

The Revelation Roaster by US Roaster Corp. (Pat Pending) utilizes 3 sources of heat.

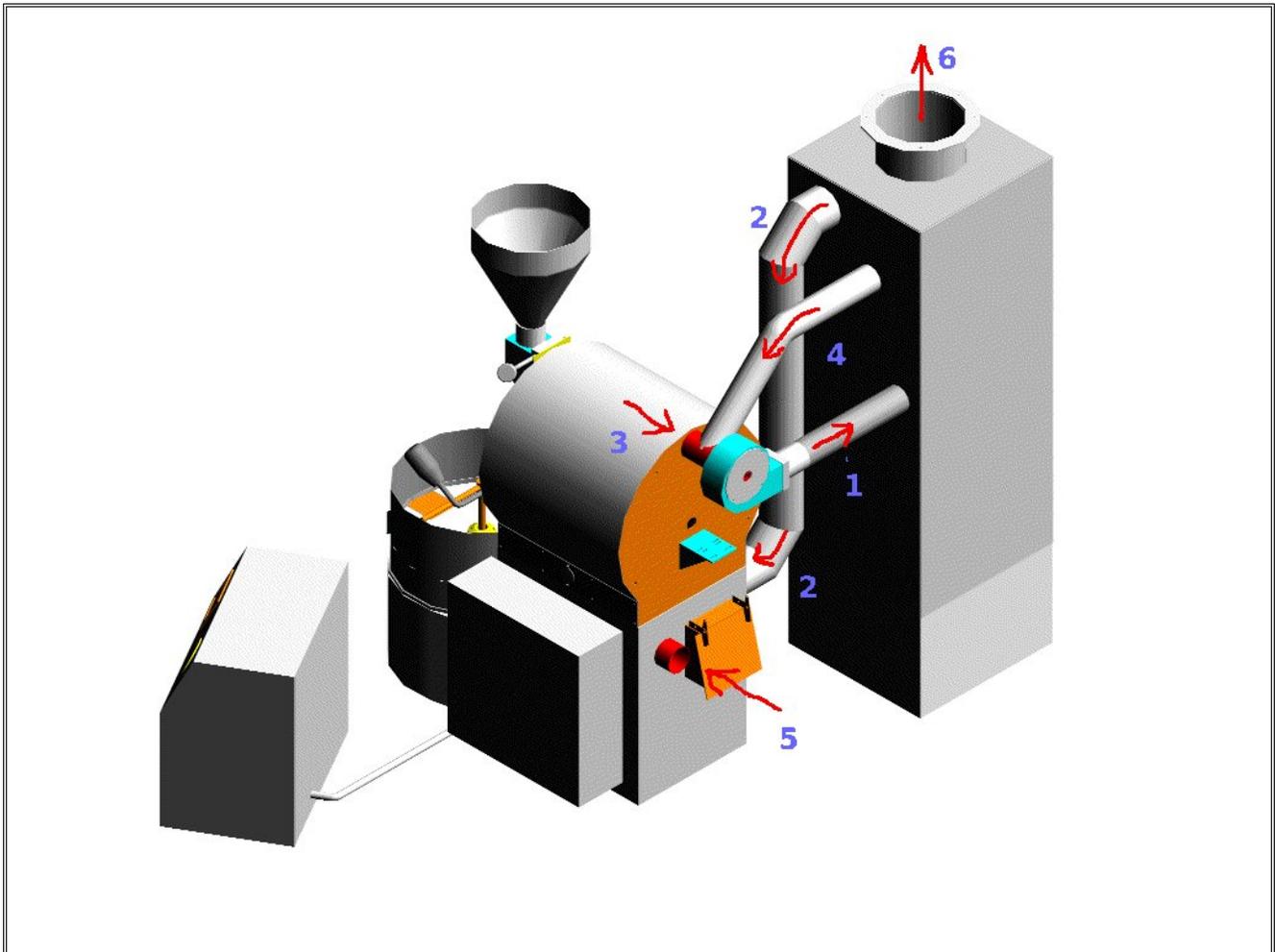
- Heating from beneath the roasting drum
- Heating from recirculated air after removing the smoke
- One specially designed catalytic converter

US Roaster Corp offers another first in the industry. A truly new high efficiency roaster designed for specialty and premium quality coffee companies concerned with fuel costs and the environment. With a Revelation, roasters can have a new roaster for what they are losing on inefficiency! Its easy to be Green!

