TETRELS TECHNOLOGY

Revolutionizing Membrane Filtration with Graphene

FOUNDING TEAM

Zisong Nie

Co-founder & CEO

- M.S. in Nanotechnology, University of Pennsylvania
- VC Experiences in Advanced Material & Deeptech
- Advisory Board Member of National Graphene Association

Jason Glickman

Co-founder

- Managing Partner of Tribal Ventures
- Accumulatively raised over $100MM in venture capital
- Several successful exits & IPO

Kunzhou Li

Co-founder & CTO

- Seoul National University Scientist
- 10+ years R&D experiences in advanced material and membrane science

MARKET OPPORTUNITY

Ultrafiltration
water treatment

$3+ Billion

Global Market

DUPONT · Nitto (Innovation for Customers) · suez · TORAY (Innovation by Chemistry) · HYDRANAUTICS (Nitto Group Company) · PENTAIR

Major
Limit

High costs from
membrane fouling

30%-40%

Membrane O&M Expenses

- Ultrafiltration: >$3 billion global market with 15% growth rate
- Widely used in wastewater facilities, municipalities, food & beverage, pharmaceutical, etc.

- High O&M expenses from membrane fouling
- Frequent water backwash, chemical cleaning and membrane replacement

INTRODUCING TETRELS

Tetrels is the first in the world to integrate Graphene, a Nobel Prize winning material into membrane products to **mitigate membrane fouling**, and eventually bring savings for UF process.

What is Graphene?

- 2010 **Nobel Prize** winner material
- **Strongest material**: 10x stronger than diamond
- **Best conductor** for heat and electronic

Graphene Applications

- Structural material in auto and aerospace
- Flexible electronics & battery material
- Semiconductor industry
- Water filtration

FEATURE PRODUCT

PRODUCT DEVELOPMENT MILESTONES

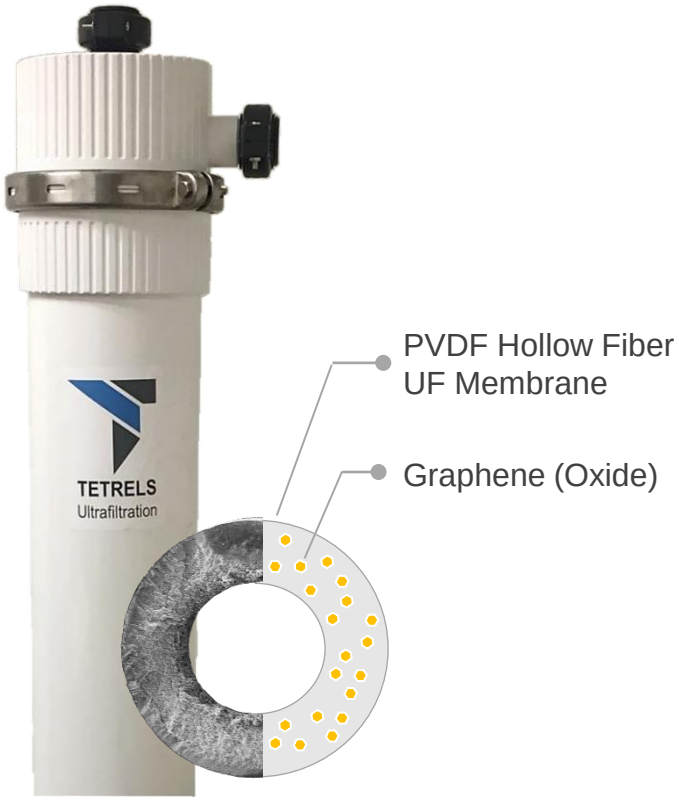
Oct. 2017
Proof of Concept

Feb. 2018
Prototype

Aug. 2018
Patent Application

Feb. 2019
Trial Production

Jun. 2019
Field Test



GRAPHENE-ENHANCED Hollow Fiber Ultrafiltration Membrane Cartridges. PLUG and PLAY integration into existing filtration systems. Identical process to replacing their current membrane filters

