

Highly Efficient and Flexible Small-scale System for PFAS Removal

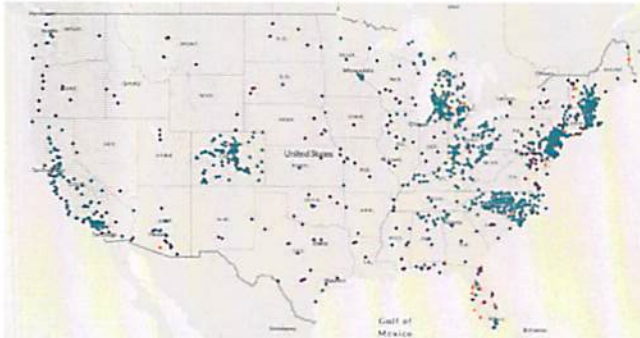
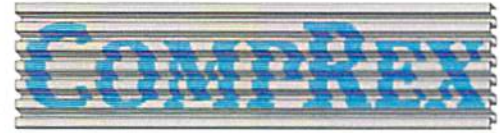
CompRex, LLC has developed a novel water filtration system that effectively and economically removes all contaminants, including PFAS, to produce bottle-quality drinking water and can be adapted for residential, commercial, and municipal use.



Zhijun Jia, CEO
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CONFIDENTIAL

The Problem: PFAS Contamination in Drinking Water



PFAS Contamination Sites in the US



PFAS Contamination on French Island

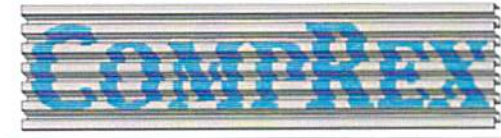
➤ Widespread contamination, including here in La Crosse

- PFAS is a group of man-made chemicals needed in many consumer products, but it causes harmful health effects in humans due to their difficulty in being broken down and tendency to accumulate in the body after consumption
- 2,337 locations in 49 states are known to have PFAS contamination
- As of June 15, 2021, 538 wells on French Island found to have PFAS contamination with 139 recording above the state's recommended level of 20 ppt
- Over 1,000 families on the island affected, most currently relying on bottled water

➤ Limited options for remediation

- Remediation measures seek to either:
 - Prevent future contamination by removing PFAS from industrial wastewaters and municipal wastewater treatment plants, or
 - Address existing contamination through treatment of drinking water sources
- Current remediation methods include:
 - Reverse osmosis in which feed stream is pushed through a semi-permeable membrane, or
 - Activated carbon in which a highly porous material is used to adsorb contaminants
- However these technologies have limited effectiveness, removing only ~95% of PFAS even under ideal operating conditions, and cost thousands of dollars for residential systems not including cost of frequent filter and membrane replacements

Our Solution: PFAS Removal through Supercritical Water Oxidation



➤ CompRex has developed an innovative technology for PFAS removal with vastly improved effectiveness and significantly lower lifetime cost

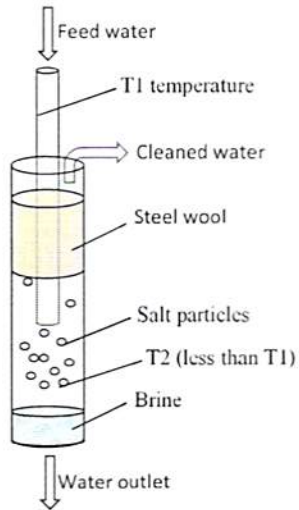


Diagram of CompRex's Supercritical Oxidation Process

- Contaminant removal through chemical reaction: water is brought to high temperature and pressure near supercritical condition and passed through a metal oxide catalyst to break down contaminant's carbon chains
- Produces bottle-quality drinking water regardless of feed water quality and removes more than 99.99% of PFAS to below state recommended level of 20 ppt
- Does not require periodic part replacement
- Does not suffer from reduced effectiveness in low temperatures like reverse osmosis, whose output is reduced by half as temperature drops more than 25° F from its optimal of 77° F
- Minimizes waste with high water recovery rate of >85% as opposed to the 65% limit of current technologies
- Can double as a water softener in residential applications, further improving economics

