the biggest aquatic feed manufacturer in the world and a dominating beasts and birds feed manufacturer in China. At the same time of trying best to expand and constantly perfecting aquatic and beasts and birds industrial chain to dedicate itself to the strategic target of building world-level healthy and safe food supplier, Tongwei also consciously bears the historic responsibility of promoting the green sustainable development of human, steadily enters into the high-purity polycrystalline silicon and solar photovoltaic industry, and commits itself to building a world-level new clean energy supplier. In addition to quickening the development of two main businesses of green agriculture and green energy, Tongwei Group actively expands relevant moderate diversification fields, and keeps good and brisk development trend in pet food, architecture, real estate and other industries.

The performance Tongwei achieved today comes from the concern, support and assistance of different leaders and friends of different levels and circles in the society, and is the crystallization growing out of all Tongwei people's hard working and brave fighting, which condenses everybody's wisdom and sweat, and deserves all Tongwei people's delight and pride and keeping trying for it.

In this era full of opportunity and challenge, we will insist the enterprise tenet of "pursue excellence, contribute to the society" as always, observe the operation principle of "Honesty, trust, fairness and Excellence" unswervingly, and unite wholeheartedly, have high morale, advance courageously to push Tongwei's business to a higher platform and wider world with the persistent enterprise mission and value appeal of "building world-level healthy and safe food supplier and world-level clean energy supplier".

全国人大代表、全国工商联副主席、通威集团董事局主席 ■
刘汉元 ■

01

绿色产业 创新转型

GREEN INDUSTRY
INNOVATIVE TRANSFORMATION

通威农业发展有限公司（以下简称通威农发）由通威股份控股，以饲料生产和水产养殖为核心业务，并同时涉及水产苗种繁育、养殖服务、动物保健、农业检测、渔业设施与装备、融资担保等诸多领域。截至目前，通威农发年饲料生产能力超过1000万吨，是全球领先的水产饲料生产企业及重要的畜禽饲料生产企业，拥有80余家涉及饲料业务的分、子公司，生产、销售网络已布局全国大部分地区及越南、孟加拉、印度尼西亚等东南亚国家。

40余年来，通威始终坚持以科技研发驱动可持续发展，拥有“国家企业技术中心”、“国家认可实验室”、“水产养殖动物疾病防控技术国家地方联合工程实验室”、“农业部水产畜禽营养与健康养殖重点实验室”、“水产健康养殖四川省重点实验室”、“四川省水产工程技术研究中心”等十余个国家级、省级技术创新平台，并先后三度荣获“国家科学技术进步二等奖”、两度获得农业农村部“全国农牧渔业丰收奖一等奖”、农业农村部“中华农业科技奖一等奖”，以及“四川省科技进步一等奖”等多项殊荣。

早在1996年，通威在中国饲料行业中率先按ISO9001质量管理体系要求，建立和实施通威质量管理体系。将饲料生产现场管理由原来无序、无章可循、因人而异的管理，向规范、科学、相互协调的现代质量管理转变，并数十年一以贯之。2020年，通威再次修订通威质量方针和目标，并通过“标准化建设”打造产品质量最好、成本最低、效率最优的核心竞争力，实现生产自动化、业务数字化、作业标准化的标准化运营，并最终实现满产满销的规模优势，助力用户实现养殖效益最大化，更引领饲料工业从“质造”走向“智造”新生态。

与此同时，通威组建通威渔业科技有限公司，发力水产养殖业务。计划在未来3-5年内进一步聚焦南美白对虾、加州鲈、口鱼等市场接受度高、适宜集约化的养殖品种，探索不同养殖条件下的设施化、工厂化养殖模式，形成技术突破和规模、品牌效应，构建通威水产产业链系统竞争能力，真正实现行业新引领，夯实通威世界级水产龙头企业地位。

Tongwei Agricultural Development Co., Ltd. (hereinafter referred to as TWAD Co., Ltd.) is controlled by Tongwei shares and focuses on feed production and aquaculture as its core business. At the same time, it is involved in aquatic fry breeding, breeding services, animal health, agricultural testing, fishery facilities and equipment, financing guarantee and many other areas. Up to now, TWAD Co., Ltd. has an annual feed production capacity of more than 10 million tons. It is a leading aquatic feed production enterprise and an important livestock and poultry feed production enterprise in the world, with more than 80 subsidiaries involved in feed business. The production and sales network has been distributed in most parts of the country and Southeast Asian countries such as Vietnam, Bangladesh and Indonesia.

For over 40 years, Tongwei has always insisted on using scientific and technological research and development to drive sustainable development. It has "National-level Corporate Technology Centers", "National Accreditation Laboratory", "National and Local Joint Engineering Laboratory of Aquaculture Animal Disease Prevention and Control Technology", "Key Laboratory of Nutrition and Healthy Breeding of Aquatic Livestock and Poultry of the Ministry of Agriculture", "Sichuan key Laboratory of healthy Aquaculture", "Sichuan Aquatic Engineering and Technology Research Center" and more than ten national and provincial technological innovation platforms, it has also won the "Second Prize of National Award for the Progress of Science and Technology" for three times, the "First Prize of National Agriculture, Animal Husbandry and Fishery Harvest Award" by the Ministry of Agriculture and Rural Affairs for two times, the "First Prize of China Agricultural Science and Technology Award" by the Ministry of Agriculture and Rural Affairs, as well as the "First Prize of Sichuan Provincial Science and Technology Progress" and various other awards.

As early as 1996, Tongwei took the lead in establishing and implementing Tongwei quality management system according to the requirements of ISO9001 quality management system in China's feed industry. The feed production site management will be changed from the original disordered, no rules to follow, and different management to the standard, scientific, and coordinated modern quality management, which has been implemented for decades. In 2020, Tongwei revised the quality policy and objectives of Tongwei again, and built the core competitiveness with the best product quality, the lowest cost and the best efficiency through "standardization construction", realized the standardized operation of production automation, business digitization and operation standardization, finally realized the scale advantage of full production and sales, helped users to maximize the breeding benefits, and led the feed industry from "quality manufacturing" to "intelligent manufacturing" new ecology.

At the same time, Tongwei established Tongwei Fishery Technology Co., Ltd. to develop aquaculture business. In the next 3-5 years, it is planned to further focus on the highly accepted and suitable intensive breeding varieties such as *Penaeus vannamei*, California perch and mackerel, and explore the facility and factory culture model under different culture conditions, form technological breakthroughs, scale and brand effect, build the competitiveness of Tongwei aquatic product industry chain system, truly take a lead in the industry, and consolidate Tongwei's position as a world-class aquatic product leading enterprise.

O2

绿色农牧 时代伟业

GREEN AGRICULTURE
AND ANIMAL HUSBANDRY
GREAT ACHIEVEMENTS IN THE ERA

随着大众生活水平不断提升，消费结构不断优化和改善，水产品在全球膳食结构中的比重不断增加，年均消费量稳步增长。2019年全球水产品总产量约为1.778亿吨，快速发展的水产养殖业继续沿着稳步上升的轨迹发展，养殖产量增长3.9%。联合国粮农组织预测，在未来10至15年内，全球水产品产量仍将处于快速上升通道。

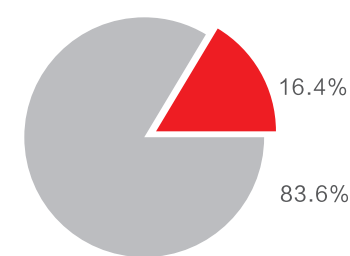
与此同时，水产品已成为人类获取动物蛋白质的主要来源之一，占总供应量的16.4%。全球水产养殖总量在过去30年中以每年平均8%的速度持续增长，成为了长期提高全球食物蛋白质产量的唯一真正可行的替代方案，在全人类的膳食营养中发挥了举足轻重的作用。

自1990年起，中国水产品产量连续30年位居世界首位。当前，我国已成为全球最大的水产品消费国，水产品产量占全球总产量比重超过40%，占据全球水产养殖产量60%以上，也是世界上唯一的养殖品总量超过捕捞总量的主要渔业国家。近年来，随着产业向智能化、设施化、集约化不断转型升级，我国渔业经济增长方式从过去单纯追求产量，向高品质、高安全性、高附加值、高品牌化转型升级，更加注重全产业链的绿色可持续发展。

With continuously rising living standards of the people and constant optimization and improvement of consumption structure, the proportion of aquatic products in global food structure has been increasing and annual average consumption steadily growing. In 2019, the global total output of aquatic products was approximately 177.8 million tons, where the fast-developing aquaculture continued its momentum of steady growth, and aquaculture output increased by 3.9%. As estimated by UNFAO, the global aquatic products output will be on the path of fast growth in the next 10-15 years.

Meanwhile, aquatic products offer one of the major sources of animal protein for humankind and account for 16.4% of the total supply. In the past 30 years, the global aquaculture total output increased with average annual growth rate of 8%, becoming the only feasible alternative for increasing global food proteins output and playing a vital role in the humankind's dietary nutrition.

Since 1990, aquatic products output of China has been topping the world for 30 consecutive years. China is now the country with the largest aquatic products consumption in the world; its aquatic products output accounts for 40% of that of the world and its aquaculture output over 60%; it is also the only major fishery country whose aquaculture total output outweighs its total amount of fishing. As the industry has been evolving into an intelligentized, facility-based and intensive industry in recent years, the growth pattern of China's fishery industry has shifted its focus from output to high quality, high safety, high added value and high-level branding and put more focus on green and sustainable development of the entire industry chain.

