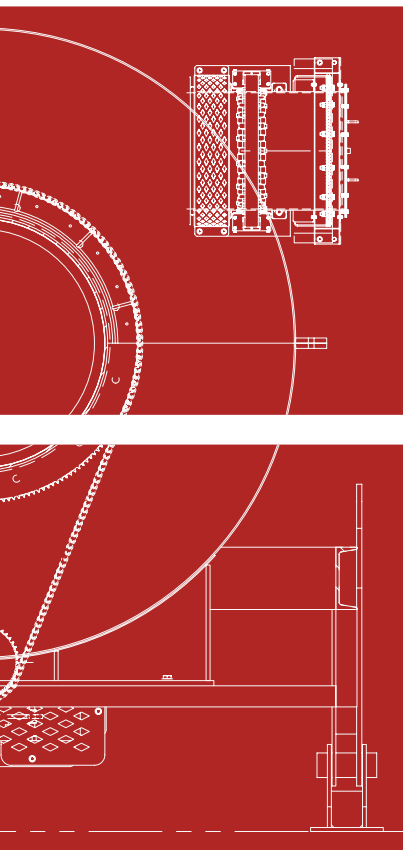


# Rotary Calciners

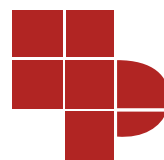
Heyl Patterson rotary calciners continuously process bulk materials at medium to high temperatures through an indirect heat source. Our calciners can be operated with gas-based, electricity-based, or steam-based heat sources and are designed to handle materials that are fine and dusty, oxidation sensitive, combustible, explosive, potentially contaminating, or thermally sensitive.

Features, such as independent temperature control through heat zones, adjustable retention time, an enclosed rotating shell, and integrated coolers make Heyl Patterson calciners ideal for efficiently processing materials in many industries. Whether processing chemicals, coals, metals, minerals, activated carbon, biomass, fly ash, or catalyst, our calciners provide complete separation of heat source and product through indirect heating in a controlled environment.

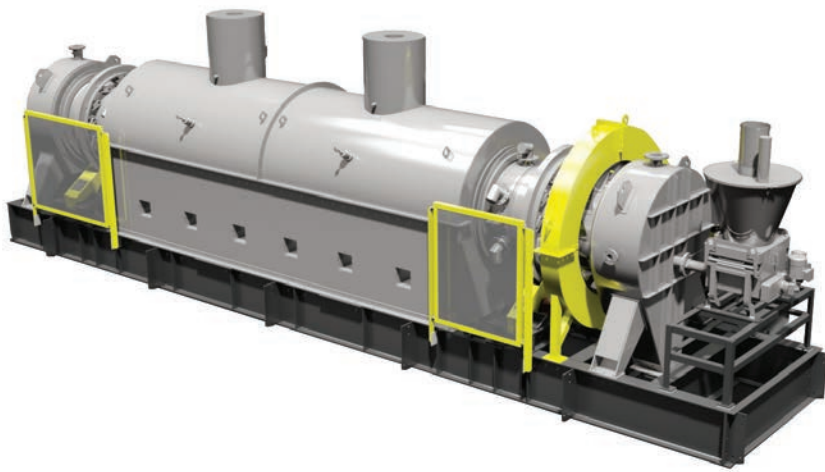


## Typical Industries & Applications:

- Alternative Fuels
- Biomass Conversion
- Catalysts
- Ceramics
- Chemicals
- Coals
- Fly Ash Beneficiation
- Glass
- Lithium Ore
- Mining & Minerals
- Plastics
- Pulp & Paper
- Precious Metals
- Waste Conversion



