ASPRING

Leading the Low-Carbon Resource-Recovery Upgrade of Wastewater Plants /引領污水廠低碳資源化升級，開創能源回用新時代

***Pioneering a New Era of Energy Reuse* / 開創能源回用新時代**

1

WWTP Upgrading / 污水廠升級

WWTP Upgrading / 污水廠升級

2

Low-Carbon Resource Utilization / 低碳資源化

Low-Carbon Resource Utilization / 低碳資源化

3

New Energy Era / 能源新時代

New Energy Era / 能源新時代

COMPANY PROFILE 公司簡介

Company Profile and Core Business 公司簡介與核心業

ASpring Bioenergy Limited strives to become a world-leading provider ofwastewater treatment and resource utilization services. Adhering to the philosophy of "Innovation-Driven, Green Development", we deliver efficient, low-carbon environmental solutions and drive the industry towards a sustainable future.

思聯生質能源有限公司致力於打造全球領先的污水處理與資源化服務商，秉持「創新驅動、綠色發展」的理念，為客戶提供高效、低碳的環保解決方案，推動產業邁向永續未來。

Resource Utilization
資源再生

Upgrade high-energy-consuming wastewater plants into resource-energy-output enterprises, achieving intensification, low carbon, and resource utilization.

將高能耗污水廠升級為資源能源輸出型企業，實現集約化、低碳化、資源化。

Innovative Synergy
強強聯手

Guided by the principles of "Innovation, Synergy, Green, and Win-Win," we partner with collaborators to drive sustainable development in the environmental protection industry.

秉持「創新、協同、綠色、共贏」理念，攜手合作夥伴共同推動環保行業可持續發展。

Dual Value
雙重價值

Creating dual value for the environment and the economy, building a green future, and providing clients with efficient and low-carbon environmental solutions.

創造環境與經濟雙重價值，構築綠色未來，為客戶提供高效低碳的環保解決方案。

SHAREHOLDER BACKGROUND 股東背景

Qingdao Sipring Water Treatment Co., Ltd. 青島思普潤水處理股份有限公司

know more

A global leader in MBBR technology and a National Manufacturing Champion, holding independent intellectual property rights for the BFM process, representing the highest standard in current biofilm technology.
全球MBBR領軍企業，國家製造業單項冠軍，擁有自主知識產權BFM工藝，代表當前生物膜技術最高水平。

23M

Daily Treatment Capacity
噸（日處理量）

Over 10% of the national total. 占全國總量 10% 以上

66%+

MBBR Market Share MBBR
市占率

Highest market share in China. 全國最高市場份額

150M

Population Served
服務人口

Extensive service coverage. 覆蓋能力極強

460+

Large-scale Projects
大型項目

Successfully implemented across various wastewater treatments. 成功落地各類污（廢）水處理

Projects encompass municipal sewage, industrial wastewater, black and odorous water bodies, rural sewage, and specialized high-salt wastewater, demonstrating comprehensive and reliable engineering capabilities. 項目涵蓋市政污水、工業廢水、黑臭水體、農村污水、特種高鹽廢水等多類型場景，工程實力全面可靠。

Associated Engineers, Limited 聯誼工程有限公司

know more

SHAREHOLDER BACKGROUND / 股東背景

Long History · Established in 1961 / 悠久歷史 · 1961年創立

Over 60 years of engineering service experience, having witnessed and participated in numerous major infrastructure projects in Hong Kong and Mainland China. / 逾60年工程服務經驗，見證並參與香港及內地多項重大工程建設。

Diversified Business · Comprehensive Strength / 多元業務 · 綜合實力

Business covers high-growth areas including environmental engineering, infrastructure development, and logistics automation systems. / 業務涵蓋環境工程、基礎設施建設、物流自動化系統等多個高增長領域。

Technical Leadership · Industry Benchmark / 技術引領 · 行業標杆

Chief editor of multiple "Urban Construction Industry Standards"; provided technical support for the Beijing Olympics and Shanghai Expo. / 主編多個《城鎮建設行業標準》，曾為北京奧運會、上海世博會提供技術支持。

Full-Scale Services · Worry-Free Project Delivery / 全維服務 · 全程無憂

Providing one-stop integrated solutions from consultancy, design, and manufacturing to project management and after-sales maintenance. / 從諮詢、設計、製造到項目管理、售後維修，提供一站式整體解決方案。

