



BABCOCK  
& WILCOX

# COMPANY OVERVIEW

MAY 10, 2023



# SAFE HARBOR STATEMENT

B&W Enterprises cautions that this presentation contains forward-looking statements within the meaning of federal securities laws. All statements other than statements of historical or current fact included in this presentation are forward-looking statements, including, without limitation, statements relating to the company's business outlook and expected financial performance, including adjusted EBITDA and sales targets, expectations regarding future growth, expansion and profitability, as well as statements about B&W's future pipeline of new projects and business within its Renewable, Environmental and Thermal operating segments and their impact on future shareholder value. These forward-looking statements are based on management's current expectations and involve a number of risks and uncertainties, including, among other things, the impact of global macroeconomic conditions, including inflation and volatility in the capital markets; the impact of the ongoing conflict in Ukraine; our ability to integrate acquired businesses and the impact of those acquired businesses on our cash flows, results of operations and financial condition, including our recent acquisitions of Babcock & Wilcox Solar Energy, Inc. ("Babcock & Wilcox Solar"), formerly known as Fosler Construction Company Inc. and/or Fosler, Babcock & Wilcox Renewable Service A/S, formerly known as VODA A/S ("VODA"), Fossil Power Systems, Inc. ("FPS"), Optimus Industries, LLC ("Optimus") and certain assets of Hamon Holdings Corporation ("Hamon"); our recognition of any asset impairments as a result of any decline in the value of our assets or our efforts to dispose of any assets in the future; our ability to obtain and maintain sufficient financing to provide liquidity to meet our business objectives, surety bonds, letters of credit and similar financing; our ability to comply with the requirements of, and to service the indebtedness under, our debt facility agreements; our ability to pay dividends on our 7.75% Series A Cumulative Perpetual Preferred Stock; our ability to make interest payments on our 8.125% senior notes due 2026 and our 6.50% notes due 2026; the highly competitive nature of our businesses and our ability to win work, including identified project opportunities in our pipeline; general economic and business conditions, including changes in interest rates and currency exchange rates; cancellations of and adjustments to backlog and the resulting impact from using backlog as an indicator of future earnings; our ability to perform contracts on time and on budget, in accordance with the schedules and terms established by the applicable contracts with customers; failure by third-party subcontractors, partners or suppliers to perform their obligations on time and as specified; delays initiated by our customers; our ability to successfully resolve claims by vendors for goods and services provided and claims by customers for items under warranty; our ability to realize anticipated savings and operational benefits from our restructuring plans, and other cost-savings initiatives; our ability to successfully address productivity and schedule issues in our B&W Renewable, B&W Environmental and B&W Thermal segments; our ability to successfully partner with third parties to win and execute contracts within our B&W Environmental, B&W Renewable and B&W Thermal segments; changes in our effective tax rate and tax positions, including any limitation on our ability to use our net operating loss carryforwards and other tax assets; our ability to successfully manage research and development projects and costs, including our efforts to successfully develop and commercialize new technologies and products; the operating risks normally incident to our lines of business, including professional liability, product liability, warranty and other claims against us; difficulties we may encounter in obtaining regulatory or other necessary permits or approvals; changes in actuarial assumptions and market fluctuations that affect our net pension liabilities and income; our ability to successfully compete with current and future competitors; our ability to negotiate and maintain good relationships with labor unions; changes in pension and medical expenses associated with our retirement benefit programs; social, political, competitive and economic situations in foreign countries where we do business or seek new business; the impact of COVID-19 or other similar global health crises, and the other factors specified and set forth under "Risk Factors" in our periodic reports filed with the Securities and Exchange Commission, including, without limitation, the risks described in the Company's Annual Report on Form 10-K for the year ended December 31, 2022 under the caption "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" (as applicable). These factors should be considered carefully, and B&W Enterprises cautions you not to place undue reliance on these forward-looking statements, which speak only as of the date of this presentation, and undertakes no obligation to update or revise any forward-looking statement, except to the extent required by applicable law.

## Non-GAAP Financial Measures

This presentation contains information regarding our adjusted EBITDA, which is a non-GAAP financial measure. Adjusted EBITDA on a consolidated basis is defined as the sum of the adjusted EBITDA for each of the segments, further adjusted for corporate allocations and research and development costs. At a segment level, adjusted EBITDA presented is consistent with the way our chief operating decision maker reviews the results of operations and makes strategic decisions about the business and is calculated as earnings before interest expense, tax, depreciation and amortization adjusted for items such as gains or losses arising from the sale of non-income producing assets, net pension benefits, restructuring costs, impairments, gains and losses on debt extinguishment, costs related to financial consulting, research and development costs and other costs that may not be directly controllable by segment management and are not allocated to the segment. We present consolidated Adjusted EBITDA because we believe it is useful to investors to help facilitate comparisons of our ongoing, operating performance before corporate overhead and other expenses not attributable to the operating performance of our revenue generating segments. In this presentation, we also present certain targets for our adjusted EBITDA in the future; these targets are not intended as guidance regarding how we believe the business will perform. We are unable to reconcile these targets to their GAAP counterparts without unreasonable effort and expense due to the aspirational nature of these targets.

# WE'RE A GLOBAL ENERGY LEADER CREATING A BRIGHTER FUTURE

## Providing high quality and innovative technologies since 1867

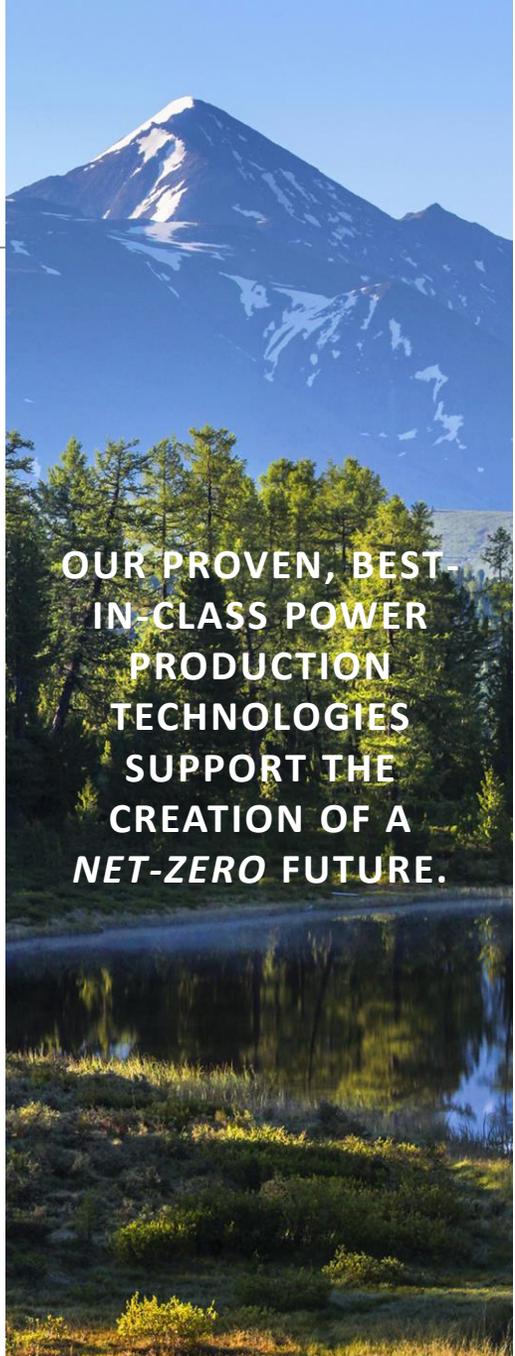
- From our first patent for a more efficient boiler to more than 17,000 patents since, we continue to drive innovation and change
- Today, we are a globally recognized technology leader and innovator at the forefront of the energy transition

## Ensuring energy security for customers and the world

- Helping utility and industrial customers with the technical challenges of moving from current to future energy sources
- Delivering systems, parts and field services to help utility and industrial plants operate more effectively and efficiently

## Making net-zero ambitions a reality today

- Our waste- and biomass-to-energy, carbon capture, hydrogen production and environmental technologies support the reduction of greenhouse gases, including CO<sub>2</sub> and methane, in an environmentally friendly way



**OUR PROVEN, BEST-IN-CLASS POWER PRODUCTION TECHNOLOGIES SUPPORT THE CREATION OF A NET-ZERO FUTURE.**

# WE'RE HELPING CUSTOMERS CREATE CLEAN AND RELIABLE ENERGY

CLEAN ENERGY SOLUTIONS



## SUPPORTING A CIRCULAR ECONOMY

Ecologically sound ways of using and recycling resources like biomass, municipal waste, and solar energy to create clean, renewable baseload power while reducing greenhouse gas emissions.



