

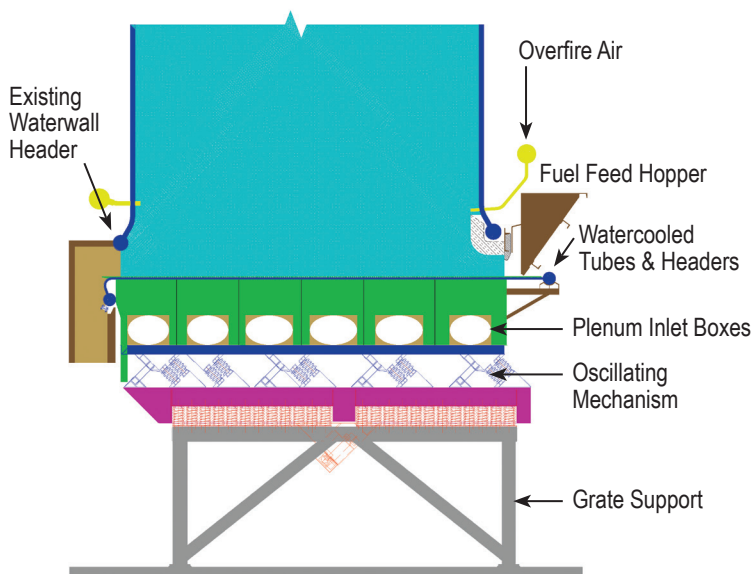


## TECHNICAL OVERVIEW

### Water Cooled Oscillating Grate for All Stoker Fuels

#### Overview

Riley Power Inc., a Babcock Power Inc. company, has been designing and manufacturing fuel burning systems for steam generators for over 95 years. Riley Power's Water Cooled Oscillating Grate (WCOG) is a new and innovative fuel firing system based upon a combination of Riley Power's proven technology and extensive experience in combustion grate systems, including stationary water cooled grates used for biomass, and traveling, spreader and oscillating grates used for coal and other unconventional fuels. When installed, the Water Cooled Oscillating Grate exceeds current market demands to burn less expensive Run-of-the-Mine coal, where available, in an environmentally responsible manner, providing the Owner/Operator with a continuing return on this investment by utilizing less power consumption, creating higher unit availability and lowering maintenance cost relative to other systems. The simple design allows for easy retrofit into existing operating systems.



Cross Section of WCOG

#### Features / Benefits

##### Lower Annual Fuel Cost

- Use of Run-of-the-Mine coal will significantly reduce your annual fuel bill
- Field tests have demonstrated good combustion with up to 30% "Waste Coal"
- Unconventional fuels can be burned successfully

##### Increased Unit Availability

- No "traveling" parts to cause mechanical failures
- Cooling water and combustion air provide dual cooling mediums for grate surfaces
- Extended Life
- Extending maintenance periods reduces expense
- Dual 1½ hp input motors can be changed, if necessary, while boiler is online – no outage needed
- Simple design extends the period between major overhauls

##### Improved Combustion

- Tight seal between the cooling tubes and grate bars allows the grate surface to burn higher volume of "Fines"
- Sealed and separated air zones allow flexibility in adjusting airflow to match fuel distribution
- Individual combustion zone dampers ensure proper air/fuel mixing in each zone



## TECHNICAL OVERVIEW

### Water Cooled Oscillating Grate for All Stoker Fuels

#### Features / Benefits (cont.)

##### Improved Operation

- Improved turn down ratio of 6:1 with stable flame
- Grate surface and air plenum are an integral unit that moves together to convey the fuel and ash bed to the discharge hopper
- Ash is automatically discharged from the grate during timed oscillating intervals
- Entire fuel and ash bed can be cleared from the grate surface in about 60 seconds, when necessary
- Automated grate operation can be tied to existing PLC control systems
- Small horsepower input motors, operating on selected intervals, reduces plant electrical consumption
- Low profile air plenum and siftings removal system provides ample access for maintenance
- Constant flow of cooling water provides sufficient protection for the grate surface when firing the boiler with auxiliary burners

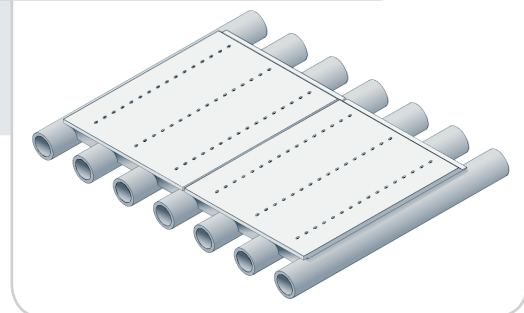
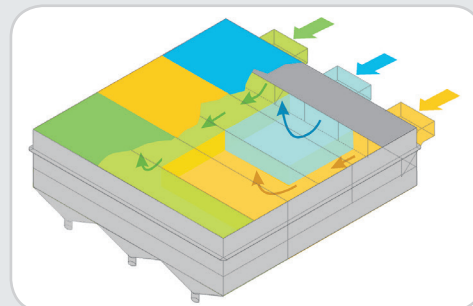
##### Eliminates Vibration to Boiler

- Grate is separately supported from its own structural steel, anchored to the basement floor, eliminating transmission of vibration to the boiler and power house

##### Cost Effective Retrofit

- Oscillating vertical flow technology does not require a sloped grate surface, so retrofits to stokers with horizontal grates can be made without pressure part modifications
- Grates can be provided either as a complete shop assembled module or broken down into multiple modules to accommodate areas with limited access
- No limitation on width or length, making the grate extremely versatile to fit any boiler
- Existing front or rear ash hoppers can be reused.

Air Plenum



Grate Bars

#### Safety<sup>3</sup>

People. Power. Projects. We're giving safety the third degree. Babcock Power Inc. and its subsidiaries place the safety, health and security of our people at the core of our company values. Our team is our most valuable resource, generating solutions everyday to deliver safe, clean, reliable energy globally. With a keen focus on safety, Babcock Power Inc. conducts business in a manner that protects our people, our customers and the environment. From innovation to generation, we are proud of our award-winning safety record and are committed to operating with integrity and excellence.

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