POLICY BACKGROUND · 政策背景

Policy Guidance, Green Development · 政策引領，綠色發展

Multiple national departments have issued a joint document explicitly promoting the "synergistic efficiency of pollution reduction and carbon emission reduction" in wastewater treatment as a key measure to achieve the "Dual Carbon" goals, providing strong policy support for the industry. · 國家多部門聯合發文，明確推進污水處理「減污降碳協同增效」作為實現「雙碳」目標的重要舉措，為行業提供強力政策支撐。

1

National Strategic Orientation · 國家戰略導向

Multiple departments jointly issued a document clearly advancing the “pollution reduction and carbon reduction synergistic efficiency” in wastewater treatment, making it an important measure to achieve the "dual carbon" goals. 多部門聯合發文，明確推進污水處理“減污降碳協同增效”，將其作為實現“雙碳”目標的重要舉措。

2

Clear Targets · 明確目標要求

By 2025, China had certified 100 green low-carbon benchmark wastewater treatment plants featuring efficient energy and resource recycling. 到2025年，全中國認證了100座能源資源高效循環利用的污水處理綠色低碳標杆廠

3

Specific Support Measures · 具體支持措施

Provide special funds, tax incentives, and special bonds support to encourage green credit and green bond financing.提供專項資金、稅收優惠及專項債券支持，鼓勵綠色信貸和綠色債券融資。

4

Industry Development Direction · 行業發展方向

Focusing on three key directions: energy-saving and carbon-reduction technologies, resource recycling, and smart water refined management. 聚焦節能降碳技術應用、資源回收利用及智慧水務精細化管理三大方向。

INDUSTRY PAIN POINTS / 行業痛點

4 Major Challenges Facing Traditional Wastewater Plants / 傳統污水廠面臨的4大挑戰

High Energy Consumption / 高能耗

High energy consumption, high chemical usage, and greenhouse gases such as methane produced during sludge treatment make wastewater treatment plants significant sources of carbon emissions. 初期分解導致有效碳源流失，後續需額外投加甲醇等碳源，增加了運行成本和碳排放。

Waste of Carbon Source / 碳源浪費

Effective carbon sources are lost during the initial stages, necessitating the external addition of methanol, which increases operational costs and carbon emissions. 有效碳源初期流失，後續需額外投加甲醇，增加運行成本與碳排放。

Resource Waste / 資源浪費

Sludge is treated only through simple landfill or incineration, leaving valuable resources like carbon and phosphorus unrecovered. 污泥僅進行簡單填埋或焚燒，碳、磷等寶貴資源未能有效回收利用。

High Carbon Emissions / 碳排放高

High energy and chemical consumption, along with methane generated during sludge treatment, make wastewater plants significant sources of carbon emissions. /高能耗、高藥耗及污泥處理產生甲烷等溫室氣體，使污水廠成為重要碳排放源。

CORE TECHNOLOGY / 核心技術

3 Core Technologies Driving Revolutionary Upgrades 3項核心技術協同驅動，實現革命性升級

ASpring's technical solution achieves a revolutionary upgrade through the organic synergy of three major modules: **CEPS + BFM + Sludge to Hydrogen**, constructing a closed-loop resource system for the entire wastewater treatment process.

思聯技術方案透過 **CEPS + BFM + 污泥發酵及製氫**三大模組有機協同，構建污水處理全流程資源閉環。

These three technologies are interconnected: CEPS carbon capture serves as the foundation, BFM provides low-energy, high-efficiency nitrogen removal as the core, and sludge fermentation converts carbon into clean hydrogen or biogas to close the loop, building an integrated "Wastewater-Sludge-Energy" low-carbon solution. / 三項技術環環相扣：CEPS 捕獲碳源為基礎，BFM 實現低耗高效脫氮為核心，污泥發酵將碳源轉化為清潔氫能或沼氣為閉環，構築「污水－污泥－能源」一體化低碳解決方案。

Value Enhancement: Sludge to Hydrogen Production CEPS BFM 污泥製氫.價值提升

Optimizes anaerobic/acid fermentation of sludge to convert organics into valuable products (VFAs, Biogas/ Hydrogen, PHA), boosts energy/resource recovery, reduces carbon and volume.