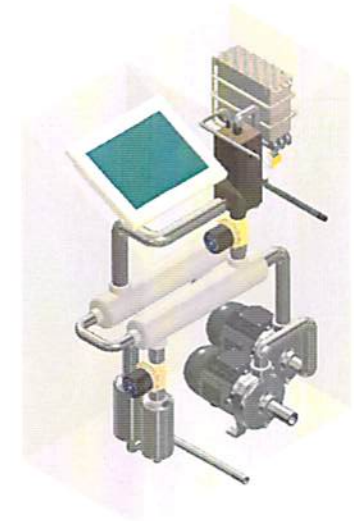
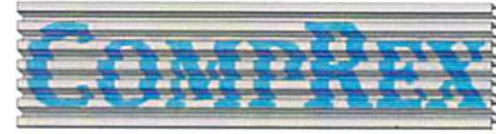


Diagram of CompRex's Residential Filtration Unit

Path Towards Commercial Deployment



- **CompRex's demo system has been successfully completed and its advantages validated**
 - Work was funded by 2019 Department of Energy (DOE) award to address treatment of fracking wastewater
 - Initial test results showed removal of salts from 25,000 ppm in the inlet stream to less than 1 ppm in the outlet stream and near 100% removal of organic contaminants

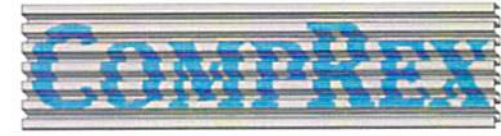
- **No significant challenge is expected in transitioning from demo unit to commercial production**
 - Initial flow diagram for bench scale system has been completed
 - System relies on a relatively simple process and simple reactor design
 - Materials, parts, and catalysts are all readily available
 - Manufacturing techniques are well-known and well-practiced



Demo System Tested for DOE Award

Planned Work	Bench Scale Stage	Pilot Stage	Commercial Production
Objective	-Develop 50 gpd bench scale system -Validate in a lab environment	-Develop 300 gpd pilot system -Validate at a residential facility	Establish manufacturing capability for mass production
Time Needed	3 months	6 months	10-12 months
Funds Needed	\$50,000	\$150,000	\$5 million
Activities	-Complete system design -Source component vendors -Manufacture system -Confirm efficiency with well water and wastewater	-Refine system design -Establish manufacturing process -Confirm economics and performance in actual residential operating environment	-Locate and renovate facility -Install equipment and train workers -Develop quality control procedure -Refine cost and pricing model -Establish distribution channels
Metrics	-PFAS removal >99.99% and <20 ppt -Other contaminants removal <200 ppm	-PFAS removal >99.99% and <20 ppt -Other contaminants removal <5 ppm -Energy efficiency >85%	-Target unit production costs of: -\$5,000 by 100 units -\$2,500 by 1000 units

Core Team Experienced in R&D and Commercialization



CompRex specializes in the provision of compact heat exchangers and reactors for power, oil and gas, petrochemical, and waste treatment industries. Our team has the **necessary capabilities** and a **strong track record** to convert ideas to products.



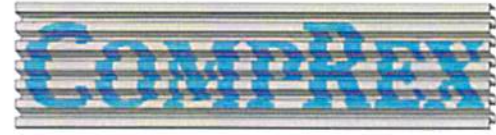
Dr. Zhijun Jia, founder and CEO of CompRex, has over 30 years of experience developing and commercializing new compact processes and products. Zhijun was previously the Reactor Development Manager for Chart Energy and Chemicals where he spearheaded the development of compact heat exchangers and reactors. In 2014, Zhijun founded CompRex to further commercialize these technologies in various applications such as heat transfer in supercritical CO₂ power systems, alcohol and ethylene oxide production, and waste-to-fuel conversion, all of which are currently in various stages of pilot testing and commercial availability. Under Zhijun's leadership, CompRex has partnered and worked with leading players in both industry and academia such as Arkema, SABIC, Shell, Air Products, RTI, Naval Nuclear Laboratory, Sandia/Argonne National Labs, University of Kentucky's Center for Applied Energy Research, University of Wisconsin-Madison, Southwest Research Institute, and Gas Technology Institute. Zhijun obtained his PhD in Chemical Engineering from the University of Alabama.



