

ADVANCED RECYCLING EQUIPMENT, INC.

CHALLENGER®

YOUR SOLUTION TO...
RIISING FOSSIL FUEL COSTS
THROUGH BIOMASS ENERGY



Thermal Combustion Systems

CHALLENGER® are capable of burning a variety of biomass materials to produce clean, hot combustion gases for energy recovery through Hot Air, Hot Water, Steam and Cogeneration. CHALLENGER® Thermal Combustion Systems offer the most advanced controls, full automation, and the most rugged interior, designed to ensure the longest life. Not to mention, CHALLENGER® is the cleanest burning system on the market today.

www.advancedrecyclingequip.com



The Solution to ^{Plant} Heating Needs

CHALLENGER® Thermal Combustion Systems strengthen your bottom line by reducing, or even eliminating, your energy and disposal costs altogether, through the combustion of renewable fuel sources, also known as Biomass.

What is Biomass?

By definition, Biomass is carbon-based organic matter that is available on a renewable basis. Common forms of Biomass include wood and wood waste, forest and mill residue, agricultural crops, fast-growing trees and plants, and industrial waste.

Why Biomass?

Fossil fuel costs are at an all-time high, without any relief in sight, making renewable energy the fuel source of the future.

Imagine being in control of your energy costs and not having to rely on a fuel source that is seemingly out of control and uncertain... CHALLENGER® Thermal Combustion Systems make that happen.

CHALLENGER® creates a totally green environment with zero negative effects on the environment by burning fuels that are organic.

Why CHALLENGER?

CHALLENGER® Thermal Combustion Systems have made Biomass a desirable alternative fuel source by completely automating the process and eliminating any undesirable emissions. This is why CHALLENGER® is the cleanest burning biomass combustion system on the market today.

Elimination of Biomass Emissions

Generally speaking, the combustion of biomass material produces emissions that can prove to be undesirable. CHALLENGER® has eliminated those potential undesirables through a proven system.

Advanced Recycling Equipment, Inc. manufactures its CHALLENGER® Thermal Combustion Systems with an extended burn chamber, increasing dwell time to 1.3 seconds for the combustion of any unwanted particulates and emissions before they are able to exit the system, making the process environment-friendly and much cleaner, which reduces maintenance time and costs.

Through the effective use of Primary, Secondary and Tertiary Combustion Air, CHALLENGER® is capable of burning material with 0-50% moisture content. In fact, the Primary Combustion Zone reaches

Applications:

- Greenhouse Operations
- Dry Kiln Operations
- Manufacturing/Industrial
- Sawmills
- Biomass Waste Recycling
- Agriculture
- Woodworking/Millwork
- General Facility Heating/Cooling
- Institutions, such as Correctional Facilities, Hospitals, and Schools



DESIGN FEATURES:



Automated Ash Removal

CHALLENGER® has the only effective self-cleaning Auto De-Ash System on the market today. Unlike other systems, CHALLENGER® requires no manual raking or rampdown/burndown. Our system removes the ash from the unit itself and automatically transfers it into self-contained ash bins. This allows for continual operation and eliminates costly downtime and unnecessary labor and operational costs. In addition, its hands-free operation, makes the system much safer.

Cast Refractory Ceramic Lining

All CHALLENGER® Combustion Units are equipped with high temperature, cast refractory ceramic lining for longer life. Its high insulating characteristics result in low external temperatures. In addition, this ceramic lining was designed to be completely modular, which makes for easy repair and replacement.



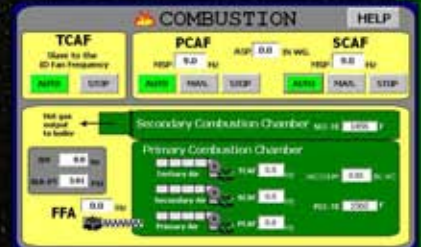
Fully-Automated Controls

The CHALLENGER® Control Panel is fully-automated and continually monitored via Programmable Logic Controller (PLC).

The air flows and fuel feed rates are constantly and automatically adjusted by way of variable frequency drives to ensure a close tolerance to the desired set point. Fuel feed motors, combustion fans, and the induced draft fan all run on variable frequency drives to ensure the proper mix of combustion air-to-fuel.

The unit adjusts itself automatically, according to load demand, with an infinite number of firing rates for maximum efficiency.

The Control System is also network/ethernet compatible, allowing for remote access, monitoring and troubleshooting by the customer and/or A.R.E. Technicians.



Storage and Material Handling

CHALLENGER® also integrates Storage and Material Handling into its systems, with 10-1,200 cubic yard capacities. This option allows for mixing of different fuel types, as well as direct truck unloading or manual loading.



Truck Unloading System



Walking Floor



Silo with Unloader



Live Auger Bottom Storage

COMBUSTION UNIT SPECIFICATIONS:

400 SERIES

Model No.	Length (ft)	Width (ft)	Height (ft)*
401	9.7	6	6
402	10.5		
403	11.3		
404	12.2		
405	13.0		
406	13.8		
407	14.7		
408	15.5		
409	16.3		
410	17.2		
411	18.0		
412	18.8		

*Extended Combustion Zone increases height by 3-ft.