## REDUCING THE IMPACT OF GREENHOUSE GAS EMISSIONS

Hydrogen production, carbon capture, ash handling, cooling systems, energy recovery and storage, and advanced emissions control solutions to help preserve the world's natural resources.

TRADITIONAL



## CREATING RELIABLE AND EFFICIENT STEAM GENERATION

Providing boilers and related equipment, aftermarket parts, service and upgrades to help utilities and industries generate reliable thermal energy from a wide range of fuels and bridge the gap during the global transition to new energy sources.

DELIVERING VALUE THROUGH TECHNOLOGY-DRIVEN PRODUCTS AND SERVICES, WITH CONTINUAL PRODUCT IMPROVEMENT AND ROBUST R&D EFFORTS TO SUPPORT FUTURE ENERGY NEEDS



# THE FOUNDATION OF OUR COMPANY

## **Our Vision:**

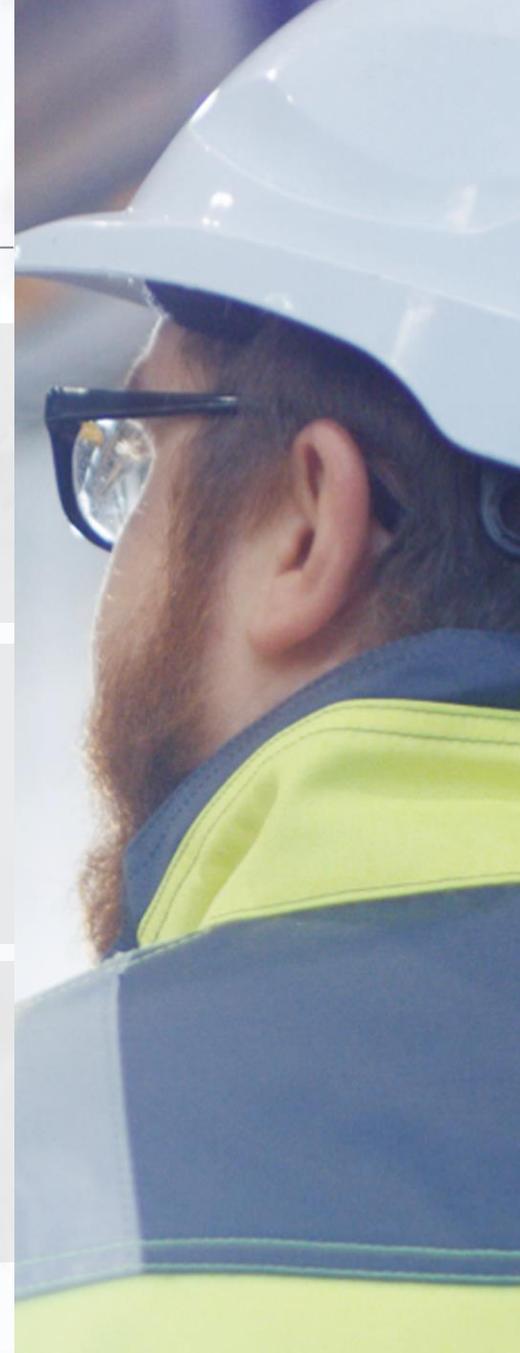
Advancing energy and environmental solutions that bring power and progress to our world.

## **Our Mission:**

B&W delivers environmentally conscious, technology-driven solutions and services to energy and industrial customers worldwide – safely, ethically and as promised.

## **Our Core Values:**

Safety • Integrity • Quality • Respect • Agility



# WE'RE LEADING AND DRIVING CLEAN POWER SOLUTIONS



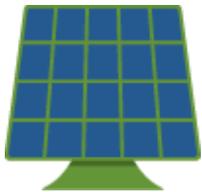
U.S. Inflation Reduction Act increases the investment into low carbon intensity solutions and hydrogen production



Energy trade disruptions around the world require increased use of available natural resources and reliable energy



Global drive toward renewable and reusable energy sources to limit carbon and methane emissions



E.U. Net-Zero Industry Act accelerating investment in solar, energy storage and carbon capture



A strong utility and industrial boiler installed base creates stable aftermarket in the U.S. and continued growth in international power generation



Water scarcity and environmental regulations drive need for custom cooling solutions

**B&W SUPPORTS  
GLOBAL TRENDS  
DRIVING  
THE NEED FOR  
SUSTAINABLE  
ENERGY  
CONVERSION  
SOLUTIONS**

# WE'RE DRIVING GROWTH, INNOVATION AND EXPANSION

## OPPORTUNITY

Meet the global need for carbon reduction and greenhouse gas reduction with patented renewable waste-to-energy, biomass, hydrogen production, solar and carbon-capture solutions

## INNOVATION

Provide best-in-class environmental technologies across a broad array of markets to meet growing environmental regulations and climate goals

## GROWTH

Leverage tailwinds created by government tax incentives and global climate investment strategies to drive sales of innovative energy transition technologies and services

## EXPANSION

Utilize experienced sales, service and business development teams in key international regions to serve the growing renewable, environmental and thermal markets



CORE GROWTH STRATEGIES FOCUSED ON DRIVING INNOVATIVE ENVIRONMENTAL, RENEWABLE AND ENERGY TRANSITION TECHNOLOGIES, GROWING AFTERMARKET SALES BY LEVERAGING THE INSTALLED BASE, AND EXPANDING INTERNATIONALLY IN KEY REGIONS

# WE'RE LEVERAGING A VAST INSTALLED BASE AND PROVEN TECHNOLOGIES



- ▶ More than 500 waste-to-energy and biomass-to-energy units at 300+ facilities globally
- ▶ Serving utility, waste management, municipality and investment firm customers
- ▶ Extensive expertise in managing and executing both utility-scale and community solar projects



- ▶ Large worldwide installed base of wet and dry scrubbers for SO<sub>x</sub> reduction, particulate control equipment, NO<sub>x</sub> reduction technologies, and mercury control systems to meet environmental regulations
- ▶ Flue gas pre-treatment technologies for use with CO<sub>2</sub> capture
- ▶ Nearly 2,000 wet, dry and hybrid cooling system units (10,000+ cells) installed globally