3X
Fouling resistance vs. conventional membranes

20%
Higher Water Flux vs. conventional membranes

75%
Savings in membrane O&M expenses

PRODUCT DEMO

Tetrels UF Module

Cross-section

Module overall photo

Field Application 1: Critical Testing

2019.07 – 2020.01

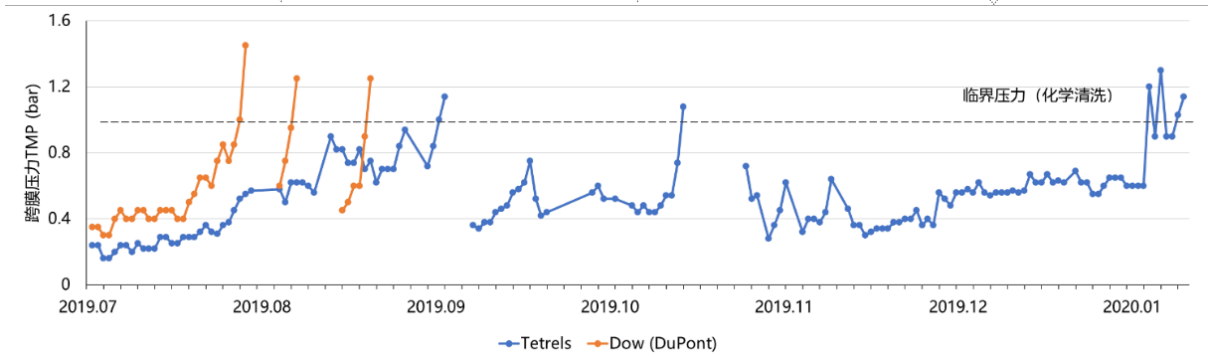
7 months

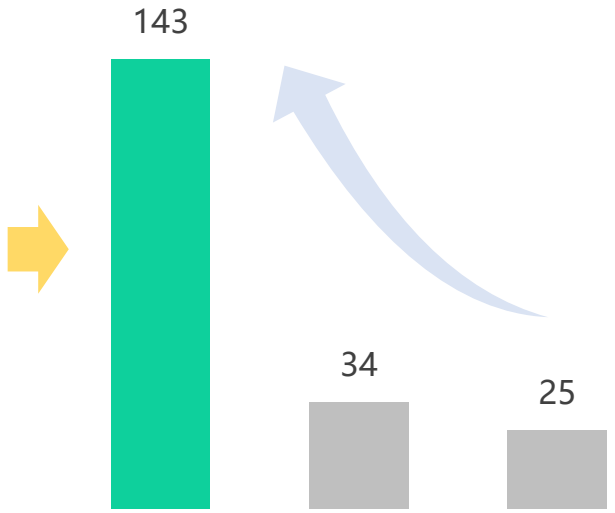
The membrane module was tested for contamination resistance under extreme sewage conditions. During the test, the outflow is controlled at a constant value, and the change in transmembrane pressure (TMP) is recorded. When TMP exceeds the critical value, off-line chemical cleaning is performed on the membrane module. When the system needs to be cleaned for the third time, the test is stopped and the total number of operating days is counted as an index of pollution resistance performance. Tetrels TG-A850F-1, Dow SFP-2860 and a Chinese brand UF module were tested under the same conditions.

Inflow NTU 2.16，COD 150 mg/L；Outflow NTU 0.07

Inflow NTU 3.42，COD 180 mg/L； Outflow NTU 0.08

Inflow NTU 1.35，COD 100 mg/L； Outflow NTU 0.07





Total number of operating days before the third chemical cleaning

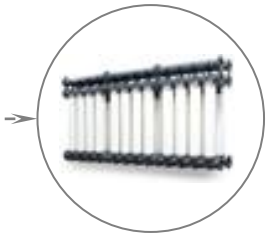
3X

Chemical cleaning cycle and pollution resistance are 3 times that of similar products on the market; Save 70% on maintenance costs