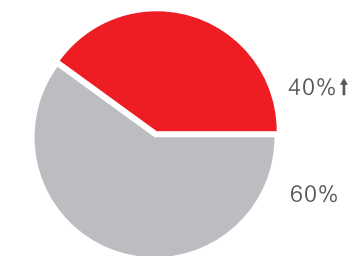


■ 水产品占人类获取动物蛋白质总供应量的16.4%

Aquatic products account for 16.4% of total supply of animal protein for humankind

■ 其它产品成为人类获取动物蛋白质的供应量占总供应量的83.6%

Other products account for 83.6% of total supply of animal protein for humankind

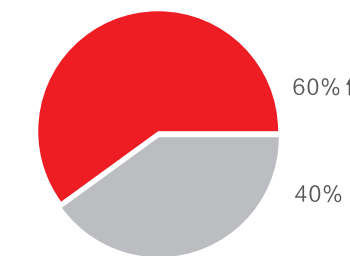


■ 我国水产品产量占全球总产量比重超过40%

Aquatic products output of China accounts for over 40% of global total output

■ 其他国家水产品产量占全球总产量比重不超过60%

Aquatic products output of other countries accounts for less than 60% of global total output



■ 我国水产养殖产量占据全球水产养殖产总量60%以上

Aquaculture output of China accounts for over 60% of global total output

■ 其他国家水产养殖产量占据全球水产养殖产总量40%以下

Aquaculture output of other countries accounts for less than 40% of global total output

绿色农牧 产业链

GREEN AGRICULTURE
AND ANIMAL HUSBANDRY
INDUSTRY CHAIN

02 饲料“做好一颗料” FEED — EVERY GRAIN MATTERS

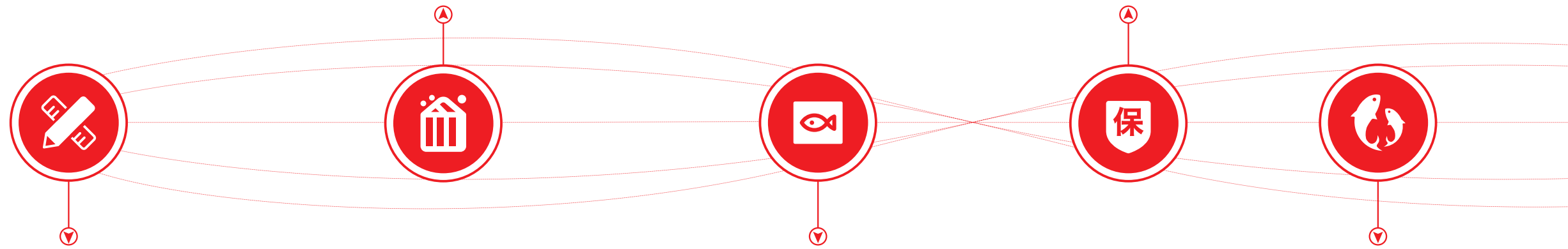
通威以科技驱动可持续发展，不断改进饲料的营养配比，不断提升水产饲料的科技含量。目前，通威饲料产品已全面提质升级，进入适应规模化专业化养殖、产出“口感有辨识度的高端水产品”的4.0时代。

Tongwei pushes for sustainable development with science and technology, continuously improves the nutrition proportioning of feed, and continuously enhances the technological elements of aquatic feed. So far, Tongwei feed products have been comprehensively upgraded in quality and entered the 4.0 era that is characterized by large-scale specialized breeding and production of "high-end aquatic products with discernible taste".

04 动保“绿色无公害” ANIMAL HEALTH — GREEN, POLLUTION-FREE

为保障无公害水产养殖的持续发展，通威整合旗下动物保健研究所、成都通威三新药业有限公司、海南海壹生物技术有限公司、湛江海先锋生物科技有限公司等团队，打造绿色强势动保品牌。

In order to guarantee sustainable development of pollution-free aquaculture Tongwei has created the strong animal health brands by pooling the teams of the Animal Health Research Institute, Chengdu Tongwe Sanxin Pharmaceutical Co., Ltd, Hainan Haiyi Biotechnology Co., Ltd and Zhanjiang Haixianfeng Bio-Tech Co., Ltd.



01 研发“科技赋能” R&D — TECHNOLOGY ENABLED

通威拥有雄厚的科研开发和自主创新实力，以科技锻造极致产品力，组建了包括国家级企业技术中心、国家级实验室，以及具有国际先进水平的国家级检测中心在内的十余个科技研发机构。

Tongwei has strong technological R&D and independent innovation strength, enabling the ultimate product strength with science and technology, and has established more than ten technological R&D institutions including national-level corporate technology centers, national-level laboratories and internationally advanced national-level testing centers.

03 种苗“推进良种选育” SEED — PROMOTING BREEDING OF FINE BREEDS

以通威优质种苗繁育生产标准化基地为载体，将通威的核心技术、宣传平台和市场网络平台等优势资源进行共享，以整合全行业水产良种选育和生产的产学研产业链，打造水产良种推广创新平台。

Supported by Tongwei's standard high-quality seed rearing and production base and by sharing Tongwei's core technologies, publicity platforms, market network platform and other advantageous resources, Tongwei integrates the industry-university-research chain that enables breeding and production of aquatic fine breeds and creates a platform for promotion and innovation of aquatic fine breeds.

05 养殖设施“环保、生态、低碳” BREEDING FACILITIES — ENVIRONMENTAL PROTECTION, ECOLOGY, LOW CARBON

通威开发“渔光一体”智能设施养殖模式，包括设施系统、养殖模式、智能管控、水质净化及尾水处理等核心技术，实现了设施渔业与光伏发电的完美协同，养殖水域的设施能需求与养殖水域光热能源的直接转化应用，成果整体达到国际领先水平。

Tongwei has developed the "integration of fishery and PV" intelligent facility aquaculture mode, including facilities system, aquaculture mode, intelligent management and control, water purification and tail water treatment and other core technologies, realizing the perfect synergy between facility fishery and photovoltaic power generation, and direct transformation and application of the active demand of facilities in aquaculture waters and solar/thermal energy in aquaculture waters, and achieving internationally leading results.

03

海外拓展 全球布局

OVERSEAS EXPANSION
GLOBAL PRESENCE



近年来，通威积极响应国家“一带一路”倡议，深入推进“走出去”战略，不断升级国际化经营路线。以饲料产业为核心，通威农发目前已拥有遍布全国各地及东南亚地区80余家分、子公司，真正实现了走出国门，不仅展示了良好的企业形象，同时也助力全球绿色农牧产业实现高质量发展。

In recent years, Tongwei, in positive response to the "Belt and Road" initiative, has vigorously acted on the "go globally" strategy and constantly upgraded its international business line. Centered around the feed industry, TWAD Co., Ltd. now has more than 80 branches and/or subsidiaries operating in China and Southeast Asia, which truly fulfills the strategy of "going abroad". Tongwei has presented a favorable corporate image and also contributed to high-quality development of the global green agriculture and animal husbandry industry.

■ 华东一区

大丰通威 大丰通威分公司
连云港通威 淮安通威
江苏巴大 扬州通威

■ 华西二区

昆明通威 长寿通威
重庆通威

■ 华南三区

海南海壹 南宁通威 茂名通威
宾阳通威 海南通威

■ 华中一区

池州通威 合肥通威
南昌通威 黄冈通威

■ 海外片区

海阳通威
和平通威
前江通威
同塔通威
越南天邦
越南通威
孟加拉通威
印尼通威

■ 预混料片区

四川预混料厂
广东预混料厂

■ 小业态

动物营养 海南威尔检测 四川威尔检测 通威农业融资担保 通广建设

■ 华东二区

南通巴大 绍兴通威 无锡通威
无锡通威特种料 江苏通威

■ 华南一区

广东通威 高明通威
阳江海壹 珠海海壹

■ 华北一区

沈阳通威 哈尔滨通威
长春通威 天津通威

■ 华中二区

洪湖通威 沙市通威
天门通威 武汉通威

■ 通威渔业科技有限公司

成都通威自动化设备
湛江海壹水产种苗
海南海壹水产种苗
成都通威水产种苗
南海通威水产科技
南京通威水产科技
青岛海王水产种业
东营通威渔业

■ 拜欧玛片区

通威拜欧玛
珠海海为

■ 华西一区

蓉峡通威 四川通威
德阳通威

■ 华南二区

厦门通威 揭阳通威
福州通威威廉 惠州通威

■ 华北二区

河南通威 山东通威
淄博通威 廊坊通威

■ 华中三区

汉寿通威
常德通威
沅江通威

■ 通威天邦特区

安徽天邦
蚌埠天邦
东营天邦
湖北天邦
宁波天邦
盐城天邦
南宁艾格菲
青岛七好

■ 总部直管

成都通威 通威特种料

04

实力加持 荣誉资质

ENHANCED CAPACITY
HONORS AND QUALIFICATIONS



- 国家企业技术中心
National-level corporate technology centers
- 中国饲料工业百强企业前十强
Top 10 of the top 100 enterprises in China's feed industry
- 农业产业化国家重点龙头企业
National Key Leading Enterprise for Agriculture Industrialization
- 国家科技进步二等奖
Second Prize of National Award for the Progress of Science and Technology
- 国家认可实验室
National Accredited Laboratory
- 水产养殖动物疾病防控技术国家地方联合工程实验室
National and Local Joint Engineering Laboratory of Aquaculture Animal Disease Prevention and Control Technology
- 农业部水产畜禽营养与健康养殖重点实验室
Key Laboratory of Nutrition and Healthy Breeding of Aquatic Livestock and Poultry of the Ministry of Agriculture
- 水产健康养殖四川省重点实验室
Sichuan key Laboratory of healthy Aquaculture
- 四川省水产工程技术研究中心
Sichuan Aquatic Engineering and Technology Research Centre



05

科技赋能 通威质造

EMPOWERED BY TECHNOLOGY
QUALITY FROM TONGWEI



■ 通威现代化的饲料生产线
■ Tongwei modern feed production line



■ 科技赋能 通威质造
■ Empowered By Technology & Quality From Tongwei

科技“质”造

TECHNOLOGY BOLSTERED
QUALITY

通威多年来始终坚持以科技驱动可持续发展，以创新锻造企业核心竞争力，引领行业进步，不断改进饲料营养配比，不断提升饲料科技含量，以精准营养、精准饲喂引领“无抗时代”的到来。

For years, Tongwei has adhered to technology-driven sustainable development, generating the core competitiveness of the enterprise by means of innovation, leading the industry progress, continuously improving the nutrition proportioning of feed, continuously enhancing the technological elements of aquatic feed, and ushering in the "antibiotic-free era" through precision nutrition and precision feeding.