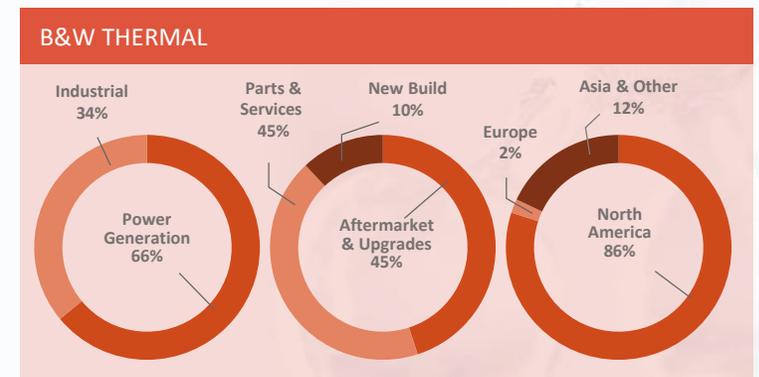
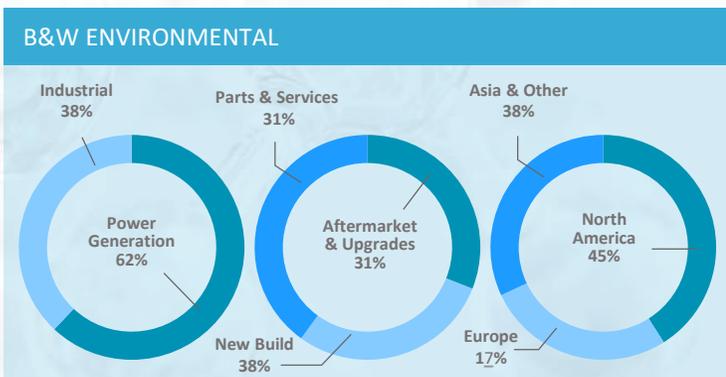
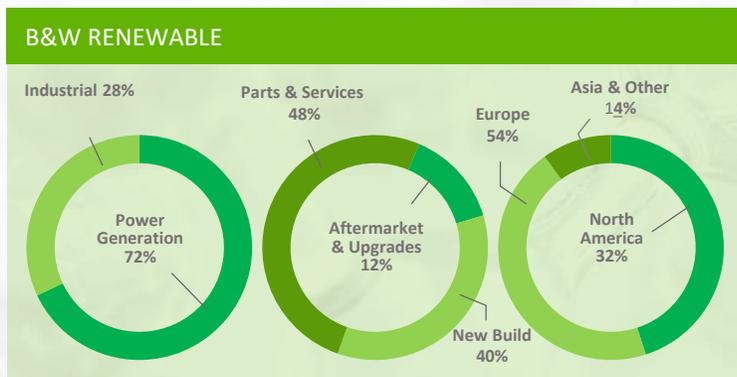
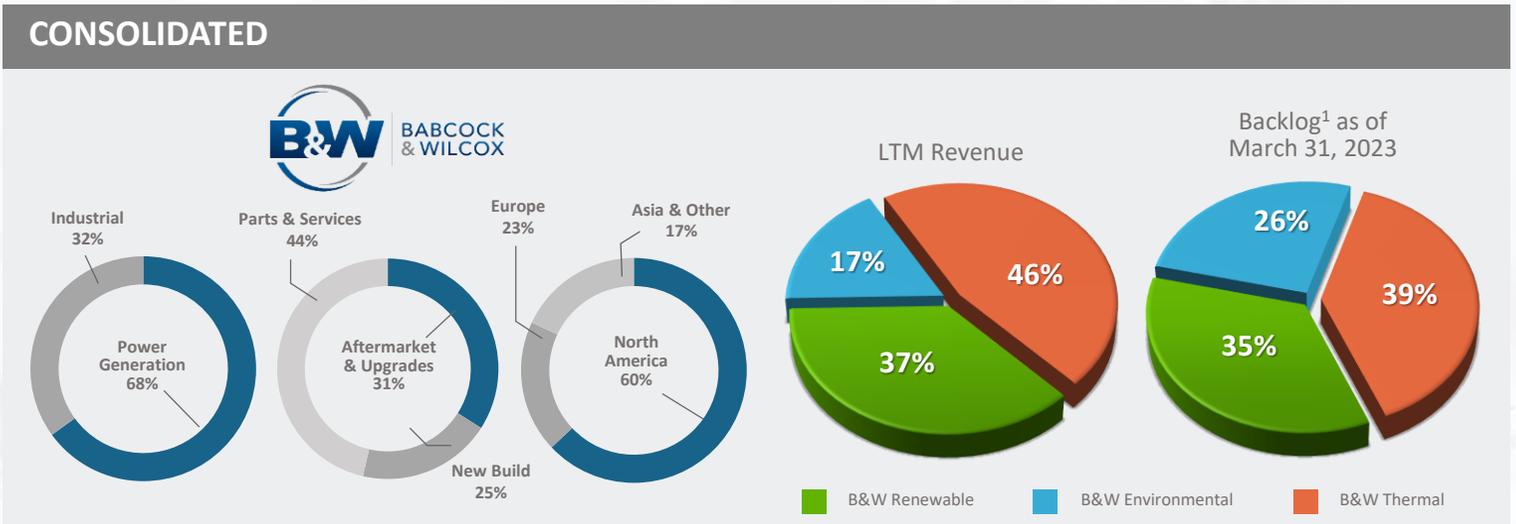


- ▶ More than 300 operating utility and industrial boiler units in the U.S. and nearly 200 operating utility and industrial boiler units across 38 countries outside of North America (excluding waste-to-energy and biomass)
- ▶ More than 5,000 industrial water-tube package boilers and other waste heat recovery products installed in a variety of facilities, including refining, petrochemical, food processing, metals and mining, carbon black and wood products

**A VAST GLOBAL INSTALLATION OF B&W'S CORE TECHNOLOGIES AT UTILITY AND INDUSTRIAL PLANTS, RENEWABLE PLANTS AND PULP & PAPER FACILITIES CREATE A LARGE GROWTH OPPORTUNITY FOR PARTS, SERVICES AND RETROFITS**

