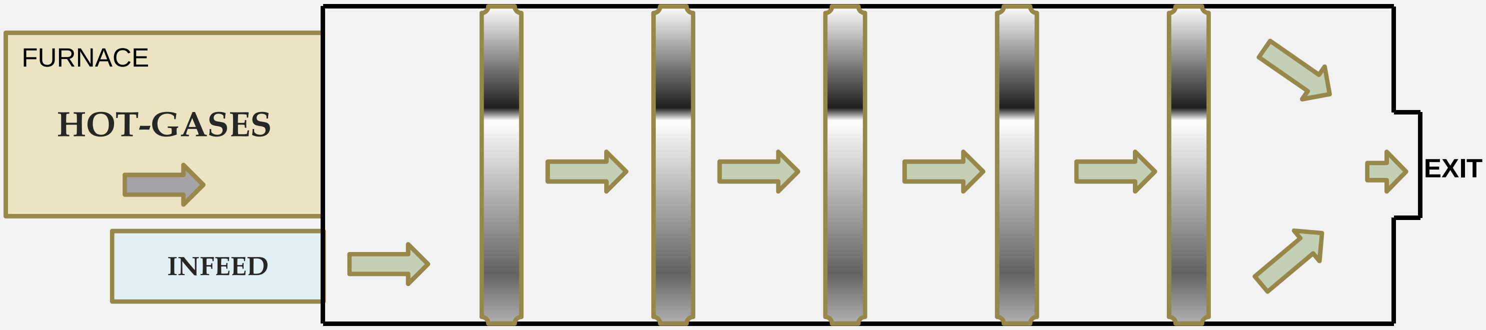
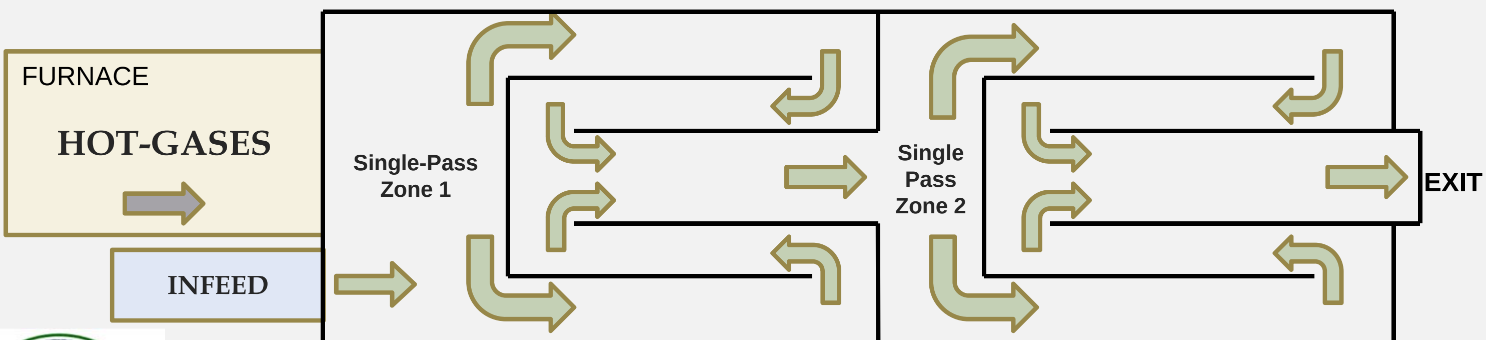
ADVANTAGES OF Z8 ROTARY DRYER OVER CONVENTIONAL ROTARY DRYERS



CONVENTIONAL SINGLE PASS ROTARY DRYER

CONVENTIONAL TRIPLE-PASS ROTARY DRYER



Z8 ROTARY DRYER (US Patent 7,155,841 B2)

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1. Patented reverse-flow design provides **increasing thermal-velocity, turbulent mixing** and **improved efficiency** through the Rotary Dryer embodiment. **Saddle Drum Drive** and robust **Trunnion Bases** offer improved mechanical efficiency, reliability , serviceability and longevity.
2. Infeed design **bypasses** the Furnace **preventing scorching and case-hardening** of biomass by the Hot-Gases.
3. First single-pass section (Zone 1) provides the lowest thermal-velocity for **liberating free water** and rapidly **cooling the Hot-Gases** through the Rotary Dryer embodiment. Intermediate bulk head provides **robust structural strength** to the Rotary Dryer embodiment.
4. Rapid cooling of Hot-Gases at Rotary Dryer inlet significantly **reduces thermal expansion** of the Rotary Dryer embodiment **preventing weld failures**, **reducing maintenance costs** and **increasing operating life**.
5. Proprietary flight-design with **scalloped or saw-shaped tooth** profile provides **continuous cascading/veiling** of feedstock perpendicular to the drying medium for increased **turbulent heat transfer at low temperatures**. Flights **continuously-welded on both sides** prevents product entrapment and overheating thus **mitigating the formation of VOCs, blue-haze, smoldering and risks of fire**.
6. Increasing thermal-velocity by reducing zone diameters through successive zones increases **eddy currents** achieving **multistage dehydration** efficiently evaporating *difficult-to-remove* bound-water from biomass via **turbulent diffusive heat-transfer**.
7. Increasing thermal-velocities through the Rotary Dryer ‘s successive 180-degree turns provide **faster drying of smaller particles** achieving **uniform and efficient dehydration of all particle sizes.**
8. Increasing thermal-velocities in successive zones following Zone 5 results in all dehydrated product exiting the Rotary Dryer **without build-up, fouling or plugging** and thus **mitigating the formation of VOC’s, blue haze, opacity and risks of fire**. Dryer design forces all foreign contaminants (tramp metal, rocks, dirt, etc.) to exit the Rotary Dryer.