1.0_{时代}

满足人民摄取
动物蛋白基本需要
Meet people's basic need for
uptaking animal protein

3.0_{时代}

降低氮磷排放
输出绿色安全水产品
Reduce nitrogen and phosphorus emissions and
export green and safe aquatic products

2.0_{时代}

改造水域、提高单位面积产量
实现渔业生产结构优化
Improve water area, increase yield per unit
area and optimize fishery production structure

4.0_{时代}

产出“口感有辨识度的
高端水产品”
Produce "high-end aquatic products
with discernible taste"

通威农牧对外落地质量方针，对内推动标准化建设，致力于进一步降本增效，打造综合成本最低、质量最好、产品最稳定、养殖效益最优的综合竞争优势，实现公司与用户共赢发展。更引领饲料工业从“质造”走向“智造”新生态。

Tongwei agriculture and animal husbandry implements the quality policy externally, promotes the standardization construction internally, and is committed to further reducing costs and increasing efficiency, creating a comprehensive competitive advantage with the lowest comprehensive cost, the best quality, the most stable products and the best breeding benefits, and achieving win-win development between the company and users. It also leads the feed industry from "quality manufacturing" to "intelligent manufacturing".



通威饲料标准化 智能生产流程图

TONGWEI FEED STANDARDIZATION AND INTELLIGENT PRODUCTION FLOW CHART



通威农发华西一区四川通威生产基地
Sichuan Tongwei Production Base in Huaxi Area of TWAD Co., Ltd.



■ 以严格的技术检测，为产品质量保驾护航
■ Maintain product quality by means of strict technical testing

质量方针

QUALITY POLICY

质量、市场、效益是公司发展的永恒主题，而质量是市场、效益的基础和前提。

Quality, market and benefit are what the company for ever pursues, but quality is the foundation and prerequisite of market and benefit.



质量
Quality



市场
Market



效益
Benefit

准确识别客户本质需求，通威始终以养殖效益最大化为目标规范全员意识和行为，以专业化、标准化、规模化水平严格管控产品质量形成的设计、制造、使用全过程。

持续改进质量管理体系，致力于打造效率领先、持续增值且不可替代的产业链，为社会提供安全稳定的产品，实现公司与客户共赢发展。

To accurately identify the essential needs of customers, Tongwei throughout standardized the thoughts and behaviors of all employees with the goal of maximizing the culture benefits, and always maintains specialization, standardization and large-scale, to strictly control the whole process in designing, manufacturing and using of product quality formation.

Tongwei constantly improves its quality management system in an effort to build an irreplaceable industry chain with leading efficiency, continuously increasing value, provide safe and stable products in order to supply the society and realize win-win development of both the company and customers.

质量目标

QUALITY OBJECTIVES

采用并实施ISO9001、ISO22000质量管理体系和食品安全管理体系，遵守国家法律法规，严格控制产品质量，实现产品出厂100%合格、质量安全事故0发生、用户投诉处理率100%、养殖效益领先、公司发展壮大的质量目标。

Adopt and implement ISO9001 and ISO22000 quality management and food safety management systems, abide by the national laws and regulations, strictly control product quality, and achieve the quality objectives including delivery of 100% qualified products, zero quality or safety accidents, 100% handling of complaints, leading position in terms of aquaculture benefits and company development and growth.



■ 通威现代化的饲料生产设备
■ Modern feed production equipment of Tongwei

服务驱动

SERVICE-DRIVEN

通威，以科技驱动服务，以科技为养殖赋能。通过与国内外知名技术专家的长期合作，聘请资深从业人士对用户进行专业技能培训，通威形成了以“股份总部——片区——分、子公司”为主体的“三级技术服务体系”。

以服务终端用户为中心，通威一直致力于打造一支具有通威特色的“专业化技术服务团队”，所有营销服务人员都配备先进的服务工具——“通威科技箱”，并在全国建立了100余个药敏实验室，每年举行超过3000场的创富技术培训会，为广大养殖户提供完善的技术解决方案和全方位服务，让通威“随时随地服务于您”成为广大养殖户信心的保障。

与此同时，通威还积极运用“互联网+”技术，通过开设“通心粉公开课”等栏目，分享养殖经验、解读养殖模式、传递行业信息、了解行业动态、预判行业前景，以线上直播和短视频等多种渠道和方式为广大客户解决技术难题。

Tongwei offers technology-driven service and conducts technology-enabled aquaculture. Through long-term cooperation with well-known technical experts at home and abroad and employment of senior practitioners who offer professional skills training for users, Tongwei has created "three-level technical service system" comprised of "share-holding headquarters--areas--branches and subsidiaries".

Centered around serving end-users, Tongwei has been committed to building a "professional technical service team" with Tongwei characteristics, where all marketing service personnel are equipped with an advanced service tool—"Tongwei technology box", and has established more than 100 drug sensitivity laboratories nationwide, holding more than 3,000 wealth creation technology training sessions every year, providing refined technical solutions and all-round services for the farmers, and making "Tongwei serving you anytime and anywhere" the guarantee of confidence for the farmers.

Meanwhile, by using the "Internet+" technologies, Tongwei also provides the programs such as "macaroni open class" to share the aquaculture experience, interpret the aquaculture mode, pass industry information, know industry news and predict the future of the industry, and solves the technical problems of customers by means of live broadcast, short video and other methods.

水产科技服务

01

AQUACULTURE TECHNOLOGY SERVICE

- 科学养殖技术
Scientific aquacultural technology
- 全方位免费测水
All-round charge-free water testing
- 量身定制调水方案
Customized water transfer solutions
- 尖端药敏诊断
Cutting-edge drug sensitivity diagnosis
- 及时准确的市场行情
Timely and accurate market information

畜禽科技服务

02

LIVESTOCK AND POULTRY TECHNOLOGY SERVICE

- 养殖模式
Aquaculture mode
- 环境检测
Environmental testing
- 疾病诊断
Disease diagnosis
- 妊娠检测
Gestation testing
- 背膘检测
Backfat testing



■ 以线上直播和短视频等多种渠道和方式为广大客户解决技术难题
■ Solve the technical problems of customers by means of live broadcast, short video and other methods

■ 通威技术团队为广大养殖户提供完善的技术解决方案和全方位服务
■ Tongwei's technical team provides refined technical solutions and all-round services for farmers

技术引领

TECHNOLOGY-GUIDED



■ 通威农发技术中心是国家认定企业技术中心，拥有多个国家认可的重点实验室
■ TWAD Co., Ltd. Technology Center is a state certified corporate technology center which owns multiple state approved key laboratories

TWAD CO., LTD. TECHNOLOGY CENTER

通威农发技术中心

通威农发技术中心是国家认定企业技术中心，拥有水产养殖动物疾病防控技术国家地方联合工程实验室、国家认可实验室、农业农村部水产畜禽营养与健康养殖重点实验室。专业从事动物良种繁育、动物营养与饲料安全开发、健康养殖与动物保健、动物产品加工、高新生物科技等相关研究和技术集成。同时，中心还承担了部、省、市级科研项目38项，申报专利639项，授权专利476项，参与制定国家标准、行业标准17项，荣获3项“国家科学技术进步二等奖”，并荣获多项国家级、省级、市级科技奖励。

TWAD Co., Ltd. Technology Center is a state certified corporate technology center which owns national-local joint engineering laboratories for aquacultural animal disease prevention and control technologies, state approved laboratories and key laboratories for aquacultural animal and livestock and poultry nutrition and health under the jurisdiction of Ministry of Agriculture and Rural Affairs. It is specialized in research and technology integration relating to breeding of fine breeds, animal nutrition and feed safety development, healthy breeding and animal health care, animal product processing and high-tech biotechnology. At the same time, the center has also undertaken 38 ministerial, provincial and municipal scientific research projects, applied for 639 patents, obtained 476 patents, participated in drafting of 17 national or industrial standards, won three "second prizes of national award for science and technology progress", and won multiple national, provincial and municipal science and technology awards.

TONGWEI RESEARCH INSTITUTE

通威研究院

通威研究院于2013年4月正式挂牌成立。研究院设置专家委员会，中国科学院院士、北京大学生命科学学院教授朱作言任委员会委员，并聘请了近百名国内外行业知名专家、学者和高精尖人才，是通威为了加强与科研院所和高等院校的技术合作，使企业自主研发和外部合作研究有机结合的又一高水平研发平台，是对外脑智力进行资源整合利用的管理平台，也是通威汇集国内国际优秀科技成果的对接平台。

Tongwei Research Institute was officially incorporated and listed in April 2013. The research institute has an expert committee, in which Zhu Zuoyan, academician of the Chinese Academy of Sciences and professor of the School of Life Sciences of Peking University, serves as a member, and has hired nearly 100 well-known experts, scholars and top-notch talents in the industry at home and abroad. It is another high-end R&D platform established by Tongwei in order to strengthen technical cooperation with research institutes and colleges/universities and to aptly combine independent R&D and external cooperative research, a management platform for the integration and utilization of external brain intelligence resources, as well as an interfacing platform for Tongwei to gather domestic and international excellent scientific and technological achievements.



■ 通威研究院揭牌仪式
■ Opening ceremony of Tongwei Research Institute



■ 通威现代渔业产业园
■ Modern fishery industry park of Tongwei

AQUACULTURAL RESEARCH INSTITUTE

水产研究所

通威农发水产研究所是目前我国水产饲料行业最大的水产研究所，主要负责水产动物营养与饲料的研究、重大科技成果技术引进与转化应用，并为分公司提供淡水鱼饲料的产品定位、配方设计和精准组合投喂等技术。研究所研发实力雄厚，现有中高级工程师、博士及硕士研究生等资深营养师、研究员40余名，近年来致力于27类主要淡水养殖鱼类5A健康饲料和365先进、高效、营养、环保养殖模式的系统研究与应用推广。近五年水产研究所主持参与了国家、省市级科研项目10余项；集成综合应用技术9项，发表科研论文50余篇，申请并授权国家发明专利30余项，主编鱼类养殖书籍2册。

TWAD Co., Ltd. Aquacultural Research Institute is currently the largest aquacultural research institute in China's aquatic feed industry. It is mainly responsible for the research of aquatic animal nutrition and feed, the introduction, transformation and application of major scientific and technological achievements and technologies, and provides the branches/subsidiaries with the technologies relating to product orientation, formula design and precision feeding of freshwater fish feed. The Institute has strong R&D strength, with more than 40 senior nutritionists and researchers who are senior engineers, doctors or postgraduates. In recent years, the institute has been committed to the systematic research, application and promotion of 5A healthy feed for 27 major cultured fish species and the advanced, efficient, nutritious and environment-friendly 365 aquaculture mode. In the past five years, the Aquacultural Research Institute has presided over or participated in more than ten national, provincial or municipal scientific research projects; it has integrated nine comprehensive application technologies, published more than 50 scientific research papers, applied for and obtained more than 30 national invention patents, and edited two fish farming books.