Field Application 2：Coal Chemical Industry Wastewater Treatment

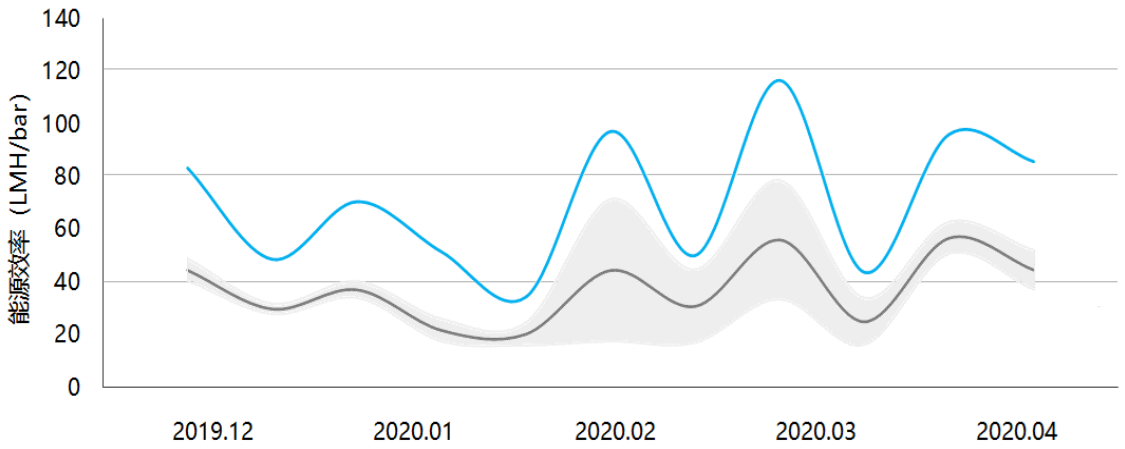
2019.12-2020.04

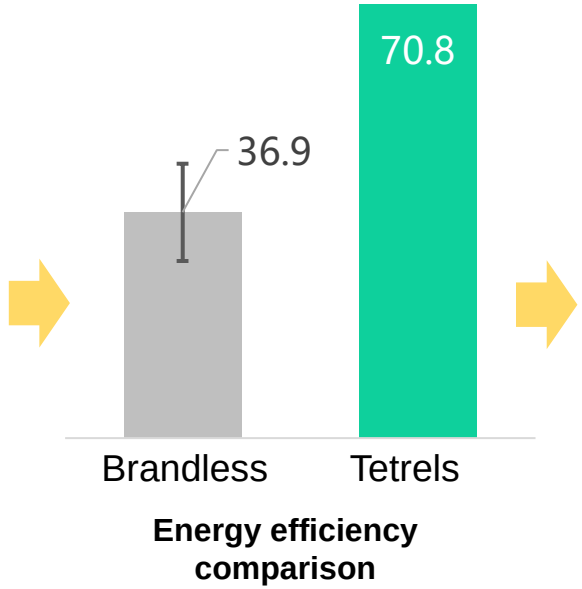
5 months



The performance test of Tetrels UF module in the field application of coal chemical wastewater treatment. In a 1,000 tons/hour wastewater treatment engineering facility, one group of Tetrels UF modules operates in parallel with five other groups of UF modules of other brands (56 modules per group). During this period, information such as inflow water pressure, TMP, and water flow rate are recorded.

$$\frac{Flux}{Inflow\ pressure \times Membrane\ area}$$





Energy efficiency comparison

92%

92% higher energy efficiency, Lost of electricity consumption or facility construction costs can be saved!

TRACTIONS

Technology Partnership with SUEZ

On-going membrane tests and trial production with SUEZ, a world leading membrane brand (acquirer of GE water technologies), for potential technology license deal

Pilot Project at Bucks county PA

Partner with Bucks County Water and Sewage Authority for a 6-month pilot UF project in Harvey Avenue Wastewater Plant, designed to further purify discharge water into local creek

FUTURE RESOLUTIONS

Technology License-out Deals

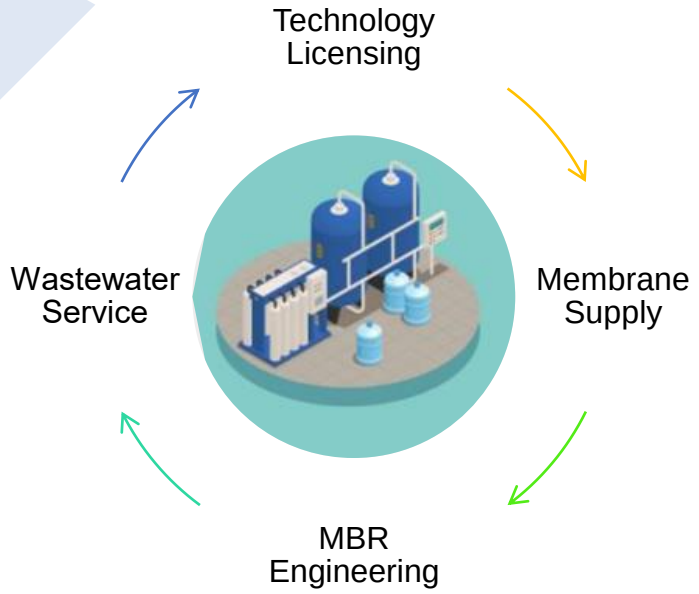
- Approach 3 potential tech licensee for partnership
- 1 partnership on-going and another 2 in pipeline

Membrane Direct Sales

- Product sales through distributor & in-house sales team
- Targeting 1500 UF units' sales by the end of 2021

Sales through MBR Engineering/Services

Approach engineering contracts for MBR (Membrane Bio Reactor) projects, e.g. municipality wastewater



2021 Q1 **2022 Q1**

TECH TEAM

Lead Scientists

Kunzhou Li

CTO

10+ years R&D experiences
in Graphene and membranes

Yong Hyup Kim

- Seoul National University Professor
- 20+ years in NASA

Manish Chhowalla

Technology Advisor

- University of Cambridge Professor
- World Leading Scientist in 2D Material
- ACS Nano Editor