Thomas Parlow, Engineering Manager, has over 15 years of experience in drafting, mechanical structure design, and engineering of heat exchangers and reactors. Tom was previously the Senior Product Engineer and Senior Engineering Business Analyst at Chart Industries, where he was responsible for engineering, mechanical structure design, and cost modeling of heat exchangers, ASME section VIII vessels, coldboxes, and B31.3 piping systems. At CompRex, Tom has also had additional experience in control system design and quality control management. Tom earned his Bachelor's degree in Engineering from California National University.



Cindy Jia, JD., Business Manager, has over 10 years of experience working in the energy industry. Prior to joining CompRex, Cindy obtained her undergraduate degree from the Wharton School of the University of Pennsylvania and spent 5 years working in power project financing at ING Bank N.V./ING Capital LLC where she conducted financial, operational, and technical due diligence and negotiated financing agreements on green-field power projects and managed a portfolio of existing projects totaling over \$3.5 billion from construction to operation. At CompRex, Cindy has been instrumental in raising over \$4 million in non-dilutive investments from various sources such as the federal, state and local governments and private companies. Cindy has also been responsible for CompRex's day-to-day business operations, project management and reporting, contract negotiations, sourcing and procurement of materials and parts, and fundraising.



Investor Partners



Robinson Metal, Inc. is a premier custom metal fabricator based in De Pere, Wisconsin with decades of experience in machining, pipe and vessel, custom enclosures and the ability to provide ASME-code stamped systems. It was the first investor in CompRex with over \$1MM in loans, and its executive team has provided invaluable support providing mentorship in marketing and sales, business strategy, and building our own in-house manufacturing capabilities.



The Wisconsin Economic Development Corporation works with more than 600 regional and local partners to accelerate business development. Through its SBIR Advance program which provides partial match funding for governmental SBIR awards, it has invested \$250,000 in CompRex and continues to support our growth by facilitating connections with other venture capital investors.



The La Crosse Area Development Corporation (LADCO) aims to create opportunities and provide advisory services for businesses in the local region with the support of municipalities in La Crosse County and Minnesota and more than 110 private sector investors including major corporations such as Trane Technologies (formerly Ingersoll-Rand), Kwik Trip, and Mathy Construction. It has invested \$40,000 in CompRex through a loan with another \$50,000 grant being planned upon meeting certain job creation requirements.

Commercialization Partner



The Center for Technology Commercialization (CTC) provides one-on-one expert consulting to early-stage emerging technology businesses throughout Wisconsin. CTC has collaborated in acquiring more than \$100 million in federal and private funding for clients. CTC has worked with CompRex since 2018 and provided lean-start up training, assistance in commercialization and fundraising, and a host of other business process optimization activities.

R&D Partners

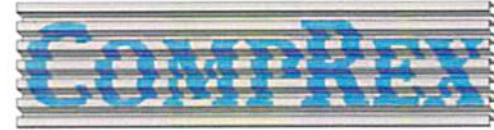


University of Wisconsin-Madison's Thermal Hydraulics Laboratory is a leading research center covering a wide breadth of fundamental physics and applications relating to advanced energy utilization, energy extraction and energy production with the main focus on experimental thermal hydraulics for advanced nuclear, solar and waste recovery energy sources. It has been one of CompRex's key testing partners, especially for processes requiring supercritical conditions.