Heating Output (MMBTU/Hr)

Fuel Heating Value (BTU/#)	8500	7500	6500	5500	4500
Approx. Moisture Content	5%	16%	27%	38%	50%
401	1.0	0.9	0.7	0.6	0.5
402	2.0	1.7	1.5	1.2	1.0
403	3.0	2.6	2.2	1.8	1.5
404	4.0	3.4	2.9	2.4	2.0
405	5.0	4.3	3.6	3.0	2.5
406	6.0	5.1	4.3	3.6	3.0
407	7.0	6.0	5.1	4.2	3.5
408	8.0	6.9	5.8	4.8	4.0
409	9.0	7.8	6.6	5.4	4.5
410	10.0	8.6	7.3	6.0	5.0
411	11.0	9.5	8.0	6.6	5.5
412	12.0	10.4	8.8	7.2	6.0

600 SERIES

Model No.	Length (ft)	Width (ft)	Height (ft)*
610	17.2	8	8
612	18.8		
614	20.5		
616	22.2		
618	23.8		
620	25.5		

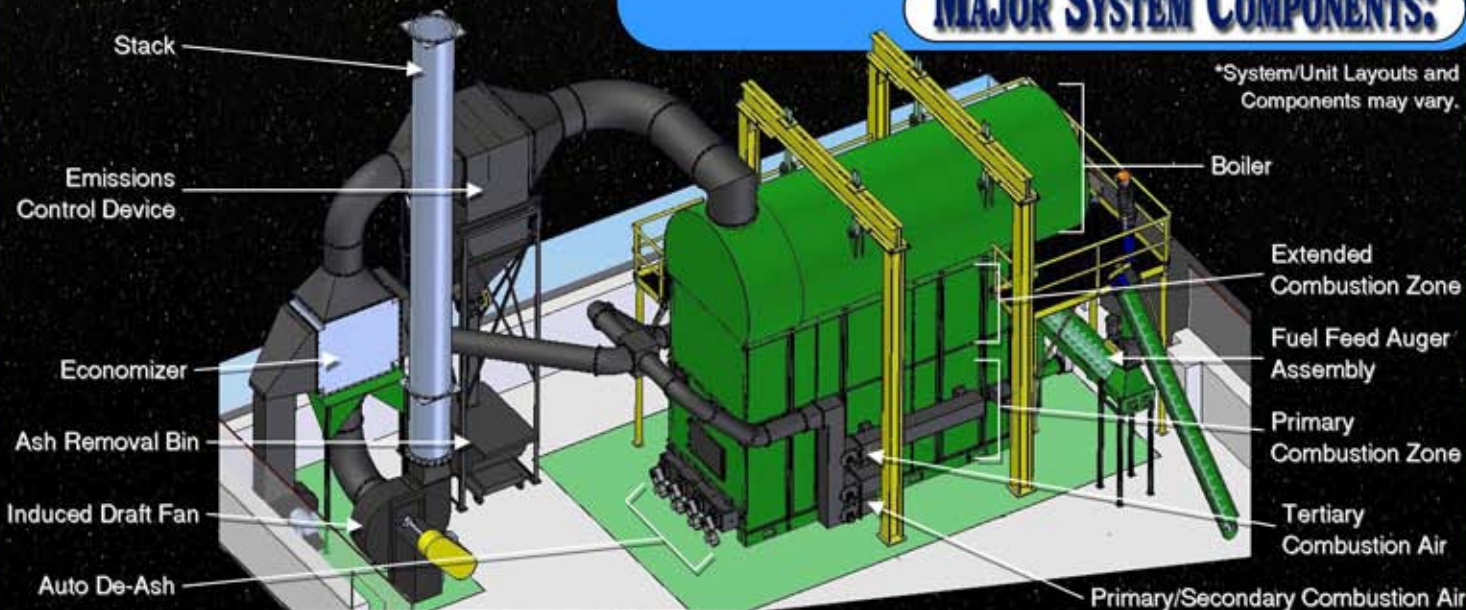
*Extended Combustion Zone increases height by 6-ft.

**All dimensions shown are outside of Firebox.

Heating Output (MMBTU/Hr)

Fuel Heating Value (BTU/#)	8500	7500	6500	5500	4500
610	17	15	13	11	9
612	20	18	16	13	11
614	24	21	18	15	13
616	27	24	21	18	14
618	30	27	23	20	16
620	34	30	26	22	18

MAJOR SYSTEM COMPONENTS:



ADVANCED RECYCLING EQUIPMENT, INC.

850 Washington Road - St. Marys, PA 15857

Ph. 814.834.4470 Fax 814.834.3483

Toll Free 800.611.6599

www.advancedrecyclingequip.com