ROTARY DRYING OVEN

THE ORIGINAL BURN OFF OVEN INVENTED HERE IN 1970

ace Since 1919
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The ACE ROTARY DRYING OVEN

MAXIMIZING YOUR SCRAP'S VALUE

ACE's new Rotary Drying Oven has one of the nation's ***fastest drying ovens*** for metal recovery without oxidation systems on the market today. Our energy efficient/low maintenance equipment has higher throughput and lower operating costs for quick pay-back. This simple operation provides continuous drying with minimal direct operator involvement, thus, reduced labor costs. Our new modular flexible equipment adapts to many processes and is the key to fast drying metal chips in a smaller footprint.

The process is performed inside an externally heated alloy stainless steel rotating retort. Rotation permits thorough mixing and tumbling the material automatically and continuously cranks out the clean, dry material at controlled temperatures by the speed of retort rotation.

ACE is your source for a modular equipment approach, which results in lower installation costs. This includes optional accessory modular input feeders and output feeder devices for various types of material to be processed. It demonstrates an innovative fast self-cleaning way to heat clean or dry brass, steel, stainless, aluminum, coated parts, chips, etc and put them back to work or recycle them. It is also used for reclaiming metals from contaminated metallic composites by means of controlled temperature de-oiling and drying.

PREPARE TO SELL YOUR SCRAP

Diligence in preparation by minimizing flame impingement on processed material to reduce oxidation pays off. Prepare scrap for selling it as you produce it. Clean scrap sells for far more than contaminated material. Scrap loses value if it is excessively contaminated with coatings, lubricants and cutting fluids.

ACE OFFERS SOLUTIONS FOR HEAT CLEANING

ACE is unique in our creative, fast and flexible approach to your heat cleaning or recycling needs. Our expertise and experience have been gained through the practical application of the latest thermal, mechanical and electronic technologies. Extensive research and development have positioned ACE as one of the world leaders in fast heat cleaning or drying various types of ferrous and non-ferrous material.

OPERATING PROCEDURE

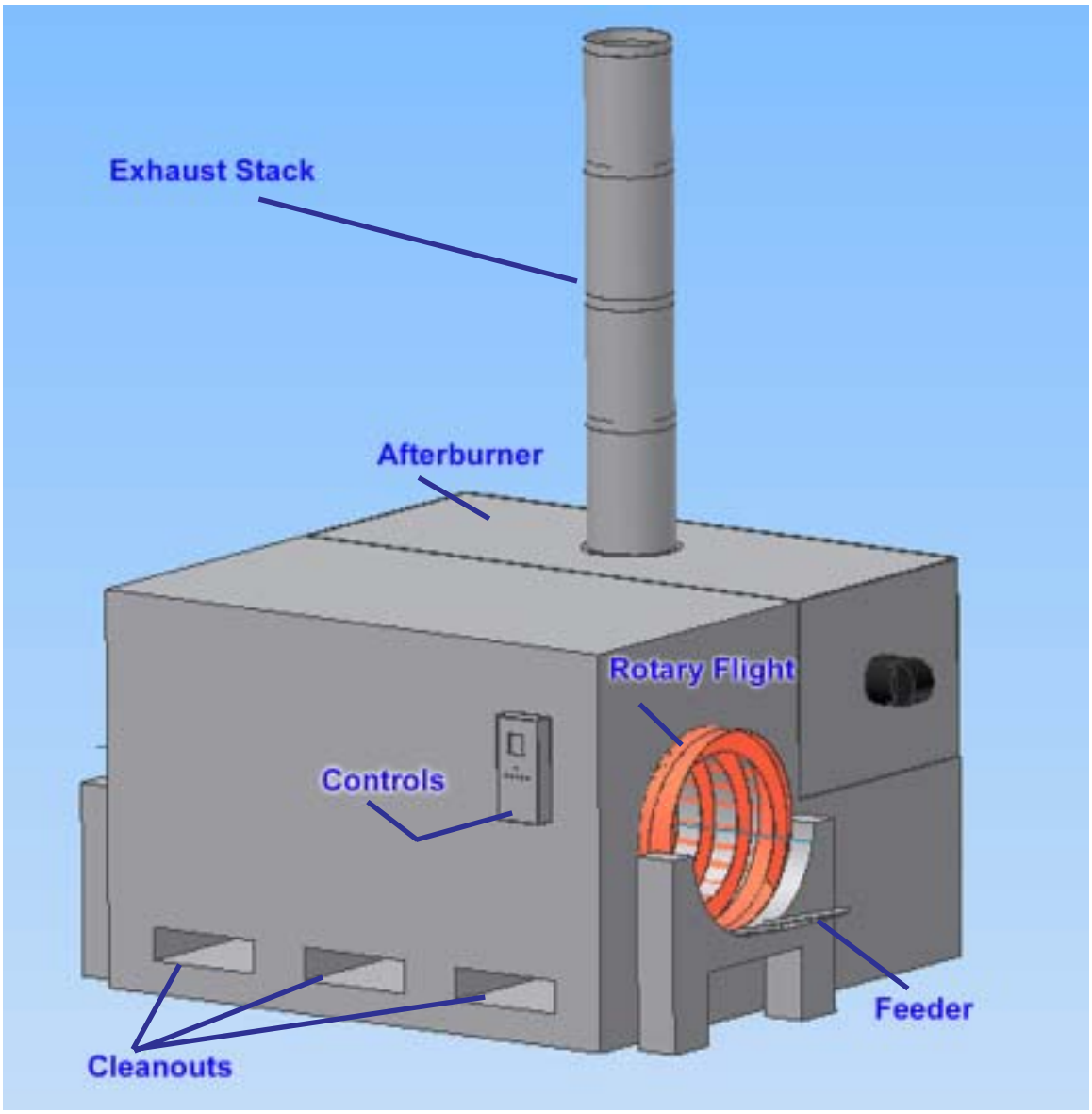
Combustible material to be processed is fed from an in-feed hopper at a controlled rate and then into the continuously rotating straight through rotary flight. The process material passes continuously in through the retort in-feed zone, hot zone, where the material is heated, and then out through the out-feed zone.