LIVESTOCK AND POULTRY RESEARCH INSTITUTE

畜禽研究所

通威畜禽研究所建立了一支近20余名博士和硕士组成的高素质团队，先后组建了乳仔猪、中大猪、种猪、蛋禽、肉禽、原料、动保等产品线进行持续研发和技术服务。畜禽研究所拥有硬件设施完备的试验基地和多层次的内外研究平台，可满足各畜禽品种的营养模式、饲喂管理、基础代谢、原料数据库建设等研究项目的需要。畜禽研究所提炼出猪料261模式、以及畜禽133养殖增效模式，倡导高质高性价比，实现养殖效益最大化。

Tongwei Livestock and Poultry Research Institute has established a high-quality team composed of more than 20 doctors or postgraduates. It has established the product lines of suckling piglets, medium and large pigs, breeding pigs, egg poultry, meat poultry, raw materials and animal health, to carry out continuous R&D and technical services. The Livestock and Poultry Research Institute has a testing base complete with all necessary hardware and a multi-level internal and external research platform, which can meet the needs of researches on nutrition mode, feeding management, basic metabolism and raw material database construction etc for various livestock and poultry species. The livestock and Poultry Research Institute refined the pig feed 261 mode and livestock and poultry breeding efficiency improvement 133 mode, advocated high quality and high cost performance, and maximized aquaculture benefits.



■ 通威畜禽研究所致力于畜禽饲料及相关养殖技术研究
■ Tongwei Livestock and Poultry Research Institute is committed to the research on livestock and poultry feed and related breeding technology



■ 通威经验丰富的营养师和研究员队伍，着力解决市场技术难题
■ Tongwei's experienced nutritionists and researchers focus on solving technical problems in the market

SPECIAL AQUACULTURAL RESEARCH INSTITUTE

特种水产研究所

通威特种水产研究所主要研究对象包括南美白对虾、中华绒螯蟹等虾蟹类水产动物，鲈鱼、大菱鲆等海水鱼类以及鲟鱼、黄鳝、黄颡鱼等淡水特种鱼类，开展上述特种水产动物的营养需求、原料消化率、饲料配方、养殖模式等研究与应用，获得国家发明专利30余项。研发实验基地位于珠海市斗门区，占地100余亩，养殖设施完善，配有高标准中试试验池塘12个，淡水、咸淡水、海水养殖试验玻璃钢桶100多个，试验网箱80多个，小型对虾养殖试验池50多个，可同时开展几十项特种水产品的饲料研发和养殖模式探索验证等科研项目。

The main research objects of Tongwei Special Aquacultural Research Institute include shrimp and crab species such as *Penaeus vannamei* and *Eriocheir sinensis*, sea fish species such as perch and turbot, and freshwater special fish species such as sturgeon, *Monopterus albus* and *Pelteobagrus fulvidraco*. It undertakes research and application relating to nutritional requirements, raw material digestibility, feed formula and aquaculture mode of the above-mentioned special aquatic animals. It has obtained over 30 national invention patents. The R&D and experimentation base located in Doumen District, Zhuhai occupies land area of over 100 mu, has sophisticated farming facilities including 12 high-standard pilot test ponds, over 100 GFRP barrels for fresh water, brackish water and seawater farming tests, over 80 test net cages and over 50 small prawn farming test ponds, and is able to conduct scientific research projects concurrently, such as R&D of feed for dozens of special aquatic products and exploration and validation of aquaculture mode.



■ 通威特种水产研究所致力于咸淡水特种鱼、虾、蟹等动物的营养饲料、养殖模式及疾病防治技术研究和应用
■ Tongwei Special Aquacultural Research Institute is committed to technological research and application relating to nutritional feed of special fish, shrimp and crabs, aquaculture mode and disease prevention and treatment



■ 通威种苗繁育基地
■ Tongwei Seed Rearing Base

SEAWATER SEED RESEARCH INSTITUTE

海水种苗研究所

通威海水种苗研究所主要负责海水种苗繁育技术研究与创新、海水种苗生产相关产品研发、海水种苗繁育技术生产示范、海水种苗板块生产技术指导、人才培养等方面的工作，致力于提升海水种苗领域的研发实力，推动通威海水种苗产业的快速健康发展。

Tongwei Seawater Seed Research Institute is mainly responsible for the research and innovation of seawater seed rearing technology, R&D of products related to seawater seed production, production demonstration of seawater seed rearing technology, technical guidance for seawater seed production and personnel training etc., and is committed to improving the R&D strength in the field of seawater seed and promoting rapid and healthy development of Tongwei seawater seed sector.



■ 通威三文鱼养殖基地
■ Tongwei salmon breeding base

SALMON RESEARCH INSTITUTE

三文鱼研究所

50 亩 | 15 项 | 2 项
实验基地 | 授权专利 | 科研成果

通威三文鱼研究所主要负责三文鱼品种资源、繁殖技术、饲料配方技术、加工研究，以及三文鱼产业模式研究。拥有面积50亩的实验基地，已取得15项授权专利和2项科研成果。研发的银鲑产品荣列成都市地方名优产品推荐目录。

Tongwei Salmon Research Institute is mainly responsible for research related to salmon species resources, breeding technology, feed formula technology and processing, and research on salmon industry model. With an experimentation base of 50 mu area, it has obtained 15 authorized patents and two scientific research achievements. The silver salmon product developed by it is listed in the recommended catalogue of local famous and excellent products in Chengdu.

ANIMAL HEALTH RESEARCH INSTITUTE

动物保健研究所

隶属通威农发国家级企业技术中心，同时是水产养殖动物疾病防控技术国家地方联合工程实验室、四川省水产养殖动物疾病防控工程实验室和成都市产学研联合实验室。成立以来，承担了数十项国家级、省部级及公司科研项目，取得了众多科研成果。截至目前，动物保健研究所已形成科技成果30余项，开发新兽药品种8项，获得新兽药证书2项，获得新兽药临床批件3项，申请专利35项（20项已授权），公开出版专著5部，发表论文60余篇。

It is a national-level corporate technology center subordinate to TWAD Co., Ltd. and also a national-local joint engineering laboratory for aquacultural animal disease prevention and control technologies, an aquacultural animal disease prevention and control engineering laboratory in Sichuan and an industry-university-research joint laboratory in Chengdu. Since its establishment, it has undertaken dozens of national, provincial or ministerial scientific research projects, yielding many scientific research achievements. By now, Animal Health Research Institute has made more than 30 scientific and technological achievements, developed eight new veterinary drug varieties, obtained two new veterinary drug certificates, obtained three new veterinary drug clinical approval documents, applied for 35 patents (20 granted), published five monographs and published more than 60 papers.



科技成果
30余项



开发新兽药品种
8项



申请发明专利
35项



发表论文
60余篇



通威动保研究所在快速诊断、综合防治技术、疫苗、无抗等方面的研究与应用取得重大突破 ■
Tongwei Animal Health Research Institute has made great breakthroughs in the research and application of rapid diagnosis, comprehensive prevention and treatment technology, vaccine and antibiotic-free drugs ■



■ 威尔检测为农田到餐桌每一个环节严格把关
■ Willtest maintains strict control throughout the process from farm to table

WILLTEST

威尔检测

威尔检测是一家提供饲料、食品、农产品、肥料和产地环境监测的第三方检测机构，为农田到餐桌每一个环节严格把关。公司拥有由博士、硕士、高级工程师等组成的优秀团队，主持或参与了10余项国家标准和行业标准制修订项目，已授权专利10余项、发表论文40余篇、出版译著1部，通过FAPAS、LGC、CNAS、CMA和CATL等组织的国内外能力验证400余项。威尔检测已获得CNAS、CMA、CATL资质，是农业农村部饲料和饲料添加剂检测任务承检机构、农业农村部授权的水产品抽检机构，出具的检测报告在全球70余个国家和地区互认。

Willtest Technology Co., Ltd. is a third-party testing institute that monitors feed, food, agricultural products, fertilizers and production place environment and maintains strict control throughout the process from farm to table. The company has an excellent team composed of doctors, masters and senior engineers. It has presided over or participated in more than ten national standards and industrial standards drafting or amendment projects. It has obtained more than ten patents, published more than 40 papers and published one translation. It has passed more than 400 domestic and international proficiency tests organized by FAPAS, LGC, CNAs, CMA and CATL etc. Willtest has obtained CNAS, CMA and CATL qualifications. It is a feed and feed additives testing agency under the jurisdiction of Ministry of Agriculture and Rural Affairs, and an aquatic products sampling and testing institution authorized by the Ministry of Agriculture and Rural Affairs. The test reports issued by Willtest are recognized by more than 70 countries and regions around the world.