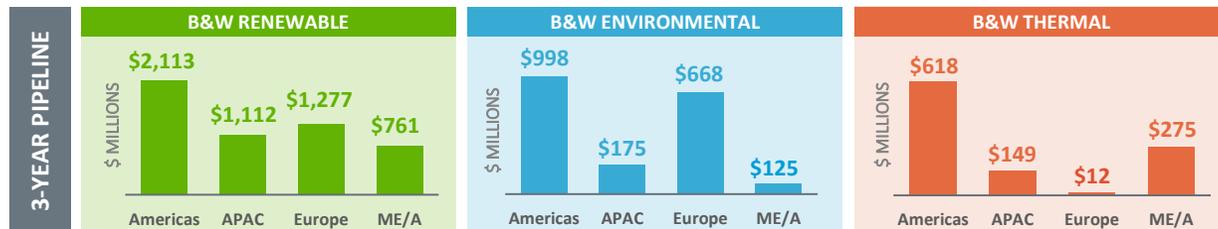
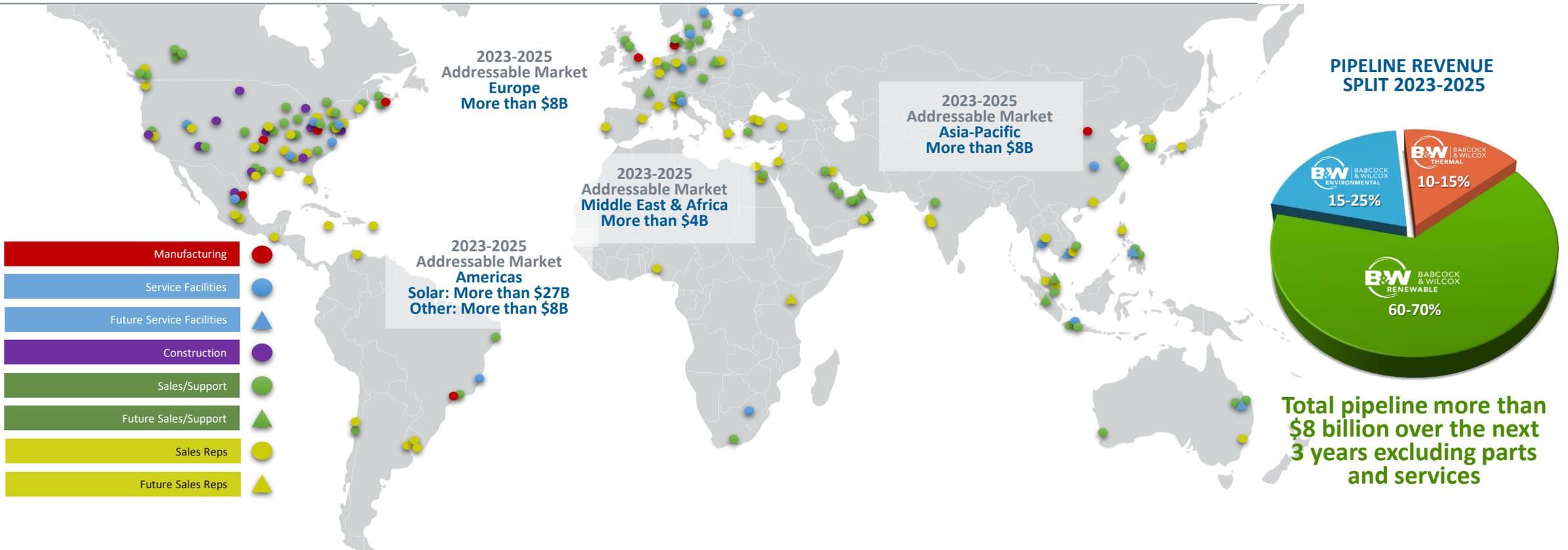
# BABCOCK & WILCOX PROFILE

CORPORATE SNAPSHOT	
Headquarters:	Akron OH, USA
Founded:	1867
Ownership:	Public (NYSE:BW)
Employees:	~2300
LTM Revenue March 2023:	~\$943M
LTM Adjusted EBITDA:	\$74.5M
2023 EBITDA Target:	\$100M to \$120M <sup>2</sup>



Notes: All charts based on LTM March 31, 2023 revenues, unless otherwise noted. 1. Backlog does not include shorter lead-time parts and services. 2. The most comparable GAAP target is not available without unreasonable effort.  
 Disclaimer: B&W Enterprises cautions not to place undue reliance on any forward-looking statements, which speak only as of the date of this presentation and may be impacted by the risks described in our SEC reports including, without limitation, the impact of COVID-19 on us and the capital markets and global economic climate generally. We undertake no obligation to update or revise any forward-looking statement, except to the extent required by applicable law.

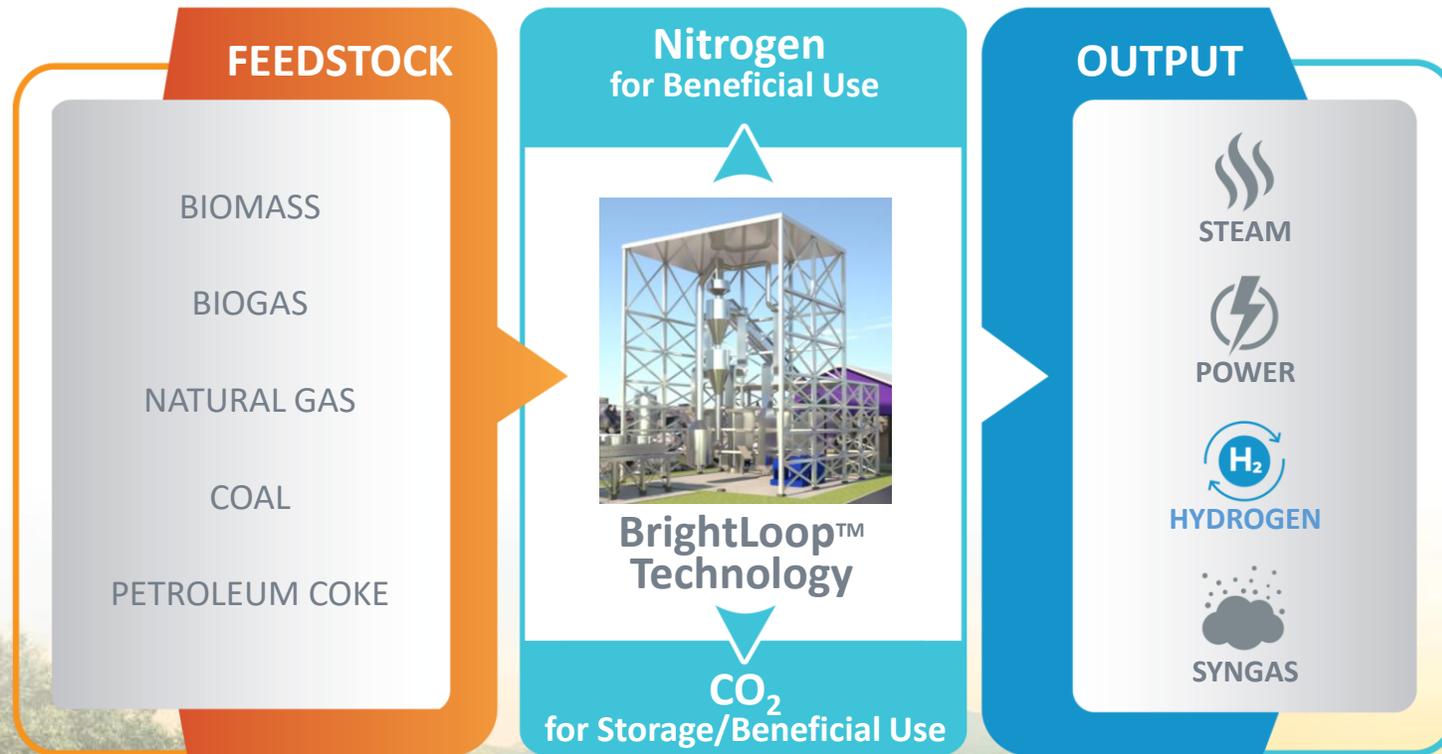
# A SOLID PIPELINE OF GLOBAL OPPORTUNITIES



## A WIDE FOOTPRINT AND ONGOING EXPANSION POSITIONS B&W TO LEVERAGE MARKET TRENDS AROUND THE WORLD

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# BRIGHTLOOP™ HYDROGEN PRODUCTION



## SOLID ADVANTAGES:

- **Hydrogen from solid fuels** – can utilize a variety of solid or gaseous fuels as feedstock
- **High rate of carbon captured** – inherent CO<sub>2</sub> isolation without the need for expensive carbon capture equipment
- **Competitive hydrogen cost** – lower levelized cost of hydrogen when compared to other hydrogen production methods
- **Scalable for a range of applications** – accommodates both large and small applications

# BRIGHTLOOP™ HYDROGEN PRODUCTION PROGRESS

## BRIGHTLOOP™ EVOLUTION

### COMPLETED



Laboratory Scale

RESEARCH STAGE

1994 - 2004



Sub-Pilot with  
The Ohio State University  
and B&W  
25 Kilowatts Thermal

SUB-PILOT SCALE

2008



Steam & Hydrogen  
25 Kilowatts Thermal

(National Carbon Capture  
Center in Alabama)