Brass Chips Before

Brass Chips After

Steel Chips Before

Steel Chips After



As the retort rotates, the processed material is lifted and showered through hot gas streams in each zone. In the hot zone, heated forced air scrubs the surface of the processed material, carrying away the vapor in the out-feed zone and enhancing drying. An insulated retort enclosure contains three chambers, which are controlled in separate zones. Our indirect firing design avoids flame impingement directly on the processed material. Indirect heat provides controlled temperature, minimizes oxidation and energy costs to maximize efficiency. Thus, allowing the process to achieve optimum heat cleaning conditions, depending on the type of process material. During the process, the combustible materials are broken down thermally at approximately 800° F. (427° C.). Exhaust from the retort is drawn from the in-feed and out-feed zones into the two afterburner chambers, which operates above 1,500° F. (798° C) to incinerate smoke and vapors. Ash and metal parts are discharged at a controlled speed from the rotating retort out-feed zone to an optional accessory modular output feeding apparatus, which may or may not, require ash to be separated from the heat cleaned or dried process material.

REMARKABLY SHORT TIME CYCLES

The oven control panel has a variable speed drive knob, which permits the operator to adjust the speed of the retort rotation. Faster speeds result in higher output of heat cleaned, dried or recycled material. Various processed material require slower or faster speeds. Average time cycles of 4 to 30 minutes at normal operating temperature of 800° F. (427° C), depending upon the type and quantity of the combustible load.

OVEN DESIGN

ACE Rotary Drying Ovens are designed to remove contaminants, i.e. moisture, lubricants, oil, paint, powder coating, urethane, epoxy, varnish, lacquer, plastic and rubber from ferrous and non-ferrous metal parts. Ash residue may easily be removed by various modular out-feed units. Ideal for in-plant recycling of waste materials for manufacturers, machining centers, die-casters, and scrap recycling processors.

HEAT CLEAN WITHOUT AIR POLLUTION

The afterburner chamber is designed to provide excess air for complete combustion of the effluent. Discharges to atmosphere are harmless by products of combustion, conforming to tough EPA air emission standards.

CONSTRUCTION

The oven enclosure is fabricated from heavy gauge steel and coated with a high temperature, rust resistant paint. The most modern state-of-the-art insulation, rated for 2,300° F. (1,260° C), lines the oven and self-supporting afterburner exhaust stack, to offer you maximum energy efficiency. The oven retort is a heavy wall, heat resistant, stainless alloy tube with an internal flight to move and tumble the process material from the in-feed zone, through the heat zone, and finally through the out-feed zone.

CONTROLS

A programmed digital microprocessor temperature controller is installed. The retort temperatures are sensed by thermocouples located in the three zone chambers. These thermocouples interfaces with temperature controllers. The retort heat zone is turned from high to low fire to maintain the setpoint temperature.

Model 4400 Controller

EXCESS TEMPERATURE CONTROL

An excess temperature controller with a “Manual Reset” button is installed in the heat chamber. This controller is a direct acting thermal expansion switch, which automatically turns off the main burner heater(s) if the temperature rises above the setpoint. It is installed as a separate backup to protect the oven and load from excess temperature.

CONVENIENT AUTOMATIC CONTROLS

This oven has all the controls you will need. Temperature is accurately controlled at a setpoint throughout the cycle. Time and temperature are automatically controlled without operator attendance, and are automatically shut off at the end of the time cycle. A variable speed drive knob to adjust retort speed is installed.