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FACILITY FISHERY ENGINEERING RESEARCH INSTITUTE

设施渔业工程研究所

设施渔业工程研究所主要开展环保、生态、低碳水产养殖、设施渔业装备化、自动化、智能化研究及电化水装置制备与应用技术的研究。先后承担通威和国家下达的多个科研项目，攻关研究水产养殖防治内、外源性污染的关键技术问题，以颠覆传统高产池塘和网箱养殖历史，并创新设计和有效建设现代环保渔业工程设施。电化水技术实现物理方式杀菌、灭藻、除虫、增氧、去污等效果，无二次化学污染，目前已用于水产全产业链，鱼卵孵化、鱼苗繁育、活鱼净养、运输、鱼片冻结保鲜等。

Facility Fishery Engineering Research Institute is mainly engaged in the research on environmental protection, ecology, low-carbon aquaculture and facility fishery equipment, automation and intelligentization, and also fabrication and application of electrochemical scale treatment (EST) equipment. It has undertaken a number of scientific research projects commissioned by Tongwei and the state to tackle key technical problems in prevention and control of internal and external pollution in aquaculture, which ended the history of traditional high-yield pond and net cage culture, and innovated and constructed modern eco-friendly fishery engineering facilities. The EST technology can achieve sterilization, algae removal, deinsectization, oxygen enrichment and decontamination through physical means without secondary chemical contamination. It has been used in the whole aquaculture industry chain, for the purpose of fish egg hatching, fry farming, clean breeding of live fish, transportation and fillets freezing and preservation.



■ 通威西昌“渔光一体”项目现代化的渔业设施
■ Modern fishery facilities of Tongwei Xichang "Integration of fishery and PV" project

AQUACULTURE ENGINEERING RESEARCH CENTER

水产工程研究中心

通威水产工程技术研究中心作为通威种苗研发中心，积极与政府部门、科研院所、高校和企业展开合作，在成都、眉山、佛山等地建立了多个基地，以鲤鱼、鲫鱼、草鱼、鲈鱼、斑点叉尾鮰、黄颡鱼、罗非鱼等为研究对象，开展了苗种繁育、遗传育种、种质鉴定、良种培育、技术推广及部分营养学等方面的研究，同时为市场提供优质苗种。

As the seed R&D center of Tongwei, Tongwei Aquaculture Engineering Research Center, in enthusiastic cooperation with government departments, scientific research institutes, universities and enterprises, has established many bases in Chengdu, Meishan, Foshan and other places, that, focused on carp, crucian carp, grass carp, bass, channel catfish, catfish and tilapia etc, have carried out researches related to seed rearing, genetic breeding, germplasm identification, breeding of fine breeds, technology promotion and nutriology, and provided high-quality seeds for the market.



通威农发崇州种苗场
TWAD Co., Ltd. Chongzhou Seed Farm



通威现代渔业产业园
Tongwei's Modern Fishery Industry Park

种苗繁育

SEED REARING

通威拥有自己的优质苗种繁育生产标准化基地，同时与国内外高校、科研机构和各区域水产苗种生产优势企业合作，打造水产良种研究与推广创新平台，获得3个自主知识产权的国家水产新品种：吉富罗非鱼“中威1号”、翘嘴鲈“华康1号”、凡纳滨对虾“王海1号”。

Tongwei has its own standardized base for high-quality seed rearing and production. Meanwhile, in cooperation with domestic and foreign universities, scientific research institutions and superior enterprises in aquacultural seed production in various regions, it has established an aquatic fine breed research and promotion platform. It has obtained three nationally recognized new aquatic breeds with independent intellectual property rights: Jifu tilapia "Zhongwei No.1", Siniperca chuatsi "Huakang No.1" and Litopenaeus vannamei "Renhai No.1".



■ 通威淡水种苗主要从事水产优质品种及新品种选育及推广
■ Tongwei's freshwater seed sector is mainly engaged in breeding and promotion of high-quality aquatic breeds and new breeds

通威农发现有成都通威水产种苗有限责任公司、南海通威水产科技有限公司、海南海壹水产种苗有限公司、青岛海王水产种业科技有限公司等4家全资或控股子公司，以通威优质苗种繁育生产标准化基地为载体，打造专业从事优质水产苗种开发、遗传选育、良种繁育、相关技术成果转化推广等创新平台。依托通威“国家级企业技术中心”雄厚科研实力，四家种苗公司分别组建种苗行业优秀团队，与中科院水生生物研究所、水科院淡水渔业研究中心、中国海洋大学、上海海洋大学等研究机构及高校深度合作，获得国家级专利技术及具有自主知识产权的国家级水产新品种等多项研究成果，面向市场需求培育和生优质通威鱼苗及虾苗。

TWAD Co., Ltd. currently has 4 wholly-owned or holding subsidiaries: Chengdu Tongwei Seedlings Co., Ltd., Nanhai Tongwei Aquatic Tech Co., Ltd., Hainan Haiyi Aquatic Seeding Co., Ltd. and Qingdao Higene Aquabreeding Technology Co., Ltd. By using its standardized bases for high-quality seed rearing and production, Tongwei has created the innovation platforms specialized in high-quality aquatic seed development, genetic breeding, breeding of fine breeds and transformation and promotion of technological achievements. Bolstered by the strong technological capability of Tongwei's national-level corporate technology centers, the four seed companies have established excellent teams in the seed rearing industry who, in deep cooperation with the research institutes and universities such as Institute of Hydrobiology of Chinese Academy of Sciences, Freshwater Fisheries Research Center of Chinese Academy of Fishery Sciences, Ocean University of China and Shanghai Ocean University, have made many research achievements including national patented technologies and stated recognized new aquatic breeds with independent intellectual property rights, and have cultivated and produced high-quality Tongwei fry and shrimp seed to meet market demands.

成都通威水产种苗目前保有通威鲤、通威银鲫、通威鲮、通威黄颡、通威鲈鱼和通威纯系草鱼原种亲本，年生产水花产能在30亿尾以上，并获得了具有自主知识产权的翘嘴鳊“华康1号”、吉富罗非鱼“中威1号”国家级水产新品种。

南海通威联合多家研究机构，共同选育、研发“通威长江纯系草鱼苗”、“通威罗非鱼苗”、“通威鲫鱼苗”、“通威全雄黄颡鱼苗”等品种，面向全国销售各类鱼苗10亿尾，年产值达800多万元。

海南海壹水产种苗拥有2家种虾与幼体生产场和19家育苗及标粗场，育苗水体近3万立方米，年可生产无节幼体400亿尾，培育虾苗近200亿尾，虾苗遍销全国各地市场。

青岛海王是国内北方区域唯一一家全年培育南美白对虾虾苗的企业，开创“北苗南运”先河，4个基地育苗水体达20000立方米，可年生产无节幼体200亿尾，快大和高抗虾苗100亿尾，石斑鱼苗1000万尾。

Chengdu Tongwei's aquaculture seed breeds now include Tongwei carp, Tongwei prussian carp, Tongwei longsnout catfish, Tongwei yellow-head catfish, Tongwei bass and Tongwei pure line grass carp of parent protospecies. Our annual fish fry production capacity is over 3 billion. We have bred the nationally recognized new aquatic breeds with independent intellectual property rights, i.e. "Huakang 1" *Siniperca chuatsi* and "Zhongwei 1" *Oreochromis niloticus*.

Nanhai Tongwei, working with multiple research institutions, has bred and developed "TongweiChangjiang pure line grass carp fry", "Tongwei tilapia fry", "Tongweicrucian carp fry", "Tongwei holandric yellow-head catfish fry" and other breeds, and sells 1 billion of various fry across the country annually, with annual output value of more than RMB 8 million.

Hainan Haiyi Aquatic Seeding Co., Ltd. has two seed shrimp and larvae production farms and 19 seed rearing and intermediate rearing farms, with nearly 30,000 cubic meters of water for seed rearing, and they can produce 40 billion naupli and breeds nearly 20 billion shrimp seeds annually; the shrimp seeds are sold all over the country.

Qingdao Higene, the only enterprise breeding *Penaeus vannamei* seeds all year round in North China, has set the precedent for "delivery of northern seeds to south". It has four seed rearing bases that have 20,000 cubic meters of water and it can produce 20 billion naupli, 10 billion fast-growing high-resistance shrimp seeds and 10 million grouper fry annually.



严格检测
Strict Testing

全程对育苗水进行监测，出苗前26项检测指标综合判定苗种质量。
Monitor the seed rearing water throughout the process and assess seed quality according to 26 testing criteria before seed extraction.



洁净水质
Clean Water

配套充足的水处理池和完善的水处理设备，水处理工艺科学先进。
Sufficient water treatment pool, sophisticated water treatment equipment, scientifically advanced the water treatment process.



平衡生态
Balanced Ecosystem

禁用抗生素药物，合理选用有益微生物，维持平衡稳定的微生态系统。
Antibiotic drugs are prohibited and beneficial microorganisms are properly used, to maintain a balanced and stable microecosystem.



新鲜活饵
Fresh Live Bait

采用角毛藻、海链藻、轮虫、卤虫等生物活饵，保证幼苗的活性营养供给。
In order to ensure the active nutrition supply of seeds, the live baits such as *Chaetoceros*, *thalassiosira*, rotifer and *artemia* are used to guarantee supply of active nutrition for seeds.



精心呵护
Meticulous Care

注重育苗操作的细节，出苗、运输环节的每一个节点标准化，降低苗种应激。
Pay attention to the details of seed rearing, standardize every step of seed extraction and transportation, and reduce the stress of shrimp seeds.

水产饲料

AQUATIC FEED

通威水产饲料是利用几代研究人员的潜心研究成果与实践经验
和成果精制而成，代表了当今我国水产饲料的最高水平，销量
居全国榜首。它包括了淡水养殖、海水养殖在内的多个饲料产
品，适合于不同的养殖条件和养殖品种。

经过多年科技研发与养殖试验（小试、中试、大试）和市场实
践并经广大用户认可，通威水产饲料已形成了独有的5A健康
指数的品质特色，包括原料指数、营养指数、成长指数、抗病
指数、耐运输指数，每项指数都做到行业最高标准，并成为行
业典范。

特种水产饲料产品主要有南美白对虾配合饲料、鲈鱼料、河
蟹料、蛙料、罗氏沼虾料等多个品种。

Tongwei aquatic feed is refined by using the effortful research results and practical
experience and achievements of several generations of researchers, which represents
the highest level of aquatic feed production in China today and ranks the top in sales
volume in the country. They include multiple feed products for freshwater aquaculture
and seawater aquaculture and are suitable for different breeding conditions and breeds.

After years of technological R&D, breeding tests (lab test, pilot test and final test) and
market practices and with approval from users, Tongwei aquatic feed now has the
quality characteristics defined by its unique 5A health indexes, including materials index,
nutrition index, growth index, disease resistance index and transport resistance index,
with each index meeting the highest industry standards, and has become a role model
in the industry.