PILOT SCALE

2014

### IN PROGRESS



INDUSTRIAL COMMERCIAL

2.5 to 25 Megawatts Thermal  
1.5 to 15 Tons Per Day  
Hydrogen Output

2025



UTILITY COMMERCIAL

100 to 550 Megawatts Thermal  
60 to 320 Tons Per Day  
Hydrogen Output

2028

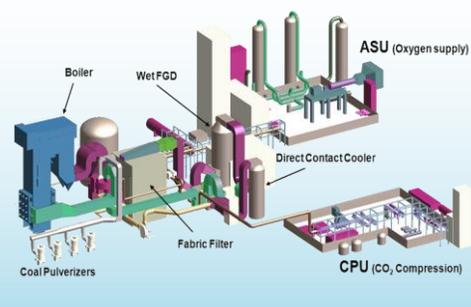
# GLOBAL LEADER IN CLEAN POWER PRODUCTION TECHNOLOGIES — OUR CLIMATEBRIGHT™ SUITE

## EMERGING TECHNOLOGIES

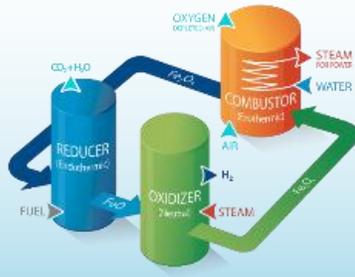
**SolveBright™**  
POST-COMBUSTION CARBON CAPTURE



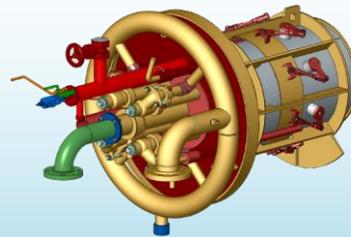
**OxyBright™**  
OXYGEN-FUEL COMBUSTION



**BrightLoop™**  
HYDROGEN PRODUCTION



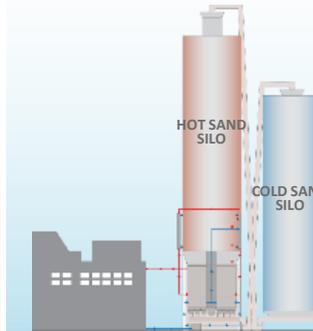
**BrightGen™**  
HYDROGEN COMBUSTION



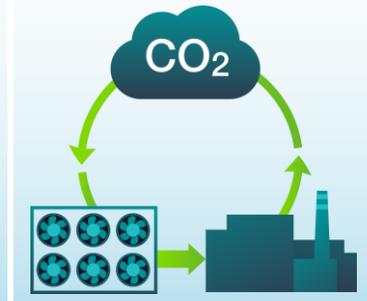
**Long Duration Energy Storage**



**Green Steam**



**Direct Air Capture**



- B&W is at the forefront of developing CO<sub>2</sub> capturing technologies
- Multiple technologies ready for commercial demonstration
- 93 active patents related to carbon capture technology
- Positioned to provide critical solutions to meet global climate goals

**B&W'S PORTFOLIO OF CLEAN POWER PRODUCTION SOLUTIONS CONTINUES TO EVOLVE TO REACH CUSTOMERS AT ALL STAGES OF THEIR ENERGY TRANSITION.**

# GLOBAL LEADER IN COMPREHENSIVE WASTE-TO-ENERGY SOLUTIONS



On-line boiler washing system

DynaFeeder® waste fuel feeder system

VoluMix® system for improved combustion

DynaGrate® combustion grate  
DynaDischarger® ash removal

Energy storage systems

Dry cooling systems

Selective non-catalytic reduction (SNCR) NO<sub>x</sub> control

Fabric filter baghouse

Wet scrubber with ADIOX® including energy recovery

Carbon capture solutions

Water-cooled wear zones and Inconel® corrosion protection



# BIOENERGY WITH CARBON CAPTURE AND SEQUESTRATION (BECCS)

OxyBright with B&W's biomass-fired BFB boiler produces carbon negative electricity with a **-2,500gCO<sub>2</sub>e/kWh carbon intensity**

OxyBright with B&W's WtE solution could produce carbon negative electricity with a **-1,000 gCO<sub>2</sub>e/kWh carbon intensity**

Our negative carbon intensity (-2500 gCO<sub>2</sub>e/kWh) is **nearly seven times more negative than the US grid is positive (+373 gCO<sub>2</sub>e/kWh)**



# B&W'S WASTE-TO-ENERGY TECHNOLOGY REDUCES METHANE EMISSIONS



- Methane has **84 times** the Global Warming Potential (GWP) of CO<sub>2</sub><sup>i</sup>
- **Annual additions to landfills** in the U.S.<sup>ii</sup> produce emissions equivalent to **10 million cars**
- **Landfills in the U.S.**<sup>iii</sup> emit more than 330 million tons of 20-year basis GWP each year, roughly equal to **70 million cars**<sup>iv</sup>
- Waste-to-Energy (WTE) avoids landfilling while producing **baseload clean energy**

- **B&W's state-of-the-art technology** has been installed in more than 500 units in more than 30 countries, including:
  - The most recent WTE facility in the U.S. (Palm Beach Renewable Energy Facility, Florida)
  - One of the world's largest waste treatment facilities in the world (Shenzhen East, China)



## WTE TECHNOLOGIES

- Boiler/steam generation island
- DynaGrate® combustion grate
- Fuel handling systems
- Emissions control equipment

1 ton of waste in a **LANDFILL** emits **3.42 metric tons** of global warming potential



1 ton of waste in a **WASTE-TO-ENERGY FACILITY** emits **.001 metric tons** of global warming potential



Landfill methane is **84 times** as potent as CO<sub>2</sub>.

Reduced to **.03%** of Landfill GWP

## B&W IS ACTIVELY DEPLOYING TECHNOLOGY THAT CURBS THE GLOBAL WARMING IMPACT OF METHANE

<sup>i</sup> Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. [https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5\\_Chapter08\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf); 20-year basis

<sup>ii</sup> EIA Biomass Explained: Waste-to-energy (Municipal Solid Waste), November 29, 2020 <https://www.eia.gov/energyexplained/biomass/waste-to-energy.php>

<sup>iii</sup> EPA Landfill Methane Outreach Program: Project and Landfill Data by State; <https://www.epa.gov/mop/project-and-landfill-data-state#:~:text=The%20MOP%20Landfill%20and%20Landfill,more%20than%202%2C600%20MSW%20landfills> and EPA U.S. Greenhouse Gas Inventory 2020, Chapter 7: Waste, Section 7.1 Landfills (CRF Source Category 5A1)

<sup>iv</sup> Equivalent car emissions calculated using EPA metric of 4.6 metric tons of CO<sub>2</sub> per year per passenger car



# FINANCIAL INFORMATION

# CONSOLIDATED FINANCIAL SUMMARY

(\$ in millions)	Twelve Months Ended <u>March 31, 2023</u>	Twelve Months Ended <u>December 31, 2022</u>	Twelve Months Ended <u>December 31, 2021</u>
Revenue	\$ 942.8	\$ 889.8	\$ 723.4
Operating Income (loss)	\$ 3.9	\$ (4.2)	\$ 20.8
Net Income (loss)	\$ (30.3)	\$ (26.6)	\$ 31.5
Net income (loss) attributable to stockholders of common stock	\$ (42)	\$ (37.7)	\$ 21.8
Adjusted EBITDA	\$ 74.5	\$ 72.4	\$ 70.6
Adjusted EBITDA Margin %	7.9%	8.1%	9.8%

Note: 2020 Reported results include the recognition in Q3 2020 of a \$26.0 million non-recurring loss recovery settlement related to certain historical EPC loss contracts; figures may not be clerically accurate due to rounding; see SEC financial filings and/or slides in Appendix for reconciliation of non-GAAP measures; COVID-19 adversely impacted all segments in 2020 and 2021.