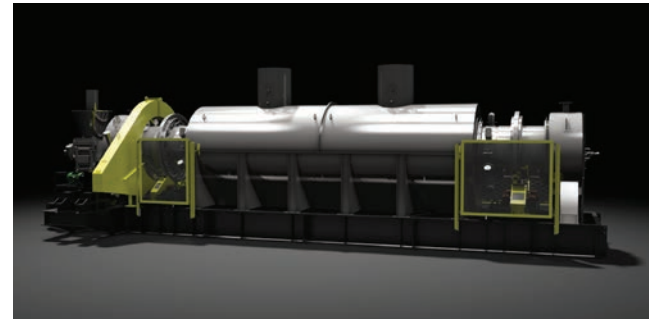
**HEYL PATTERSON**  
THERMAL PROCESSING



## Features & Benefits:

- Innovative seal designs for hazard mitigation
- Multiple heat zones provide independent control for temperature profiling such as ramp up, soak, & cool down
- Custom-designed internal shell components provide maximum heat and mass transfer
- Plug flow operation for product uniformity
- Adjustable retention time for precise temperature and moisture control
- Burners fire tangentially to eliminate localized overheating
- Accurate bed temperature control with wireless telemetry for improved processing

Heyl Patterson rotary calciners are available in designs from 4 inches to over 10 feet in diameter and lengths in excess of 100 feet.



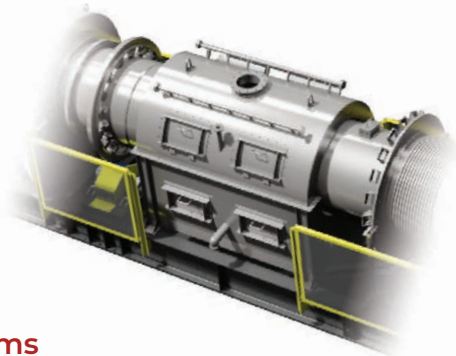
## Options:

### Rotary Seals

Various expandable and dust-tight rotary seal designs for special atmospheres and operation under positive or negative pressure. Gas-tight designs are used for high temperature hydrogen atmospheres.

### Integral Coolers

Indirect water-spray coolers can be integrated into the calciner to expedite cooling of the material prior to discharge.

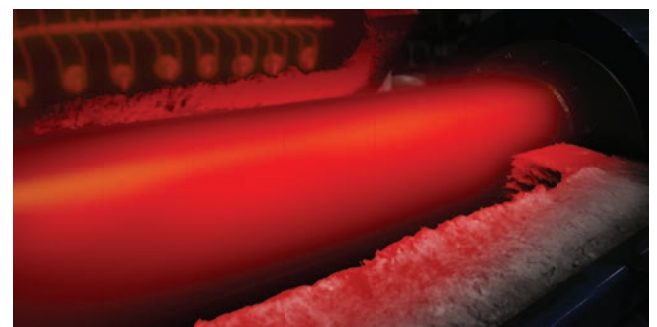


### Drive Systems

Adjust the slope and/or processing speed. Auxiliary & emergency drive systems are also available to ensure maximum uptime.

### High Temperature Designs

Special materials of construction and shell designs that withstand material temperatures of up to 2200° F (1200° C) are available.



### Burner & Temperature Systems

Recuperative or regenerative burner systems prevent overheating. Internal bed temperature measurement systems are available to provide exact temperature specifications.

### Automatic Lubrication Systems

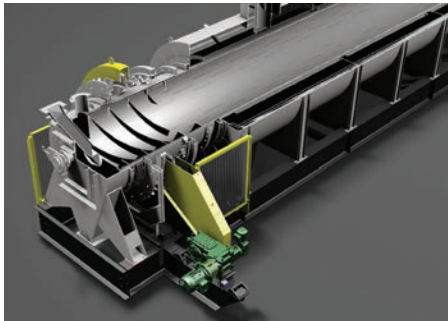
Automatic lubrication systems can be built into calciners for routine maintenance.



## Advantages of Indirect Heating:

With indirect heating, fine materials are easily processed without excessive product entrainment in the gas stream. Requirements for emission control or volatile recovery can be reduced. Inert, oxidizing, reducing, and dehumidifying process atmospheres can be maintained.

