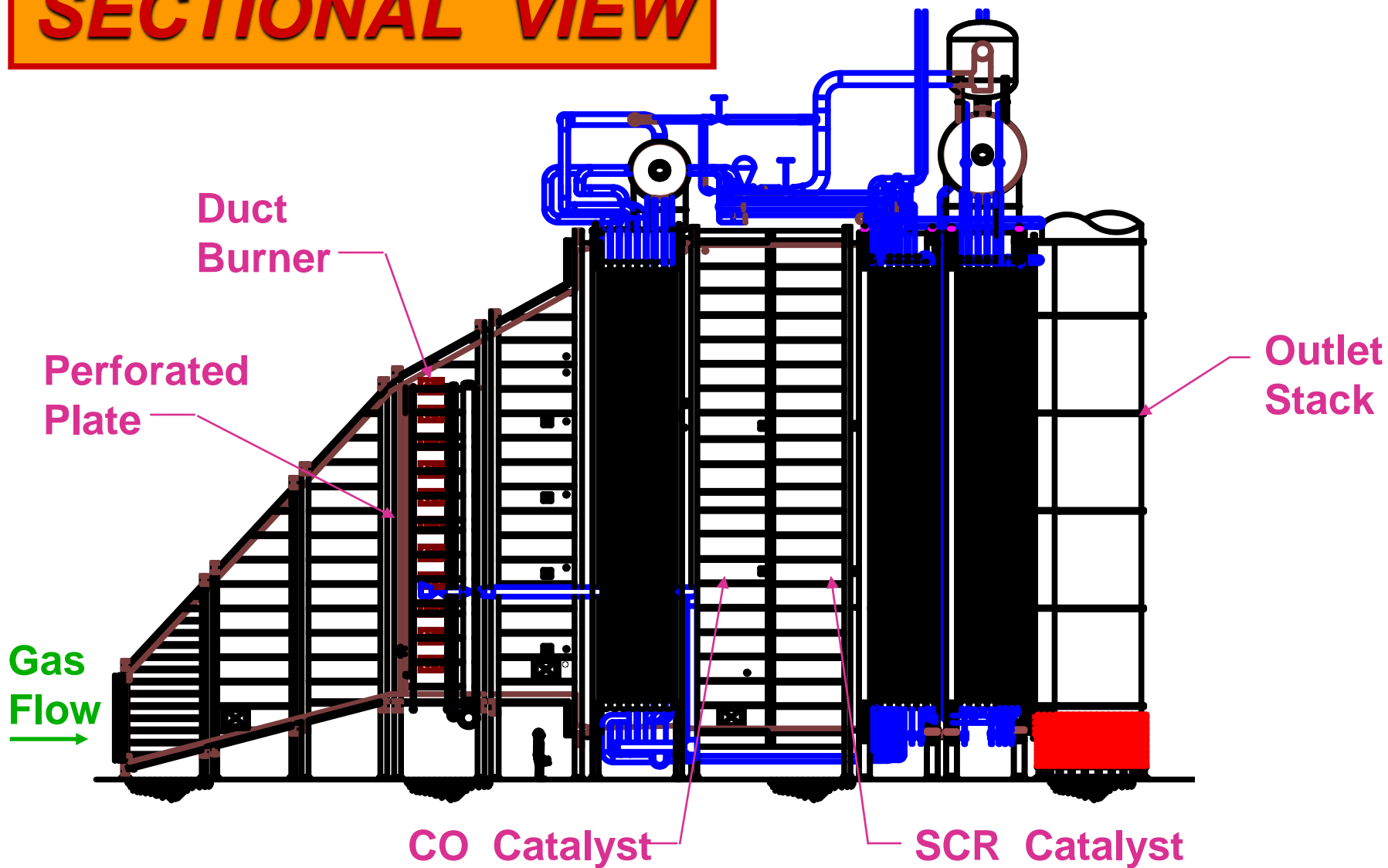