The special aquatic feed products mainly include mixed feed of *Penaeus vannamei*,
bass feed, river crab feed, frog feed and *Macrobrachium rosenbergii* feed.

畜禽饲料

LIVESTOCK AND POULTRY FEED

通威畜禽料针对畜禽的不同品种（猪、鸡、鸭、奶牛）、不同
生长阶段和不同地域特性设计而成，是结合公司多年来的研
发成果及国外研究进展的结晶，重点关注养殖效益，具有安
全、养殖全程性价比最优等特点，主要包括配合饲料、浓缩
饲料以及预混料三大系列。

Tongwei's livestock and poultry feed products have been designed for
various species (pig, chicken, duck, dairy cow) based on their growth
stages and regional characteristics and are the results yielded by
years of R&D of the company and also the foreign research progress,
with the focus put on aquaculture benefits and characterized by safety
and optimal whole-process cost performance. They include mixed
feed, concentrated feed and premix feed.



■ 通威农发华西一区四川通威生产基地
■ Sichuan Tongwei production base in Huaxi Area 1 of TWAD Co., Ltd.



■ 通威畜禽生物安全防控系统
■ Tongwei Livestock and Poultry Biosafety Prevention and Control System



■ 通威预混料生产基地
■ Tongwei premix production base

复合预混料

Compound Premix Feed

通威系列复合预混料及功能性预混料秉承了通威配合饲料的特点，在使用时，由成都通威动物营养科技公司专业技术人员根据用户的实际情况，针对性地设计实用的参考配方，确保用户获得优质的畜禽、水产产品以及高效的生产性能和更大的经济效益。

Tongwei series of compound premix feed and functional premix feed inherit the characteristics of Tongwei mixed feed. For the purpose of practical use, Chengdu Tongwei Animal Nutrition Technology Co., Ltd has designed useful reference formulas to serve the actual needs of users, to ensure the users harvest high-quality livestock and poultry and aquatic products and achieve high production performance and greater economic benefits.

动保产品

Animal Health Products

为助推绿色无公害水产养殖的持续发展，通威整合旗下动物保健研究所、成都通威三新药业有限公司、海南海壹生物技术有限公司、湛江海先锋生物科技有限公司等团队完善的技术研发、渠道推广等优势资源，打造绿色强势动保品牌。通威动保产品多以中药提取或微生态制剂为主要成分，不添加抗生素，并提出“以防为主、内服保健、外用调水”的使用原则。调水防病开展在发病之前，以预防保健为主，通过生物型保健产品的使用，提高水产养殖动物免疫力，减少疾病的发生。

通威三新药业拥有通过兽药GMP认证的5个现代化车间、10条工艺先进的生产线。公司检验仪器精密，拥有完善的质量保证体系，并运用现代化信息技术科学管理，为广大客户提供100%优质的合格产品。目前公司专注于池塘水质、底质改良和提高鱼体抗病力的保健产品的研发和推广，形成了以水质调节、底质改良、内服保健产品等七大类产品为核心的产品体系，减少高密度养殖中水产动物受到多类应激，同时增强鱼体的抗病力。

海壹生物以“以生物之道解决鱼虾的健康问题”作为经营理念，并以微生态制剂经营、微生物环保作为主导方向，与广东海洋大学、广州大学微生物学院、岭南师范学院微生物学院展开积极合作，对配方进行调制和升级，打造了“5A生物”，在科学配伍、菌种安全、专业发酵、活菌指数以及严格检测等五大管理环节力求做到极致。

目前，通威调水防病方案已经覆盖旗下饲料销售公司，惠及数百万亩养殖水面，用以保持水环境优良，切实降低疾病发生和抗生素使用的机率，提高水产品品质。

In order to promote sustainable development of pollution-free aquaculture, Tongwei has created the strong animal health brands by using the technological R&D achievements and promotion channel of the teams of the Animal Health Research Institute, Chengdu Tongwei Sanxin Pharmaceutical Co., Ltd, Hainan Haiyi Biotechnology Co., Ltd and Zhanjiang Haixianfeng Bio-Tech Co., Ltd. Tongwei's animal health products are mostly made of Chinese herb extracts or microecologies, with no antibiotics. We follow the operational principles of "protection foremost, health by internal ingestion and water-aided external application". Water-aided disease prevention takes place before occurrence of disease and prevention is foremost. Biologically engineered animal health products are used to enhance immunity of aquatically cultured animals and reduce diseases.

Tongwei Sanxin Pharmaceutical Co., Ltd has five modern workshops and ten technologically advanced production lines that have veterinary medicine GMP certification. The company uses precision testing instruments, has a sophisticated quality assurance system, and uses modern information technology enabled scientific management, to provide 100% qualified high-quality products for customers. Now the company focuses on R&D and promotion related to pond water quality, bottom sediments improvement and health products that enhance fish disease resistance, and has formed a products system centered around seven categories of products including water quality regulation product, sediment improvement product and internally ingested health care products, in order to reduce the stress of aquatic animals in high-density aquaculture and also enhance fish disease resistance.

Haiyi Biotechnology Co., Ltd, adherent to the business philosophy of "protecting fish and shrimp health through biological means" and oriented by microecologies operation and microbial environmental protection, and in vigorous cooperation with Guangdong Ocean University, School of Microbiology of Guangzhou University and School of Microbiology of Lingnan Normal University, has adjusted and upgraded the formulas and created the "5A biology", where ultimate perfection is pursued in the five management processes: scientific compatibility, strain safety, professional fermentation, strain survival index and strict testing.

By now, Tongwei's water-aided disease prevention solutions have been applied to the its affiliated feed sales companies and has benefited millions of mu aquaculture area, in that they can preserve favorable aquatic environment, substantially reduce occurrence of diseases and probability of antibiotics use and enhance quality of aquatic products.



■ 通威动保产品为养殖保驾护航
■ Tongwei animal health products protect breeding

06

现代渔业 绿色发展

MODERN FISHERY
GREEN DEVELOPMENT

渔业养殖 FISHERY BREEDING

1982年创立至今，通威深度参与并见证了中国水产养殖业和饲料工业发展壮大，在不断巩固和提升水产饲料的世界级龙头地位的同时，不断完善养殖品种改良、饲料研发、绿色养殖、食品加工销售等环节，形成从“源头到餐桌”的全程质量监控和追溯，有效提升现代水产产业链价值和竞争力，为社会大众提供优质的产品，持续改善人类生活品质，成就世界水产品牌。

Since it was founded in 1982, Tongwei has intensively participated in and witnessed development and growth of aquaculture and feed production industries of China. In addition to strengthening and enhancing its status as the world leader in aquatic feed industry, it continuously works on improvement of farming breeds, feed R&D, green cultivation and food processing and sale. It maintains whole-process quality monitoring and tracing from "source to table", substantially enhances the value and competitiveness of the modern aquaculture industry chain, provides high-quality products for everyone in the society, continuously improves people's life quality and creates a world-class aquaculture brand.

水产养殖是水产产业链的关键环节和饲料产业的重要支撑，为此，通威成立通威渔业科技有限公司发力水产养殖业务。目前，通威在山东东营启动南美白对虾工厂化养殖项目，总规划20万立方米水体（1期投资1亿，2万立方米水体），东营基地即将率先打造全国首家无人化和全循环水车间的模式研究，真正实现行业新引领。同时，成都通威水产科技有限公司和成都通威自动化设备有限公司作为设施化模式研究和推广的主体，在西昌、扬中、崇州等基地试点示范，协同推进大水面设施化养殖和“渔光一体”养殖项目。

Aquaculture is a key link in the aquatic industry chain and an important support for the feed industry. Therefore, Tongwei set up Tongwei Fishery Technology Co., Ltd. to develop aquaculture business. Currently, Tongwei has launched the Penaeus vannamei factory breeding project in Dongying, Shandong Province, with a total planning of 200 thousand cubic meters of water (100 million investment in phase 1, and 20 thousand cubic meters of water). Dongying base will take the lead in building the first unmanned and full cycle water tanker workshop in China, and truly take a lead in the industry. At the same time, Chengdu Tongwei aquatic science and Technology Co., Ltd. and Chengdu Tongwei automation equipment Co., Ltd., as the main body of the research and promotion of the facility-based model, have conducted the pilot demonstration in Xichang, Yangzhong, Chongzhou and other bases to jointly promote the large surface facility aquaculture and the "integration



通威循环水育苗车间
Tongwei circulating water seed rearing workshop



通威农发崇州种苗场
TWAD Co., Ltd. Chongzhou Seed Farm

渔业设施

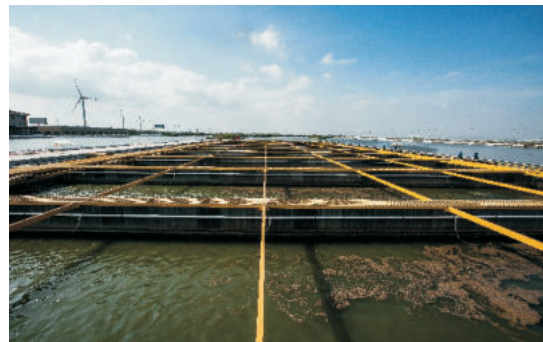
FISHERY FACILITIES

近年来，通威渔业设施逐渐采用无线传输技术、传感器技术、后台大数据分析和移动APP集成，实现水质监控、环境监控、水质调节、精准化投喂与生物生长状态科学调控与自动化管理，并在此基础上开展智能养殖应用示范，构建全过程数字化、科学化、标准化、规范化、精细化、远程化、自动化、智能化、环保化的现代水产养殖模式，全面保证水质的安全和水产品的质量，提高养殖效率、降低生产成本和劳动强度，同时为养殖投资或经营者提供决策依据，保证养殖过程安全、顺利开展。

In recent years, Tongwei's fishery facilities have gradually integrated wireless transmission technology, sensor technology, background big data analysis and mobile APPs and has achieved water quality monitoring, environmental monitoring, water quality regulation, precision feeding, and scientific regulation and automatic management of animal growth conditions. On this basis, they have undertaken smart farming application and demonstration and established the modern aquaculture mode that is characterized by digitalized, scientific, standardized, canonicalized, meticulous, remotely controlled, automated, intelligent and eco-friendly operation throughout the process, to comprehensively guarantee water safety and aquatic product quality, increase breeding efficiency while reduce production cost and labor intensity, and also provide the basis for decision making of aquaculture investor or operator so that aquaculture process can proceed safely and successfully.