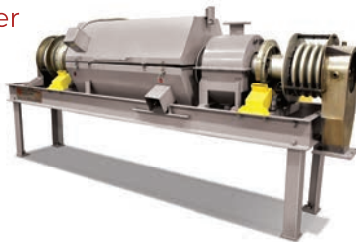
It also provides the capability for temperature profiling of the process and eliminates contamination from the furnace exhaust to the material being processed.



*Each Heyl Patterson calciner is designed for your specific application requirements and unique specifications.*

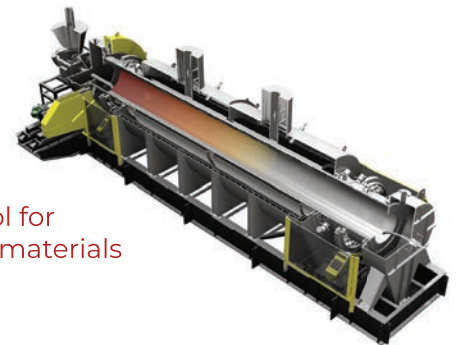
### Rotary Shell Features:

- Full penetration shell welds, and thickened shell plate at tire and drive support locations
- Single-piece or split-flanged design for easy removal of furnace shell section
- Custom-designed internal shell components for maximum heat and mass transfer
- Shell construction material selected to match process requirements



### Furnace Design Features:

- Completely pre-piped and pre-wired NFPA-approved combustion systems or pre-wired electrical heating elements
- Split and flanged furnace casing for easy access to the furnace interior
- Multiple heating zones provide tight temperature control for uniform heating of materials



## Complete Customization & Integrated Systems

From designs to handle specific process atmospheres and multiple heating zones for temperature profiling, to special materials of construction and automated PLC-based units, Heyl Patterson calciners are expertly designed for productivity, reliability, and profitability.

Heyl Patterson can provide complete systems including material feeding equipment and air pollution and emissions control equipment such as baghouses, scrubbers, cyclones, and thermal oxidizers.

## Engineering & Manufacturing

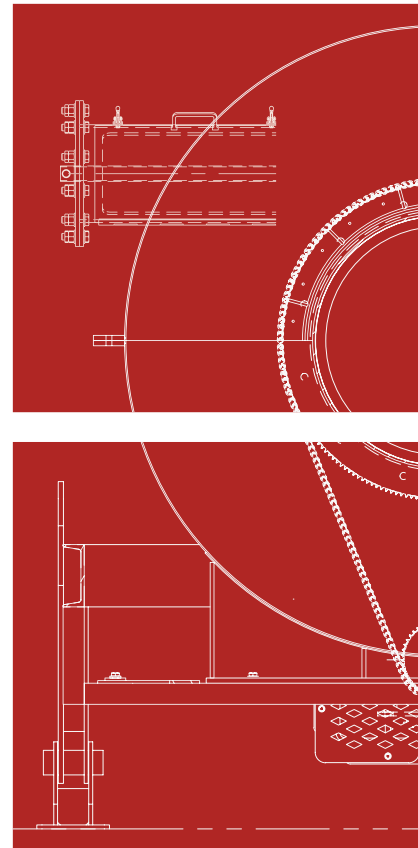
- Equipment designs are verified using Finite Element Analysis (FEA) to ensure trouble-free service and long life
- 3D equipment modeling
- State-of-the-art manufacturing facilities on 3 continents with robotic cutting and welding
- Manufacturing expertise working with mild steel, various grades of stainless steel, duplex steels and other exotic alloys for specialty applications
- Welders certified to ASME & AWS standards
- ISO 9001:2015 certified



## Lab Testing

Be confident that your drying and cooling equipment is efficient with CPEG's 15,000 ft<sup>2</sup> state-of-the-art test lab. With our lab, you have access to the most extensive testing capabilities in the industry. Multiple pieces of equipment can be combined for multistep and multistage testing to simulate field operation, validate new equipment designs, and provide complete process solutions. Combined with our full analysis of material characteristics and measurements of material behavior in specific processing applications, you are assured an efficient, reliable and safe solution, all backed by our process warranty.

Field testing with rental equipment is available when lab testing would not effectively simulate process operating environments.



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