# CAPITAL STRUCTURE

(\$ in millions)

As of March 31, 2023

## CAPITALIZATION:

<b>Total Debt</b>	<b>\$</b>	<b>351.7</b>
Cash, cash equivalents and restricted cash		91.1
<b>Net Debt</b>	<b>\$</b>	<b>260.6</b>

## TOTAL DEBT LEVERAGE:

LTM 3/31/2023 Adjusted EBITDA <sup>(1)</sup>		74.5
Net Leverage <sup>(2)</sup>		3.5x

Note: Figures may not be clerically accurate due to rounding.

(1) See SEC financial filings and/or slides in Appendix for reconciliation of non-GAAP measures.

(2) Net Debt compared to LTM 3/31/2023 Adjusted EBITDA.





# APPENDIX

# LEADERSHIP TEAM



**Chairman and  
Chief Executive Officer**

Kenny Young



**Executive Vice President  
and Chief Financial Officer**

Lou Salamone



**Executive Vice President and  
Chief Operating Officer**

Jimmy B. Morgan



**Executive Vice President,  
General Counsel and  
Corporate Secretary**

John J. Dziewisz



**Chief Strategy and  
Technology Officer**

Brandy Johnson



**Vice President,  
Corporate Operations**

Gillianne Hetrick



**Senior Vice President,  
Clean Energy**

Joe Buckler



**Senior Vice President,  
Thermal**

Chris Riker



**Vice President,  
Corporate Development**

Sarah Serafin

# CORPORATE GOVERNANCE

## BOARD OF DIRECTORS



**Chairman and  
Chief Executive Officer**

Kenny Young



Henry Bartoli



Joseph Tato



Rebecca Stahl



Alan Howe



Philip Moeller

## ADVISORY BOARD



Homaira Akbari



Rod O'Connor



Peter O'Keefe



Phillip Piddington



Eric Powell

# ADJUSTED EBITDA RECONCILIATION <sup>(1)</sup>

(\$ in millions)	Twelve Months Ended March 31, 2023 <sup>(4)</sup>	Twelve Months Ended December 31, 2022 <sup>(3)</sup>	Twelve Months Ended Dec 31, 2021	
<b>Net income (loss)</b>	<b>\$ (30.4)</b>	<b>\$ (26.6)</b>	<b>\$31.5</b>	1) Adjusted EBITDA is a non-GAAP Measure; figures may not be clerically accurate due to rounding.
Interest expense	52.9	50.8	41.4	
Income tax (benefit) expense	10.3	11.0	(2.2)	2) Cost associated with development of commercially viable products that are ready to go to market.
Depreciation & amortization	23.2	24.0	18.3	
<b>EBITDA</b>	<b>56.0</b>	<b>59.2</b>	<b>89.0</b>	3) Adjusted EBITDA for the twelve months ended December 31, 2022 include a \$7.0 million non-recurring gain on sale related to development rights of a future solar project that was sold.
Goodwill impairment	7.2	7.2	—	
Benefit plans, net	(30.0)	(37.5)	(48.1)	
Gain on sales, net	(1.6)	(2.6)	(14.0)	
(Gain) loss on debt extinguishment	—	—	(6.5)	4) Adjusted EBITDA for the twelve months ended March 31, 2023 include a \$7.0 million non-recurring gain on sale related to development rights of a future solar project that was sold.
Stock compensation	10.6	8.7	10.5	
Restructuring activities and business services transition costs	6.7	8.5	10.7	
Advisory fees for settlement costs and liquidity planning	1.0	1.5	5.5	
Litigation legal costs	5.2	10.7	4.9	
Acquisition pursuit and related costs	4.8	5.5	4.8	
Contract Disposal (O&M)	4.0	3.0	—	
Product development <sup>(2)</sup>	4.6	4.1	4.7	
Foreign exchange	4.1	0.6	4.3	
Financial advisory services	1.4	1.4	2.7	
Contract step-up purchase price adjustment	—	1.7	—	
Loss from business held for sale	—	—	0.5	
Other – net	0.5	0.4	1.6	
Income from discontinued operations	—	—	—	
<b>Adjusted EBITDA</b>	<b>\$74.5</b>	<b>\$72.4</b>	<b>\$70.6</b>	