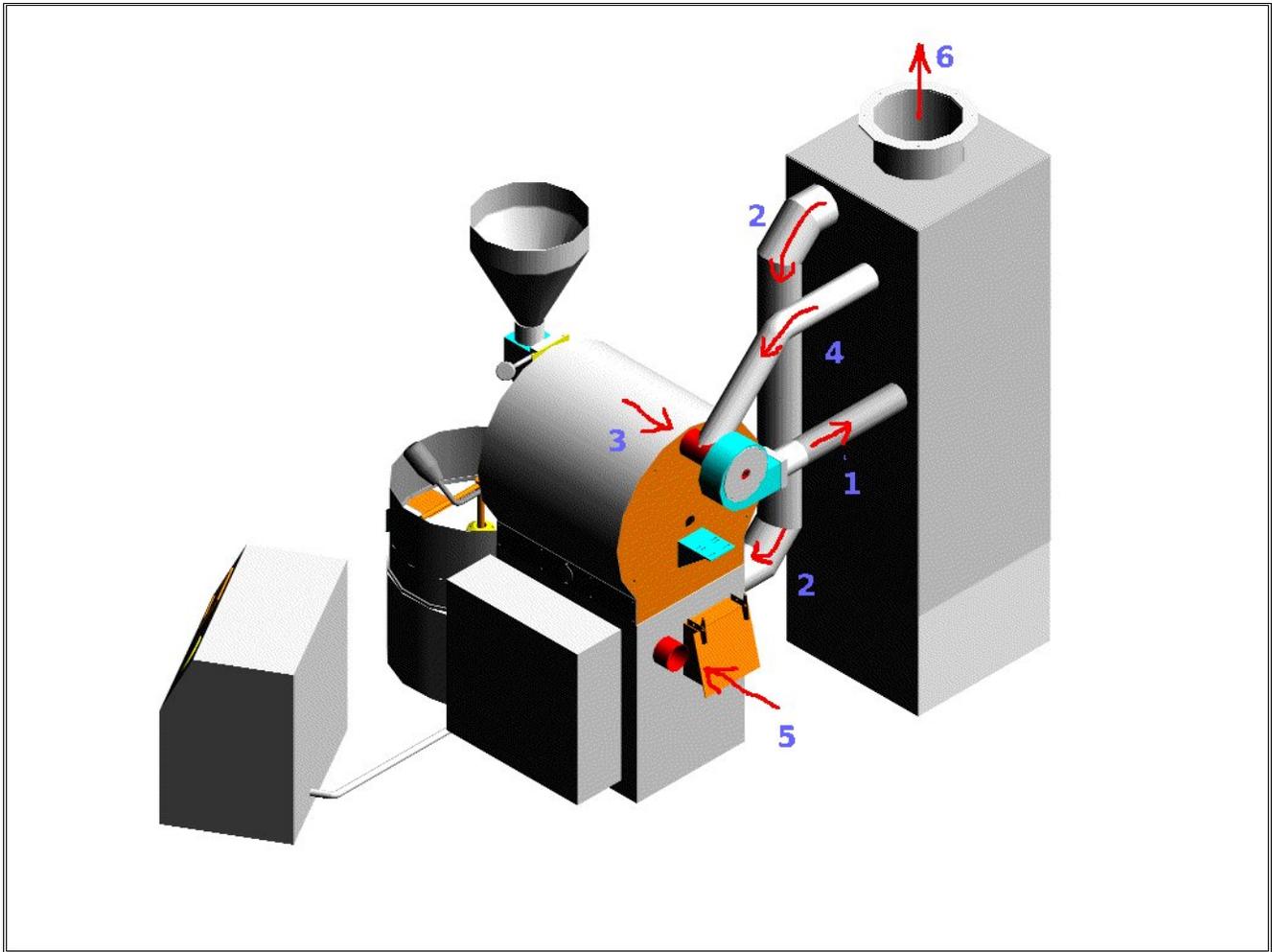
The heating source can come from either Electric, Gas, Bio-Fuels or as a Hybrid application

The Revelation Roaster uses a low oxygen environment for the roasting process. Necessary fresh air is introduced into the system for maintaining combustion. This adjustable control scheme retards the exothermic reaction within the coffee beans and reduces the production of acidic gases, resulting in smoother tasting coffee. The degree to which oxygen is introduced is fully controlled by the customer. It will accommodate any variety of bean and depth of roast to insure an even roast and full development of flavor.

The air flow is as follows:



1. The variable speed exhaust fan pulls heated air, smoke and chaff out of the roasting drum and into the cyclone/catalyst cabinet. This air goes into the cyclone where the chaff particulates fall out of the air stream into the collection bin at the bottom. The air then travels up across the catalyst heating elements. These elements are used to bring the catalyst up to combustion temperatures. Once the PLC controls see the catalyst is in operation range, they reduced in power. The smoke travels through the catalyst and is consumed. In fact, the smoke itself becomes a fuel source to support this combustion and contributes to the efficiency.
2. The heated and cleaned air is then routed to the roasting drum. This heated air for roasting is also supported by adjustable heating below the drum. The roasting process involves both convection heating with the hot air traveling through the bean mass as they tumble, and conduction heating by the radiant heat transmitted from the drum heat source, through the metal drum and onto the bean surface.
3. The acidic smoke and chaff are removed from the roasting drum and returned to cyclone and heaters to repeat the cycle.



4. When the beans are nearing the desired finishing temperature, no more additional heat is required. The system does two things. It reduces the heat from the heating source under the drum and bypasses the cleaned, heated air away from returning to the roasting drum.
5. To insure optimum combustion, some fresh air must be introduced into the air stream. Otherwise, the continuous circulation of the air within the process depletes the oxygen content during the combustion. Air is also introduced into the stream when the roasting process is over and the unit is in the cool down mode.
6. Once the roasting is finished and the majority of the smoke is consumed the remaining hot air is vented outside and cool air is drawn into the roaster to bring its internal temperature down to the shutdown set-point.

The roasting process is controlled either manually by the operator or by the automatic profiling system.