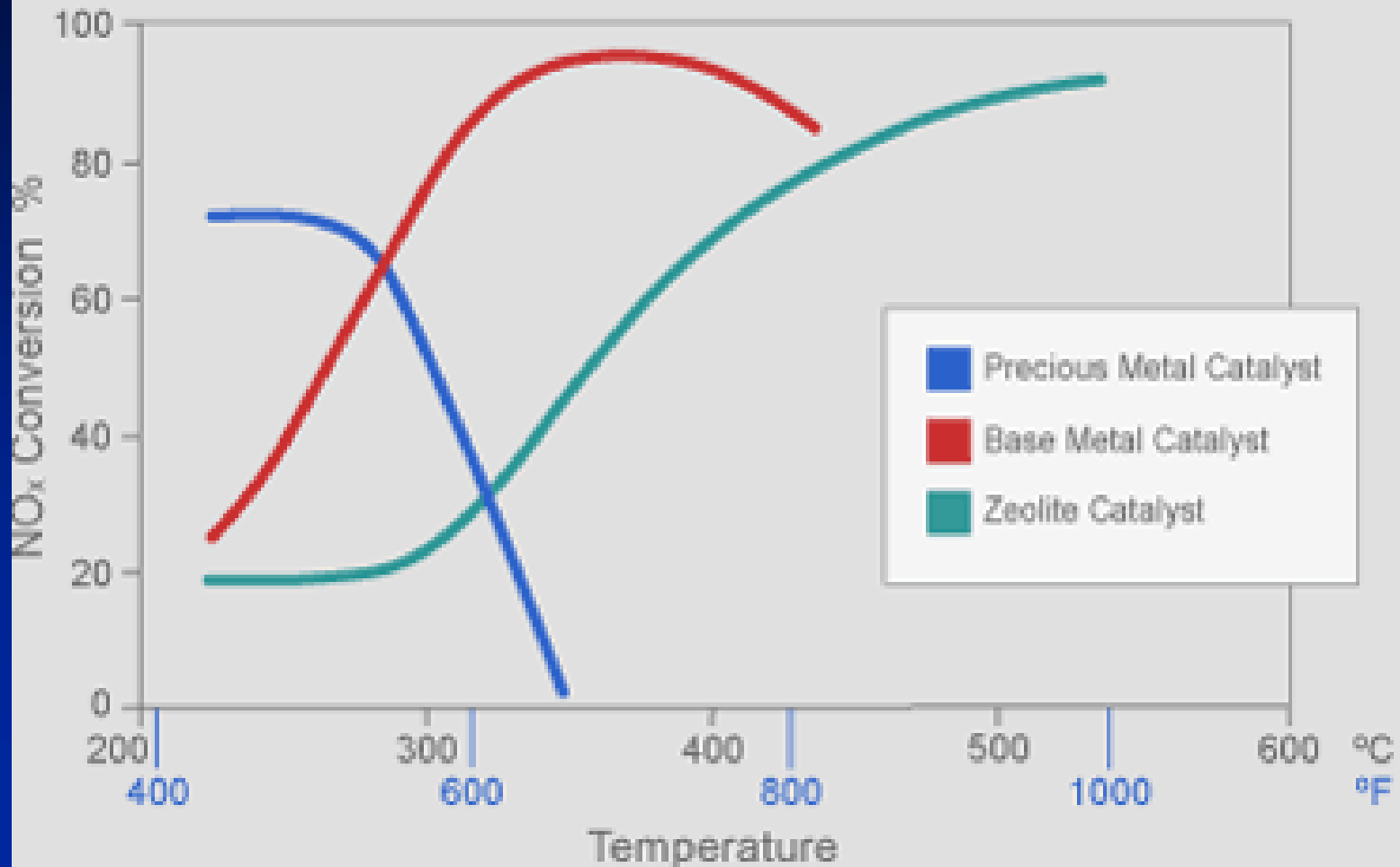