DOWNSTREAM ENVIRONMENTAL LIABILITY

A new factor in scrap management is that government regulations and case law now impose liability on fabricators for safe handling of their scrap all the way to re-melt in primary metals mills. The government doesn't want scrap processors hauling containers leaking fluids on the highways or dumping scrap containing free-flowing fluids in recyclers' yards. Downstream liability can come back to haunt fabricators, years, even decades, after selling scrap if the scrap has caused environmental damage; courts have held that fabricators are potentially responsible parties because contaminants in scrap they shipped to dealers contributed to the cleanup. Because some fluid always will cling to scrap, the metal recycler's facility should be designed to process and ship your material properly.

ECONOMICAL DE-OILING THROUGH CONTROLLED TEMPERATURE DRYING

The continuous Rotary Heat Cleaning Oven is the foundation of any chip processing system. Indirectly heated material is rotated, lifted, tumbled, showered and mixed, so that material being processed will be continuously mixed and uniformly heated to the controlled temperature without excessive exposure to furnace atmosphere.

PRIMARY USE

Reclaiming metals by means of controlled temperature drying and de-oiling through the indirectly heated design. Used by smelters, industrial plants and recycling facilities to produce clean dry metals from contaminated metallic oily turnings, borings and grindings, preheating of scrap metals for melting into ingots or hot briquetting. Also, retention of fines in the retort to capture precious metals.

RAW MATERIAL TO BE RECYLED

Material for this process includes coated parts, machine shop scrap, chips and turnings from industrial sources and other contaminated metals, which will be suitable for recycling or melting. Material should be granular or crushed, so that it will flow freely down an auger or vibrator in-feed metering conveyor.

Inside of Flight

AIR POLLUTION CONTROL

Combustible material on processed material will vaporize or burn during the heat cycle. Particulates and vapors generated by the process will be completely incinerated in the afterburner at a minimum temperature of 1,500° F (798°C).to meet tough EPA standards.

PROCESSING FEATURES

Processing is a continuous straight-through operation. Natural gas, manufactured gas or LP gas fuel burners are installed.. Zoned temperature control with an automatic cooling system is standard. Variable rotary retort speed to control material flow and retention time for daily start-up or continuous duty is also standard. Moisture content of processed material is reduced to less than ½% while meeting EPA standards.

TEMPERATURE CONTROL

A controlled fire in the retort is normal, and managed by sensing the heat chamber to automatically heat or cool the outside of the retort to maintain setpoint process zone temperatures inside the retort. If temperature exceeds the setpoint, water sprays are automatically activated to stop runaway fire when excess volatiles are introduced with the process material.

DESIGN CAPACITY OF LOAD

This oven has a nominal design capacity to process 2,000 Lbs./Hr. maximum of material with density of 50 Lbs./Cu. Ft. or 40 Cu. Ft./Hr. The actual capacity will depend upon the percent of combustible process material input.

DESIGN CAPACITY OF COMBUSTIBLES

Combustible volume input should be limited to 2% maximum of process material weight. The lower the combustible content, the easier it is to control the process.

FEATURES OF THE ROTARY OVEN

1. It provides an over-all uniform heat with a lower, surrounding air temperature in the oven.
2. ***Almost instantaneous heat delivery***, primarily because it is not necessary to heat large volumes of air in the hot zone chamber before starting to heat the load The pick-up-factor is practically nil.
3. The advantage of heating directly is that the retort is nearly 100 percent efficient with this method. This is because all heat that is generated is absorbed directly by the process. This helps to speed heat-up and eliminate thermal lag. There is no intermediate heat transfer medium that could result in heat losses.
4. Because the system is a low-intensity infrared emitting retort, it may be in close proximity to the load without fear of damage due to excessive concentrated heat. **Surface of the retort is generally only about 100° F. (37° C) hotter than the ambient air temperature during the heat cycle.**
5. The load acts as a heat sink or reservoir, thereby reducing temperature sag when the heating system goes to low-fire at setpoint temperature.
6. The retort heating system for the hot zone is simple to install and maintain.
7. Forced convection heat enters the retort from the multiple holes in the hot zone of the retort.
8. It provides an over-all uniform heat with a lower, surrounding air temperature in the oven.
9. ***Almost instantaneous heat delivery***, primarily because it is not necessary to heat large volumes of air in the heat zone firebox before starting to heat the load The pick-up-factor is practically nil.
10. Patent pending.