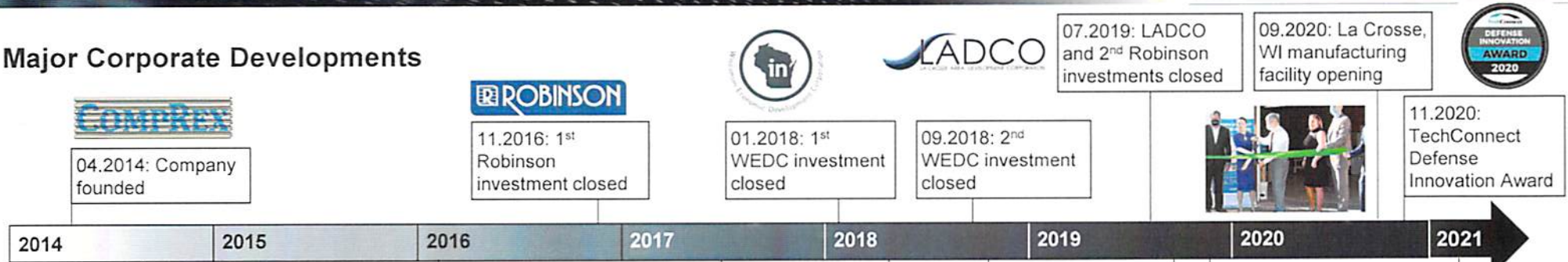


University of Kentucky Center for Applied Energy is a world class research center focusing on the development of technologies relating to waste and coal utilization and conversion processes and the derivation of high added-value materials and chemicals from energy resources. It is CompRex's key partner in reactor development and testing.

Track Record of Growth Supported By Top Industry Players and Research Facilities



Major Corporate Developments



Major Product Developments

08.2014: Contract for heat exchanger with Naval Nuclear Laboratory



01.2017: Contract with RTI for demo gas-to-liquid system using reactor



06.2017: DOE award to develop large scale heat exchanger manufacturing with support from Sandia National Lab



04.2018: DOE award to develop reactor for wastewater treatment

10.2018: \$1.2MM DOE SETO Award for heat exchanger with support from Dresser Rand/Siemens



09.2019: \$1.4MM DOE ARPA-E Award for heat exchanger



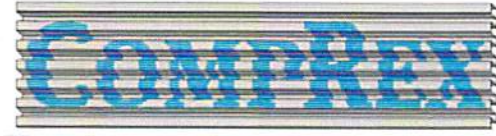
12.2019: Contract with ANL, Shell, and SABIC to test reactor for chemical production



02.2021: In discussions with confidential partner on pilot waste-to-fuel-project, Aquatech and ExxonMobil on pilot fracking wastewater treatment project, and in contract with Naval Postgraduate School for heat exchanger



Our Ask: Assistance Needed from the City of La Crosse



➤ Funding

- Monetary assistance as we conduct bench and pilot scale testing and as we expand our local manufacturing capacity

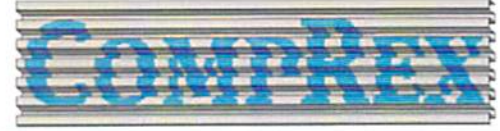
➤ Testing

- Guidance on local and state PFAS treatment needs
- Provision of PFAS contaminated water samples
- Coordination with accepted third-party PFAS testing contractors
- Facilitation of pilot testing environment

➤ Commercialization

- Upon successful pilot scale demonstration, we hope to have a commitment from the City on commercial deployment in La Crosse

Complex Problem? CompRex Solution.



CompRex's novel water filtration technology provides an efficient and economic solution for PFAS removal for homes, businesses, and municipalities. It has already been successfully proven in demonstration scale, and CompRex's capable and experienced team has laid out a solid path towards commercial deployment.

With the support of the City of La Crosse, we hope our solution can help those in need in our local community and in communities around the world.

The future of clean water is here, in CompRex.