# KEY TECHNOLOGIES AND CAPABILITIES

# KEY TECHNOLOGIES: STEAM GENERATION



## Utility Boilers

High pressure, high efficiency, high capacity, low emissions

Fuel: Coal, oil, natural gas, multi-fuel



## Natural Gas-Fired and Other Industrial Water-Tube and Fire-Tube Boilers

Bottom- or top-supported, shop- or field-assembled

Fuel: Natural gas, oil, CO, waste heat and gases



## Heat Recovery Steam Generator Components

Pressure parts, casing, ducting, drums, housing and frames

Fuel: Waste heat and gases



## Waste-to-Energy Boilers

Reduces dependency on landfills and reduces methane gas emissions

Fuel: MSW, RDF



## Biomass-Fired Boilers

Carbon-neutral technology

Fuel: Wood, wood waste, straw, sludge



## Process Recovery Boilers

Single-drum, industry-standard unit for improved mill operation

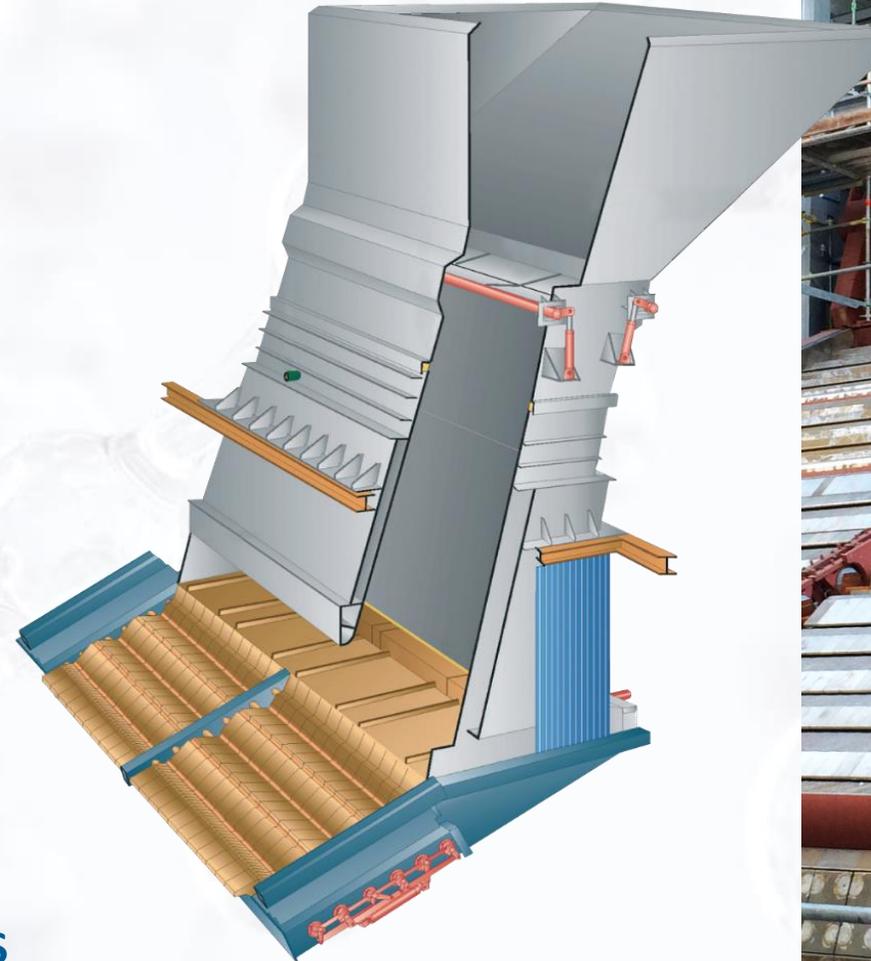
Fuel: Black liquor

# KEY TECHNOLOGIES: RENEWABLE COMBUSTION GRATES

## DYNAGRATE® COMBUSTION GRATE

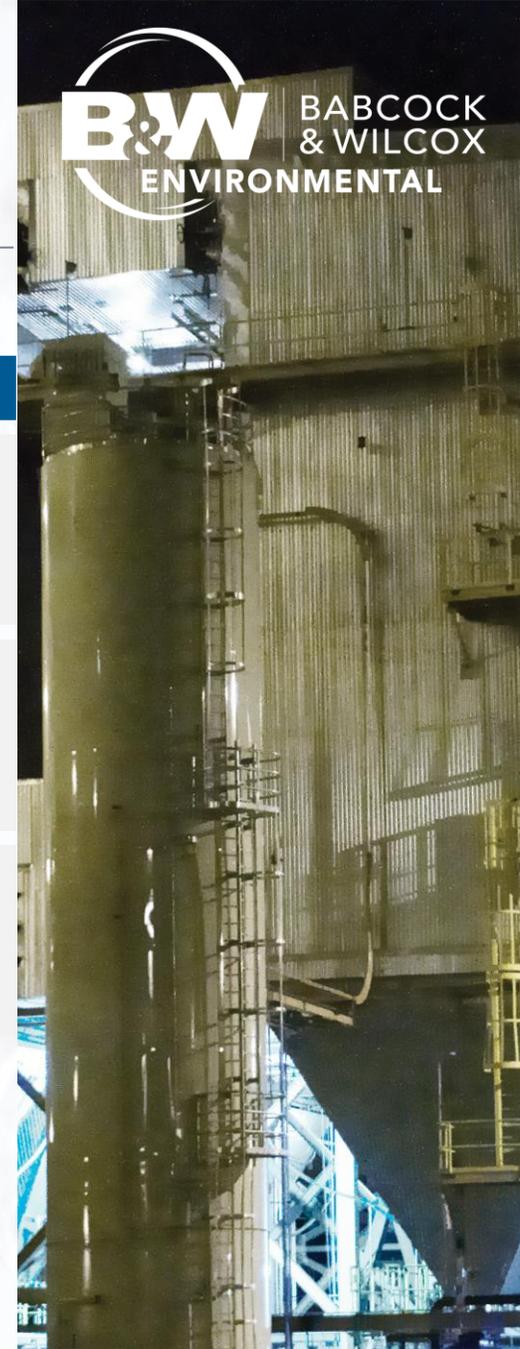
- Large installed base with diverse set of customers
- Grate design allows for high availability and long operational time, leading to reduced O&M cost
- High thermal efficiency and low emissions
- Fuel flexibility
- Factory assembled modules reduce field construction

**A MARKET LEADER WITH DIFFERENTIATING  
TECHNOLOGY IN WASTE-TO-ENERGY SOLUTIONS**



# KEY TECHNOLOGIES: EMISSIONS CONTROLS

PURPOSE	TECHNOLOGY SOLUTION	PURPOSE	TECHNOLOGY SOLUTION
<b>Particulate Control</b>	<ul style="list-style-type: none"> <li>• Pulse Jet Fabric Filters (PJFF) / Baghouses</li> <li>• Wet and Dry Electrostatic Precipitators (ESPs)</li> <li>• Wet Particulate Scrubbers</li> <li>• Multiclone® Dust Collectors</li> </ul>	<b>Mercury, Dioxins, Furans</b>	<ul style="list-style-type: none"> <li>• Powdered Activated Carbon Injection</li> <li>• Absorption Plus™, MercPlus™, Mitagent™ Additives</li> <li>• GMAB™ ADIOX® and MERCOX™ technologies</li> </ul>
<b>NO<sub>x</sub> Control</b>	<ul style="list-style-type: none"> <li>• Selective Catalytic and Non-catalytic Reduction (SCR/SNCR)</li> <li>• Low NO<sub>x</sub> Burners and Combustion Systems</li> </ul>	<b>Wastewater Elimination</b>	<ul style="list-style-type: none"> <li>• Wastewater Evaporation System (WES) via Spray Drying</li> <li>• Air-Cooled Condensers</li> </ul>
<b>SO<sub>2</sub> / Acid Gas Control</b>	<ul style="list-style-type: none"> <li>• Wet or Seawater Flue Gas Desulfurization (FGD) Systems</li> <li>• Semi-dry FGDs (Spray Dry Absorbers, Circulating Dry Scrubbers)</li> <li>• Wet ESPs and Dry Sorbent Injection (DSI)</li> </ul>	<b>Pre-treatment for Post-Combustion Carbon Capture</b>	<ul style="list-style-type: none"> <li>• Wet and Dry Scrubbers, Sorbent Injection, ESP Fabric Filters, SCRs</li> <li>• Complements SolveBright process, other post-combustion technologies</li> </ul>
<b>SO<sub>3</sub> / Acid Mist Control</b>	<ul style="list-style-type: none"> <li>• Wet ESPs</li> <li>• Dry Sorbent Injection (DSI)</li> </ul>		



# KEY TECHNOLOGIES: FLUE GAS TREATMENT FOR CARBON CAPTURE

- To optimize carbon capture on solvent-based scrubbing technologies, reductions in various pollutants found in the incoming flue gas are required
- Our solutions include technologies for acid gases, particulate and acid mist, NO<sub>x</sub>, mercury, and flue gas moisture