優化污泥厭氧/酸化發酵，轉化有機物成高價值碳源(如VFAs)、沼氣/氫氣或PHA，提高能源/資源回收，減碳減量。

CEPS Carbon Capture / CEPS 捕碳

Adds chemicals to primary settling to quickly capture most organic carbon (COD) into sludge, cuts downstream load, enables resource recovery (e.g., VFAs or biogas).

用化學藥劑強化初沉，快速抓住污水中有機碳（COD），減少後續處理負荷，支持資源回收（如產酸/沼氣）。

BFM Low-Carbon Efficient Denitrification / CEPS BFM低碳高效脫氮

Pure biofilm (MBBR) + magnetic separation process enriches efficient denitrifiers, minimizes external carbon, saves energy for N/P removal, compact footprint.

純膜生物膜（MBBR）+磁混凝工藝，富集高效脫氮菌，少用或不用外加碳源，節能除氮除磷，占地小。

CORE TECHNOLOGY 核心技術

BFM — High-Efficiency Engine for Wastewater Treatment BFM — 污水處理高效引擎

The BFM Bio-Film Efficiency process holds independent intellectual property rights, representing the highest level of current biofilm technology with four major advantages leading over traditional processes. BFM生物集效工藝擁有自主知識產權，代表當前生物膜技術最高水平，四大優勢全面領先傳統工藝。

Intensive 集約

Saves **over 70%** of land area, highly suitable for space-constrained urban environments and facility expansions. 節省 **70%以上** 土地面積，高度適合用地緊張的城市及改擴建場景。

Low-Carbon 低碳

Combining land-saving advantages during construction with mainstream Anaerobic Ammonium Oxidation (Anammox) for nitrogen removal during operation to significantly reduce carbon emissions. 施工期節地優勢疊加運行期主流厭氧氨氧化（Anammox）脫氮，大幅降低碳排放。

Efficient 高效

Effluent quality superior to Grade IV standards, with **TN≤2mg/L, NH_3-N≤0.5mg/L**, far exceeding industry benchmarks. 出水水質優於IV類，**TN≤2mg/L，NH_3-N≤0.5mg/L**，遠超行業標準。

Intelligent 智慧

Smart automated control system reduces operational costs by **over 30%** compared to traditional manual control. 智能自動化控制系統，較傳統人工控制降低運營成本 **30%以上**。

MARKET STRATEGY / 市場策略

Market Strategy: Demonstration-Driven Replication 市場推廣策略：示範引領，複製擴張

Sales Tools / 銷售工具

Technical White Papers & ESG Reports / 技術白皮書與ESG報告

Establish technical credibility with data and case studies to strengthen decision-maker confidence. / 以數據與案例建立技術公信力，強化決策者信心。

Cost Recovery Models / 成本回收模型

Clearly present investment payback periods to help clients quantify decarbonization and energy-saving benefits. / 清晰呈現投資回報週期，協助客戶量化減碳與節能效益。

Channel Strategy / 渠道策略

Strategic Partnerships / 強強聯手

Collaborate with industry-leading partners to explore key markets for mutual success. / 攜手行業頭部合作夥伴，共同開拓重點市場，實現互利共贏。

Financial Integration / 金融聯動

Introduce green credit and carbon finance tools to lower investment barriers and accelerate project implementation. / 引入綠色信貸與碳金融工具，降低客戶資金門檻，加速項目落地。

FUTURE OUTLOOK / 未來展望

Building a Wastewater Resource Industry Ecosystem 構築污水資源化產業生態

1

Short-term Goal (2026) / 短期目標 · 2026

Launch the first 100,000-ton demonstration project, complete core technology verification, and establish initial brand recognition and influence. / 落地首個10萬噸級示範項目，完成核心技術驗證，建立初步品牌認知與影響力。

2

Mid-term Goal (2027) / 中期目標 · 2027

Replicate 2–3 domestic projects to achieve scale, launch the first overseas demonstration project in Southeast Asia, and build a strategic partnership trust mechanism. / 國內複製2–3個項目形成規模，技術出海落地東南亞首個示範，構建戰略合作夥伴信任機制。

3

Long-term Goal (2028+) / 長期目標 · 2028+

Exceed 3 annual orders, become a leading global low-carbon resource solution provider, and build a complete industrial ecosystem covering carbon trading. / 年訂單超3座，成為全球領先低碳資源化方案商，構築涵蓋碳交易的完整產業生態。

Co-creating a Green Future, Sharing Clean Energy / 共創綠色未來，共享清潔能源

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Thank You!

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