通威自动化设备有限公司先后推出了水产养殖行业第一款正压风送式投饵机；第一台水产养殖用改底机；第一套可自由移动的曝气装置；面向深海网箱养殖客户的深海网箱养殖投料解决方案；2016年，公司与通威水产科技公司共同推出了可实现低碳、高效、生态、健康的水产养殖的通威PRAS池塘循环水养殖模式。该模式具有节水节地、操控简单、生产稳定、养殖水产品安全，单位产出耗电低、高产环保等特点。

Tongwei Automation Equipment Co., Ltd. launched the first positive pressure air feeding feeder in aquaculture industry; the first bottom changing machine for aquaculture; the first freely movable aeration device; the deep-sea net cage feeding solution for deep-sea cage aquaculture customers; in 2016, the company and Tongwei Aquatic Tech Co., Ltd. jointly launched the Tongwei PRAS pond circulating water aquaculture mode that can enable low-carbon, efficient, eco-friendly and healthy aquaculture. This mode is characterized by water and land saving, simple operation, stable production, safety of aquatic products, low power consumption per unit output, high yield and environmental protection.



■ 流水槽循环水养殖系统
■ Tank circulating water aquaculture system



■ 箱式循环水养殖系统
■ Box-type circulating water aquaculture system

高质量发展 双绿色未来

HIGH QUALITY DEVELOPMENT
DOUBLE GREEN FUTURE

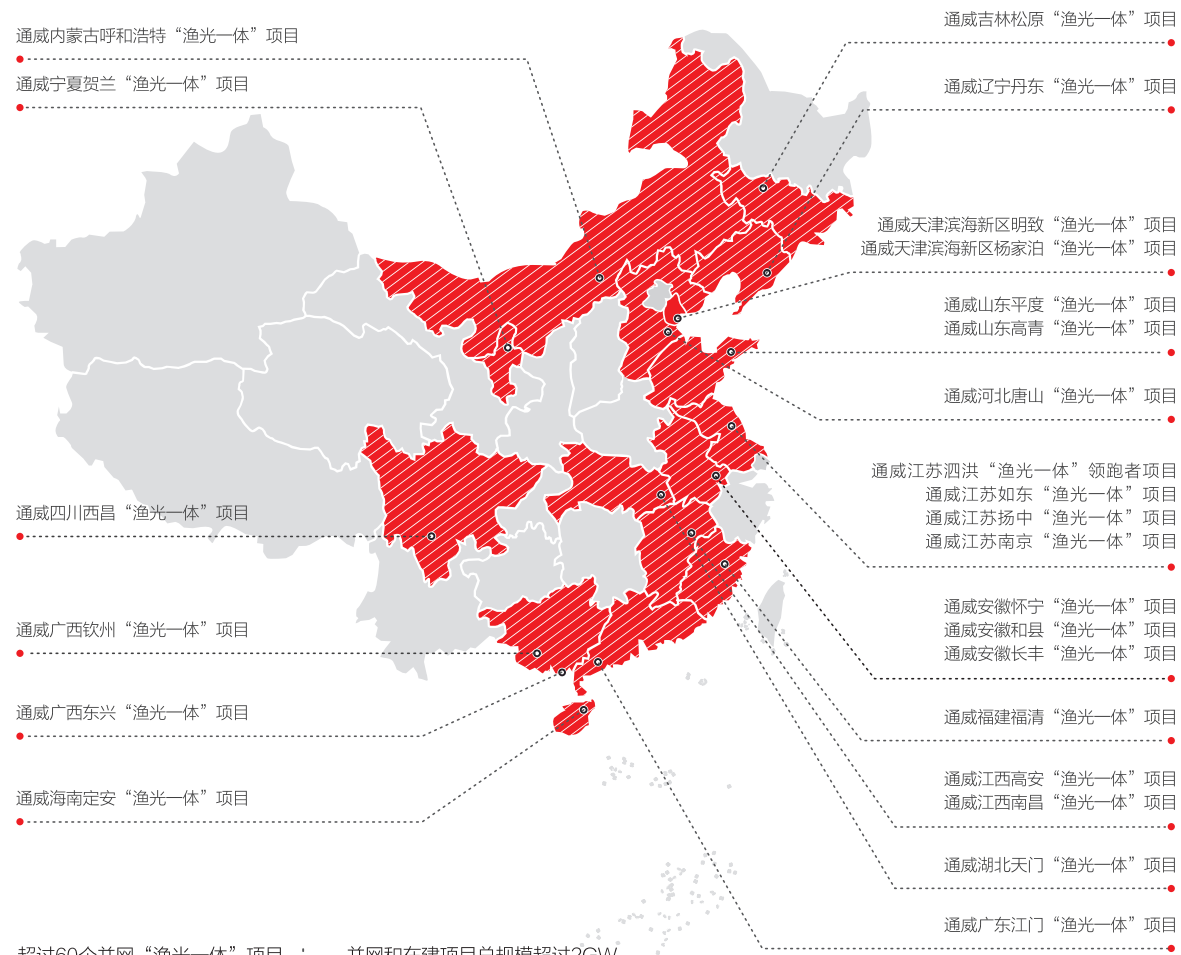


渔光一体

INTEGRATION OF FISHERY AND PV

通威“下可养鱼、上可发电”的“渔光一体”创新模式，打造了一批拥有多项技术创新成果的现代渔业产业园，真正实现了渔业和光伏高效协同发展，“渔、电、环保”三丰收，进一步推动我国水产养殖转型升级。

Tongwei's "integration of fishery and PV" innovative mode that enables "power generation in the upstream and aquaculture in the upstream" has created a number of modern fishery industry parks supported by multiple technological innovation achievements, truly realized the efficient synergy between fishery and PV, generated great benefits from "fishery, electricity and environmental protection" and further promoted the transformation and upgrading of aquaculture in China.



超过60个并网“渔光一体”项目 | 并网和在建项目总规模超过2GW

60+ | **>2GW**



通威现代化的渔业养殖设施 ■
Modern fishery and aquaculture facilities of Tongwei ■

现代渔业产业园 MODERN FISHERY INDUSTRY PARK

近年来，通威相继在江苏滨海新滩盐场、灌东盐场、射阳、宿迁等地陆续建成2000亩级产业园35个，整合养殖上下游优势资源，凸显通威技术、产品、模式、服务、管理等优势，推进水产养殖转型升级，实现从传统渔业向绿色、高效、健康渔业过渡。

In recent years, Tongwei has built 35 industry parks of 2,000 mu scale in Jiangsu coastal Xintan Salt Field, Guandong Salt Field, Sheyang and Suqian. By pooling the advantageous resources of the upstream and downstream of aquaculture industry and using its advantages in technology, products, business mode, services and management, Tongwei transformed and upgraded aquaculture and transitioned from the traditional fishery to green, efficient and healthy fishery.

SMART FARMING

智能养殖

通威智能化养殖模式应用无线传输技术、传感器技术、软件开发技术，集成一批物联网设备，实现水质监测、环境监控、水质调节、精准化投喂、生物生长状态科学调控与自动化管理，并在此基础上开展智能养殖应用示范，构建水产养殖全过程数字化、科学化、标准化、规范化、精细化、远程化、自动化、智能化、环保化的现代水产养殖模式，建立并不断完善现代水产养殖信息化体系。

Tongwei's smart farming mode has applied wireless transmission technology, sensor technology and software development technology and integrated a set of IoT equipment to achieve water quality monitoring, environmental monitoring, water quality regulation, precision feeding, and scientific regulation and automatic management of animal growth conditions. On this basis, we have undertaken smart farming application and demonstration and established the modern aquaculture mode that is characterized by digitalized, scientific, standardized, canonicalized, meticulous, remotely controlled, automated, intelligent and eco-friendly operation throughout the process, to establish and constantly improve the modern aquaculture informatization system.



■ 通威智能化养殖
■ Tongwei smart farming

科学规划 Scientific Planning

通过前期合理规划设计，采用先进的池塘设计、尾水处理技术对现有鱼塘进行科学规划。

Through reasonable preliminary planning and design, advanced pond design and tail water treatment technology are used to make scientific planning for existing fish ponds.

智能控制 Intelligent Control

通过物联网技术自动感知水质状况，联动增氧设备及投喂设备，最大限度减少劳动量。

IoT technology is used to automatically sense water quality and oxygen enrichment equipment and feeding equipment are used to minimize labor input.

TONGWEI 365 MODE

通威365模式

3 3种鱼类合理搭配混养 Three Fish Species are Reasonably Mixed

以主养鱼获得增值，以调水鱼改善水质，以调底鱼改良底质。根据地域特性、养殖习惯，通威技术人员为客户量身推荐池塘养殖的三类优良品种鱼，规划各类鱼的放养时间、顺序、规格、尾数和重量密度，掌控养殖期各类鱼的出塘时间、规格和比例等。养殖周期结束后，根据养殖成效、行情及鱼价波动，规划下一周期三类鱼的放养和养殖。

Main fish is for added value, water regulation water for improving water quality and bottom regulation fish for improving bottom sediments. In view of the regional characteristics and breeding practices, Tongwei's technical personnel recommend three pond cultured fine breed fish species for customers, plan the cultivation time, sequence, specification, quantity and weight density of various fish, and control the pond fishing time, specification and proportion of the fish during cultivation. After the end of the cultivation period, the breeding and cultivation of the next period will be planned based on the cultivation results, market condition and fish price fluctuation.