**THE WORLDWIDE LEADER IN FLUE GAS PRE-TREATMENT TECHNOLOGIES FOR POST-COMBUSTION CARBON CAPTURE**

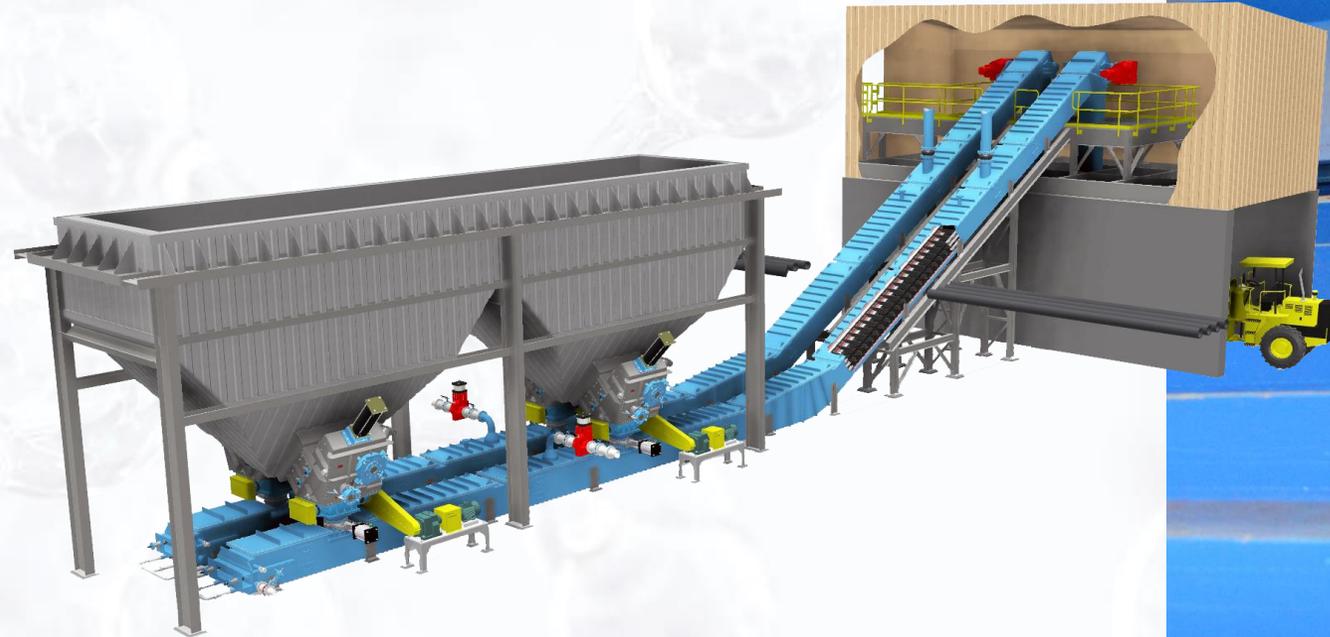


 <b>300+</b> Wet Scrubber Installations	 <b>90+</b> Dry Scrubber Installations
 <b>260+</b> Wet ESP Installations	 <b>490+</b> Dry ESP Installations
 <b>35+</b> Flue Gas Condensation Installations	 <b>1000+</b> Fabric Filter Installations
 <b>100+</b> SCR Installations	 <b>35+</b> Sorbent Injection Installations

# KEY TECHNOLOGIES: SUBMERGED GRIND CONVEYOR ASH HANDLING

Designated to meet current and future U.S. regulatory requirements for ash handling with:

- Lower equipment cost
- Lower installation cost
- Ability to utilize existing hoppers and gate valves
- No hopper modifications
- Short outage time
- Short lead time
- Available redundancy under the boiler
- Lower O&M costs



**AN INNOVATIVE SOLUTION TO ELIMINATE ASH PONDS**

# KEY TECHNOLOGIES: COOLING SYSTEMS

WET



## NATURAL DRAFT/HYPERBOLIC

Fanless design provides low power, noise and maintenance, as well as long operating lifecycle



## MECHANICAL DRAFT

Counterflow for cost-effective thermal performance; crossflow for low energy consumption and operating costs

### MATERIAL OPTIONS:

WOOD | CONCRETE | FIBER-REINFORCED POLYMER (FRP)

DRY



## AIR-COOLED CONDENSERS

Water preservation technology customized for high-performance, long-life, low noise, corrosion-resistant applications



## AIR FIN COOLERS

Cost-effective designs using embedded or wrapped tubes to meet required thermal, mechanical, noise, and space requirements



## OPTIMIZATION SERVICES

Specialized services to maximize plant performance and minimize costs and maintenance

# KEY CAPABILITIES: GLOBAL PARTS & SERVICE

## UPGRADES & RETROFITS

**Maintaining/improving plant operation:**  
Projects for extending the life of power, process and environmental equipment

## REPLACEMENT PARTS

**Supplying components for system reliability:**  
High-quality standard or custom-engineered pressure and non-pressure parts

## OPTIMIZATION SYSTEMS

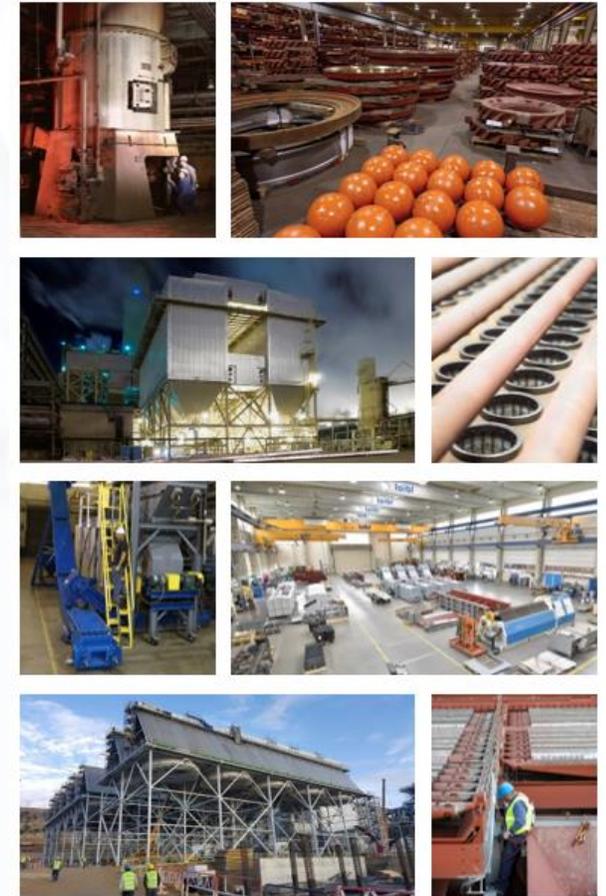
**Enhancing efficiency with proven technology:**  
Diagnostic, monitoring, tuning and control systems for combustion, cleaning and cooling equipment

## ENGINEERING SERVICES

**Evaluating options for improved performance:**  
Expert people, tools and processes to measure, model, design, deliver, train, and project manage

## CONSTRUCTION

**Adding value through constructability:**  
Safe execution of new installation, retrofits, system maintenance/repair, plant modifications

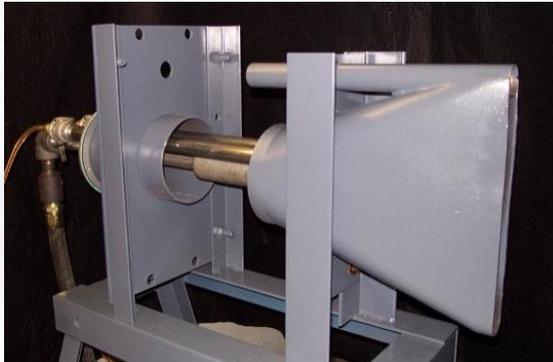


# KEY TECHNOLOGIES: IGNITORS, FLAME SCANNERS AND CONTROLS

## Designed for safety, reliability and fuel flexibility

- Natural gas conversions from oil- or coal-firing
- Alternative energy fuels such as hydrogen, bio-diesel, methanol, and bio-gas
- Burner management and controls for complete turnkey system capability
- Flame scanning capability can be effectively implemented on any industrial application
- Technologies can be utilized for new construction or retrofit projects
- Safety standards conforming to National Fire Protection Association (NFPA) classes

**PROVEN TECHNOLOGIES WITH INSTALLATIONS IN MORE THAN 70 COUNTRIES, INCLUDING MORE THAN 11,000 IGNITORS**



# KEY CAPABILITIES: SOLAR INSTALLATION

## ENGINEERING AND PROCUREMENT

- Project Cost Analysis
- Grid Integration and Interconnection
- Technical Evaluation
- Push-Pull Testing
- AC and DC Engineering
- Permitting and AHJ Permissions
- Logistics
- Strategic Procurement of Structural Components and Electrical BOE

## BENEFITS OF A SOLAR ADDITION:

1. Powering up/down operations
2. Supplemental/plant energy source
3. Additional MW/GW output

## INDUSTRY-LEADING EPC SERVICES



**High efficiency. Low emissions.  
Integrated solutions for clean power production.**

## CONSTRUCTION

- Subcontractor Management
- On-Site Construction Management
- Coordination and Supervision of Projects
- Utility Interconnections
- Quality and Commissioning Control
- Electrical and Structural QA/QC
- BOE





BABCOCK  
& WILCOX