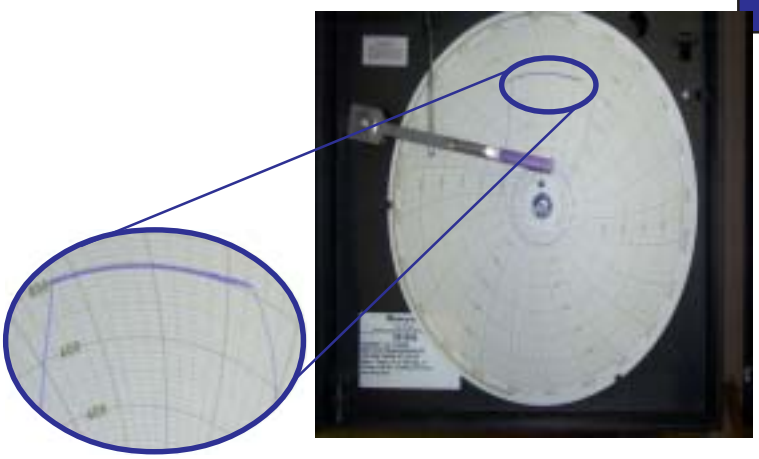


Fig. 4

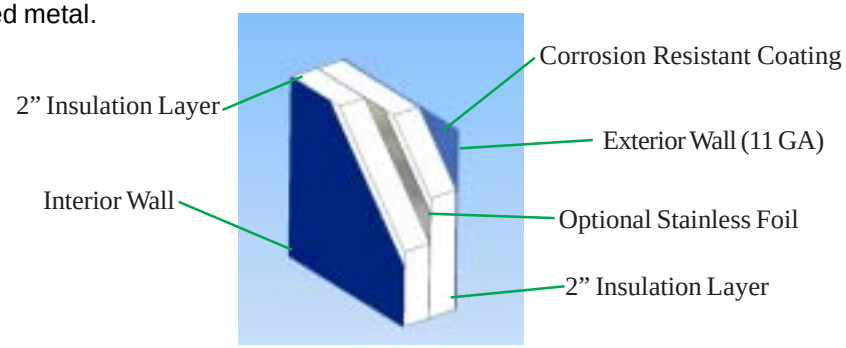
EXCLUSIVE FEATURES OF ACE HEAT CLEANING OVENS

SERVICE
ACE guarantees the original owner free service of the oven for the life of the unit.

REPAIR PARTS ARE AVAILABLE FROM STOCK
You may wish to order by Visa, Master Card or American Express credit cards.

OUTSTANDING REPUTATION & CRAFTSMANSHIP
ACE was established in 1919 and is the original manufacturer of Heat Cleaning Ovens since 1970.

5 LAYER WALL PROTECTION
Corrosion-resistant barrier inside oven 11 Ga. Steel enclosure adds many years to the useful life of the oven. 4" of 2,300° F. insulation, so that outside enclosure skin temperature does not exceed 140° F. Insulation is protected by 16 Ga. Expanded metal.



DURABILITY
The ACE System is built with only high quality, durable materials. 11 GA steel is used as compared to 14 GA used in other ovens.

DIAGNOSTIC PANEL
FM/IRI ovens supplied with Honeywell combustion flame safety controls which provides up to 127 diagnostic check points.

WATER SUPPRESSION SYSTEMS
A primary and back-up secondary water suppression systems supplied to prevent run-away fires.

SAFETY FEATURES
Fail Safe water check system, Pressure relief hatch(s), Door lock, High-Limit temperature switch, Over temperature water suppression system(s), Flame safety controls and Emergency shut-down.

MICRO-RAMP TEMPERATURE CONTROL SYSTEM
A programmed digital microprocessor-based time-temperature controller and water suppression system work together to suppress combustion for high combustible loads. Main chamber temperature is controlled by a thermocouple located in the main chamber. This thermocouple interfaces with the microprocessor. The main chamber burner is turned from high to low fire to maintain setpoint temperature.

AUTOMATIC PROGRAMMED TIMING CYCLES
The oven program heat cycle runs only as long as necessary to clean the load and no longer. There is no manual timer for the operator to guess how long it takes to clean the load.

HEAT CLEAN WITHOUT POLLUTION
The integral afterburner chamber is designed to provide excess air for complete combustion of the smoke and odors. Discharges to atmosphere are harmless by-products of combustion, conforming to tough EPA air emission standards.

ACCESSORY ITEMS
We offer over 50 optional accessory items at low prices to meet your particular requirements.

MODELS
Over 30 standard models are available to you.

ACE HAS THE "HOLY GRAIL" IN HEAT CLEANING OVENS
The only oven on the market today that permits multitasking, such as heat cleaning, baking, heat treating, heat-up prior to welding , baking or incinerating paint filters and much more in one oven.

Dimensions

115" W x 160" L x 113" H

Accessory Dimensions

Vibratory Feeder, Stand & Hopper Assembly
60" W x 75" L x 114" H

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