서 울 대 학 교
SEOUL NATIONAL UNIVERSITY

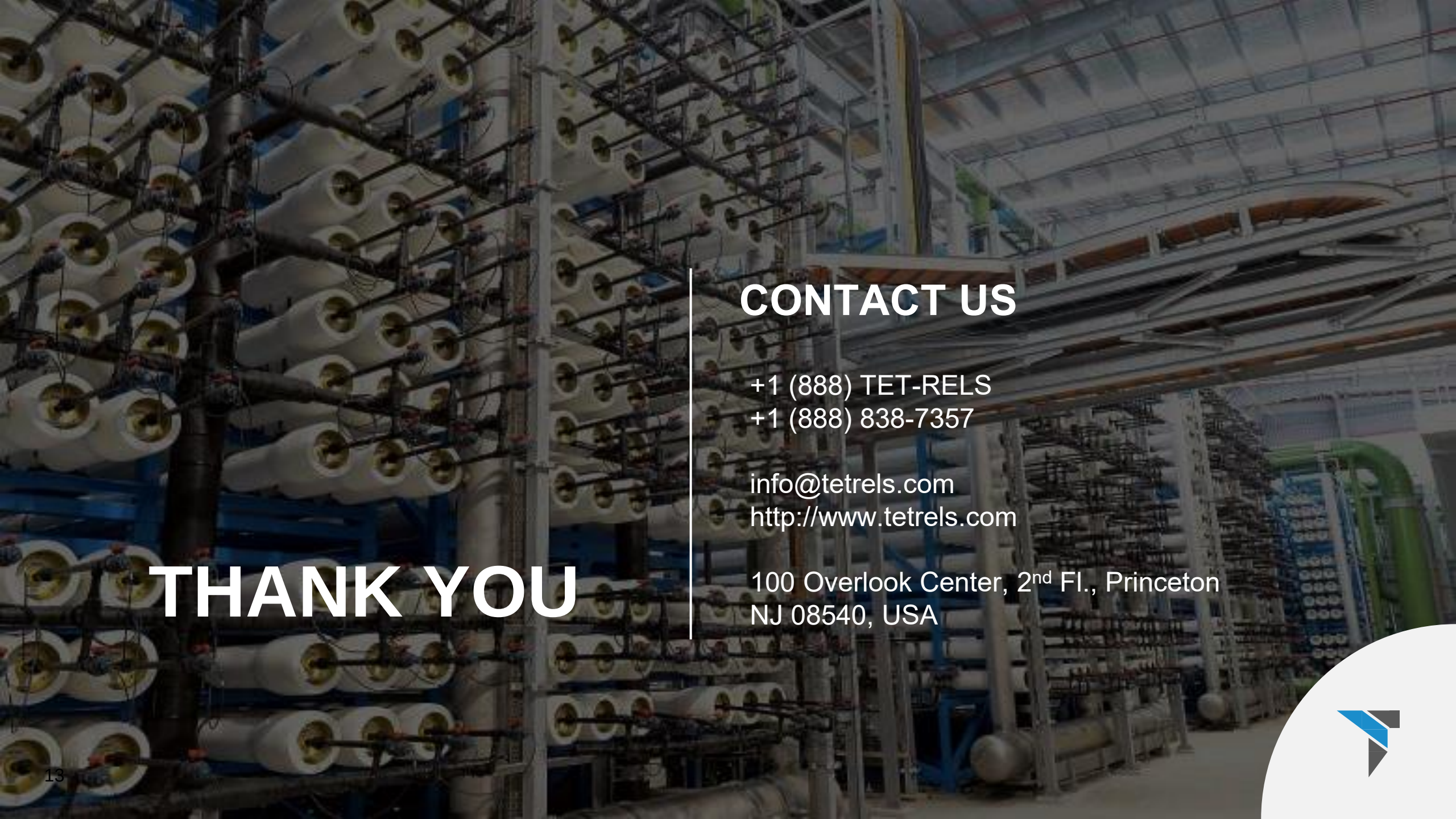
TETRELS IN THE NEWS

Nasdaq west®

> The traditional criticism of reverse-osmosis technology is that it costs too much. Graphene-enhanced RO membrane dramatically extends the lifetime of RO membranes and notably improves desalination efficiency

> National Graphene Association Announces New Board Members
>
> Zisong Nie is the Founder of Tetrels Technology Corp., which aims to commercialize graphene-enhanced water treatment technologies. With a deep understanding of the graphene industry and business development skills, he has officially engaged with more than 20 companies and closed investment deals with 8 companies within the last year.

NGA National Graphene Association™
Connect • Innovate • Commercialize



THANK YOU

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