5 以365天为一个养殖周期 One Cultivation Period is 365 Days

通威365科学养殖模式，暗合一年365天，以一个养殖年为周期，以一条鱼的养殖全过程为基础，优化养殖模式、匹配产品组合，塑造科学养鱼新概念。

6 6大关键养殖技术 Six Key Aquacultural Technology

- 底排污技术——解决池塘清淤问题**
Bottom desilting technology solve the problem of pond desilting
- 智能复合增氧系统——解决池塘增氧问题**
Intelligent fishery technology conserve labor force and improve aquaculture benefits
- 通威电化水技术——确保用药安全、降低成本，提升鱼类品质**
Tongwei EST technology ensure drug safety, reduce cost, enhance fish quality
- 风送投饵系统——解决池塘投饲问题**
Air feeding feeder system solve the problem of pond feeding
- 水源保障技术——净化水质调节水温**
Water source protection clean the water and regulate temperature
- 智能渔业技术——节约劳动力、提高养殖效益**
Intelligent fishery technology saving labor force and improving breeding efficiency

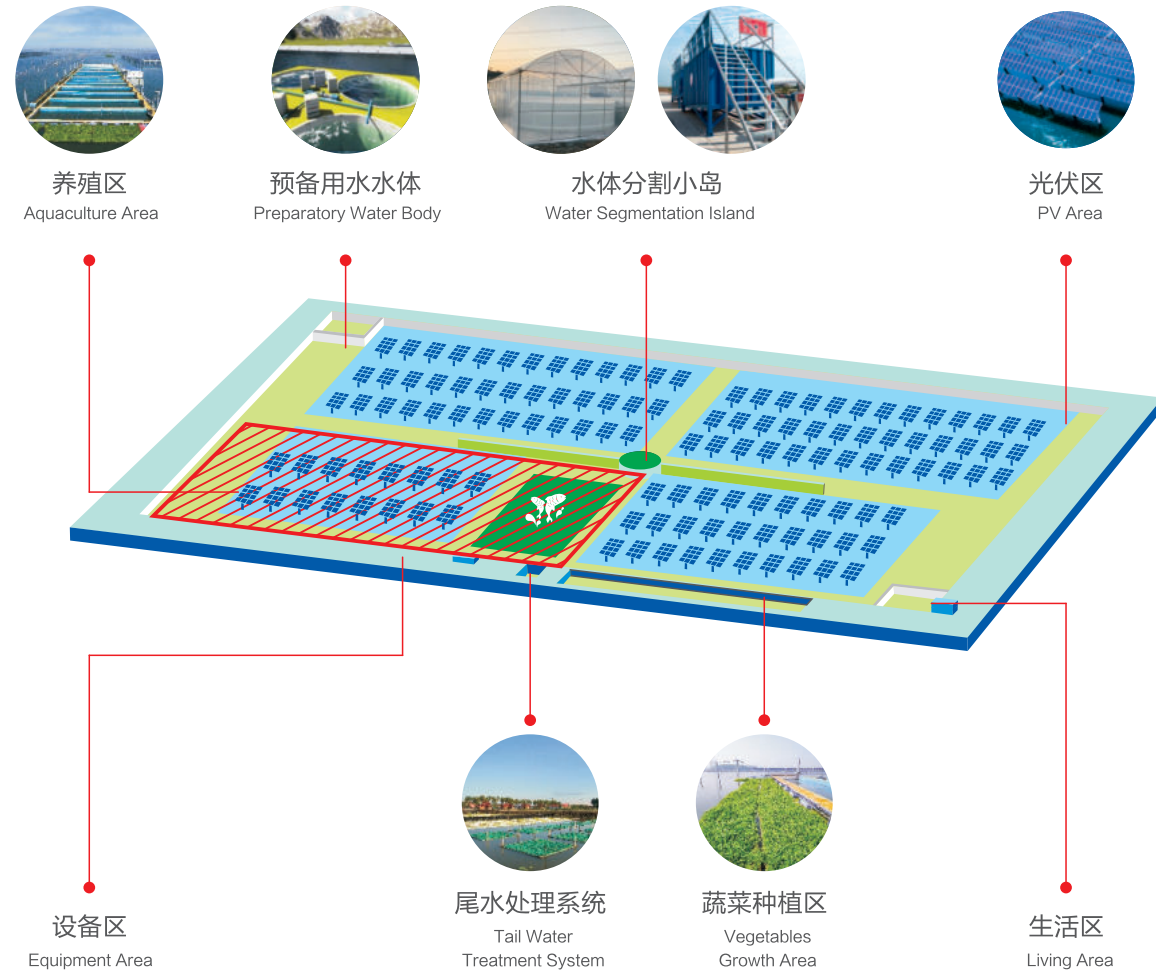
The 365 aquaculture mode, in which a cultivation year of 365 days is a cultivation period and the whole cultivation process of a fish is covered, improves the aquaculture mode and optimizes product portfolio and constitutes a new concept of scientific aquaculture.

FACILITY-BASED SOLUTION

设施化解决方案

通威“渔光一体”现代产业园，通过设计融合现代化高科技水产养殖系统，实现智能、高效的水产养殖，引领水产养殖向集约化、立体化、生态化、智慧化的转变和发展。

Tongwei "Integration of Fishery and PV" Modern Industry Park, by integrating modern high-tech aquaculture systems, realizes intelligent and efficient aquaculture, and leads the transformation and development of aquaculture towards an intensive, three-dimensional, ecologicalize and intelligent industry.



池塘内循环水槽养殖系统

In-pond circulating water channel aquaculture system

通过全新的气提式增氧机，跟水槽管道、纳米管结合，把水经过气水混合输送到水槽进行养殖，实现低碳、生态、高效、健康的水产养殖。

By using the new air lift aerator and also the water tank pipeline and nanotube, the aerated water is conveyed to the water tank for aquaculture, realizing low-carbon, eco-friendly, efficient and healthy aquaculture.



漂浮式圆形池循环水养殖系统

Floating circular pond circulating water aquaculture system

以水面上的漂浮平台为载体，以高压模块工艺制成的箱体或圆形池作为养殖池，匹配低扬程循环泵、在线溶氧监测、增氧自动启停、高效杀菌等智能设备，同时搭配固定吸附过滤、植物过滤吸收、大塘生态修复等降解工艺，集成智能、高效、生态、可持续循环水养殖系统。

The floating platform on the water surface serves as the carrier and the box or circular pool made by high-pressure module technology as the culture pond, which are supplemented by intelligent equipment such as low lift circulating pump, online dissolved oxygen monitoring, automatic start-up and stop of oxygen enrichment, and efficient sterilization. The system is also equipped with degradation processes such as fixed adsorption filtration, plant filtration and absorption and pond ecology restoration, and is integrated with intelligent, efficient, eco-friendly and sustainable circulating water aquaculture system.



陆基封闭式循环水养殖系统

Land based closed circulating water aquaculture system

陆基封闭式循环水养殖系统是将养殖池放置于陆地上进行的高密度集约化养殖，粪便集中收集并移除，系统配套生物处理器、紫外杀菌、微滤机、加热设备、温棚等设施，实现全封闭循环水养殖，由于系统可实现温度的实时监测和控制，因此该系统可实现全年连续养殖。

Land based closed circulating water aquaculture system is a high-density intensive aquaculture system in which the culture pond is placed on land and the feces is collected and removed in a centralized manner. The system is equipped with biological processing device, ultraviolet sterilization, microfiltration device, heating equipment and greenhouse, to realize closed circulating water aquaculture. The system is capable of real-time monitoring and control of temperature, so it realizes continuous aquaculture throughout the year.



陆基箱式循环水养殖系统

Land based box type circulating water aquaculture system

以陆地为基础，用养殖箱为载体，运用高新技术全面有效地人为控制养殖环境和养殖过程，其养殖水体采用封闭再循环的模式，能摆脱自然水域环境对水产养殖的影响，能同时开展淡水与海水水产养殖的全新模式。

Installed on land and carried by aquaculture cage, this system uses high-end technology to artificially control the aquaculture environment and process in a comprehensive and efficient way. The aquaculture water flows in a closed recirculation system which eliminates the impact of natural water environment on aquaculture and enables the new mode that supports both freshwater and seawater aquaculture.

07

领导关怀 共促发展

CONCERN OF LEADERS
COMMON DEVELOPMENT

在通威走向全国、走向世界的过程中，一路前行、硕果累累，得到了各级政府、各界领导的悉心关怀和大力支持。从一粒种子成长为参天大树，通威在关怀中不断发展，在发展中心怀感恩，从不辜负每一份期望和嘱咐，不断用令人瞩目的成绩回馈每一份关爱与帮助。

During its expansion across the country and around the world, Tongwei has stridden sturdily with countless achievements, courtesy of great care and support from the governmental authorities and the leaders of various sectors. Like a seed becoming a towering tree, Tongwei has been growing thanks to the great care given to her and is always grateful to such care, never failing any expectation, but constantly requiting such care and support with remarkable achievements.



中共中央总书记、国家主席、中央军委主席习近平视察通威(海南)水产食品有限公司并亲切接见通威集团董事局主席刘汉元先生
Xi Jinping, General Secretary of the CPC Central Committee, President of the PRC, and Chairman of the CPC Central Military Commission, visited Tongwei Hainan Aquatic Products Co., Ltd. and met with Mr. Liu Hanyuan, Board Chairman of Tongwei Group



■ 中共中央政治局常委、国务院总理李强视察通威如东“渔光一体”基地
■ Li Qiang, member of the Standing Committee of the Political Bureau of the CPC Central Committee and Premier of the State Council, inspecting Tongwei Fishery-PV Integration Base in Rudong

■ 时任国家主席胡锦涛亲切接见通威集团董事局主席刘汉元先生
■ Hu Jintao, then President of the PRC, met with Mr. Liu Hanyuan, Board Chairman of Tongwei Group



■ 十七届、十八届、十九届中共中央政治局常委、时任国务院总理李克强亲切接见通威集团董事长刘汉元先生
■ Li Keqiang, member of the Standing Committee of the Political Bureau of the 17th, 18th and 19th CPC Central Committees and Then Premier of the State Council, met with Mr. Liu Hanyuan, Chairman of Tongwei Group

■ 时任国务院总理温家宝视察武汉通威
■ Then Premier Wen Jiabao inspected in Wuhan Tongwei Feed Co., Ltd.

通威 · 为了生活更美好
TONGWEI · FOR BETTER LIFE