SECTIONAL VIEW

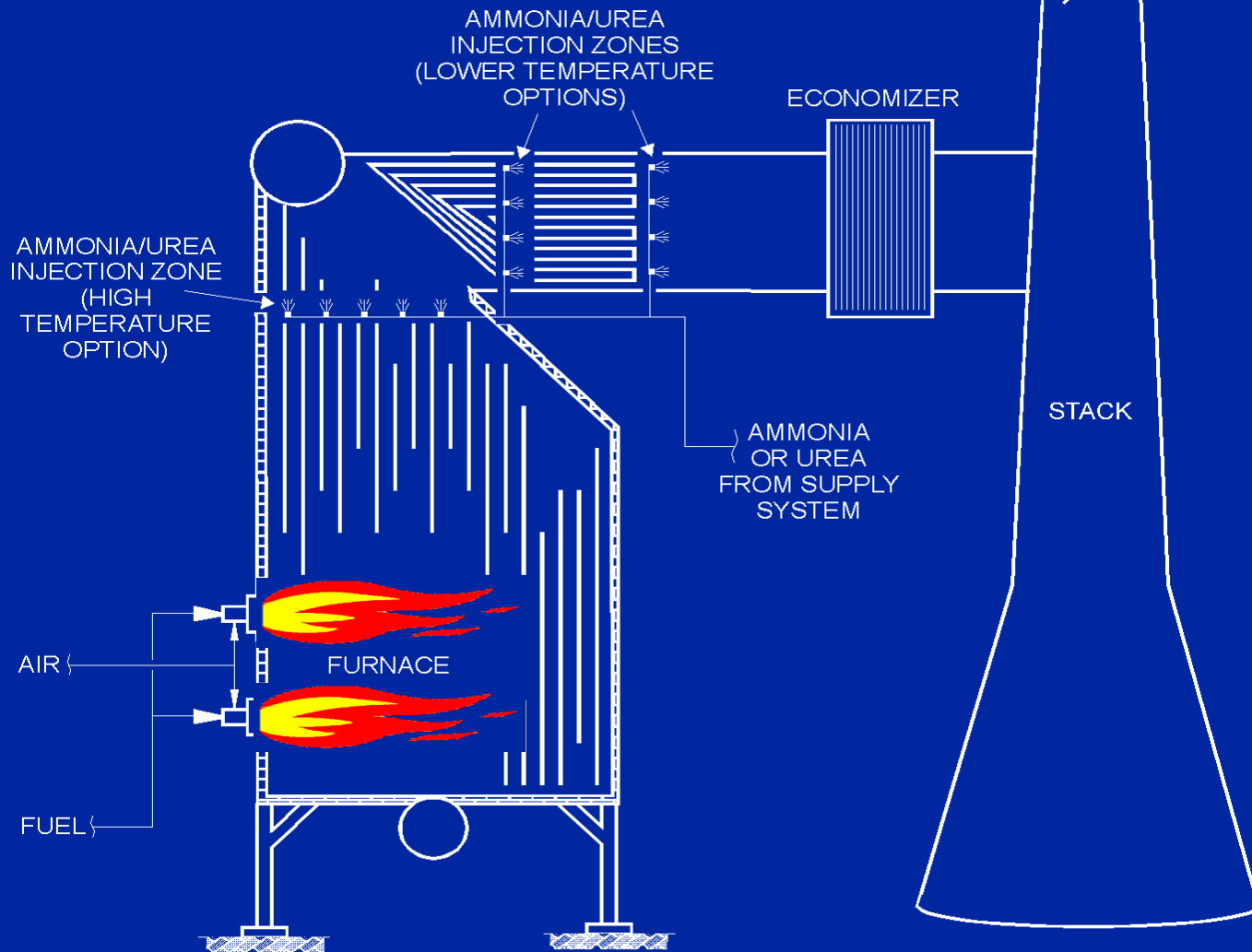


Typical Catalyst Operation Window

SCR Catalysts Operating Window



Boiler with SNCR



Selective Non-Catalytic Reduction

Ammonia

NH₃



N₂

Urea

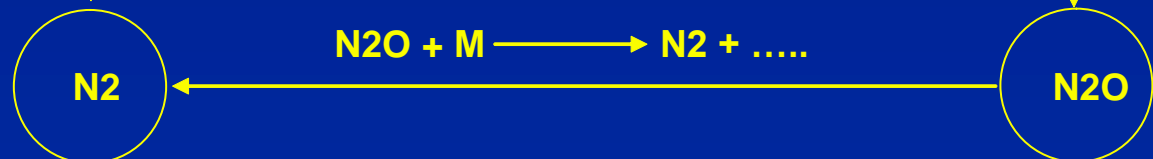
NH₂CONH₂



NH₃ + HNCO



N₂O



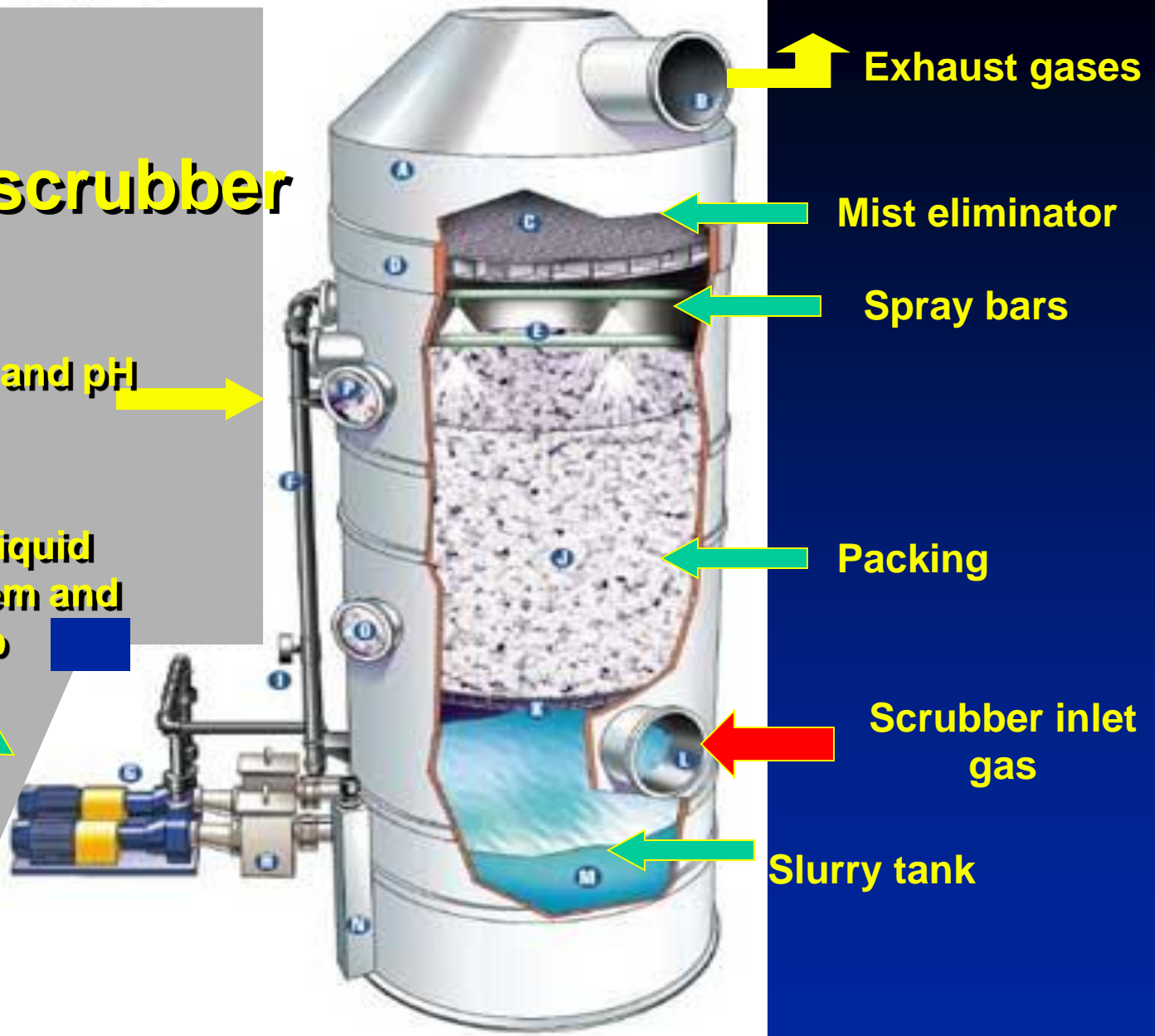
SCR vs. SNCR

	SNCR	SCR
NOx Reductiuon	20-50%	50-95%
Hardware	Simple	More Complex
Capital Cost	Low (1)	High (5-10)
Reagent Utilization	Typ. 30%	Almost 100%
O&M	Reagent	Reagent/Catalyst
Designability	Poor	Good
NH3 slip	5-20 ppm	<10 ppm

Typical packed scrubber

Liquor flow and pH monitoring

Recirculation liquid pumping system and liquor make-up



Exhaust gases

Mist eliminator

Spray bars

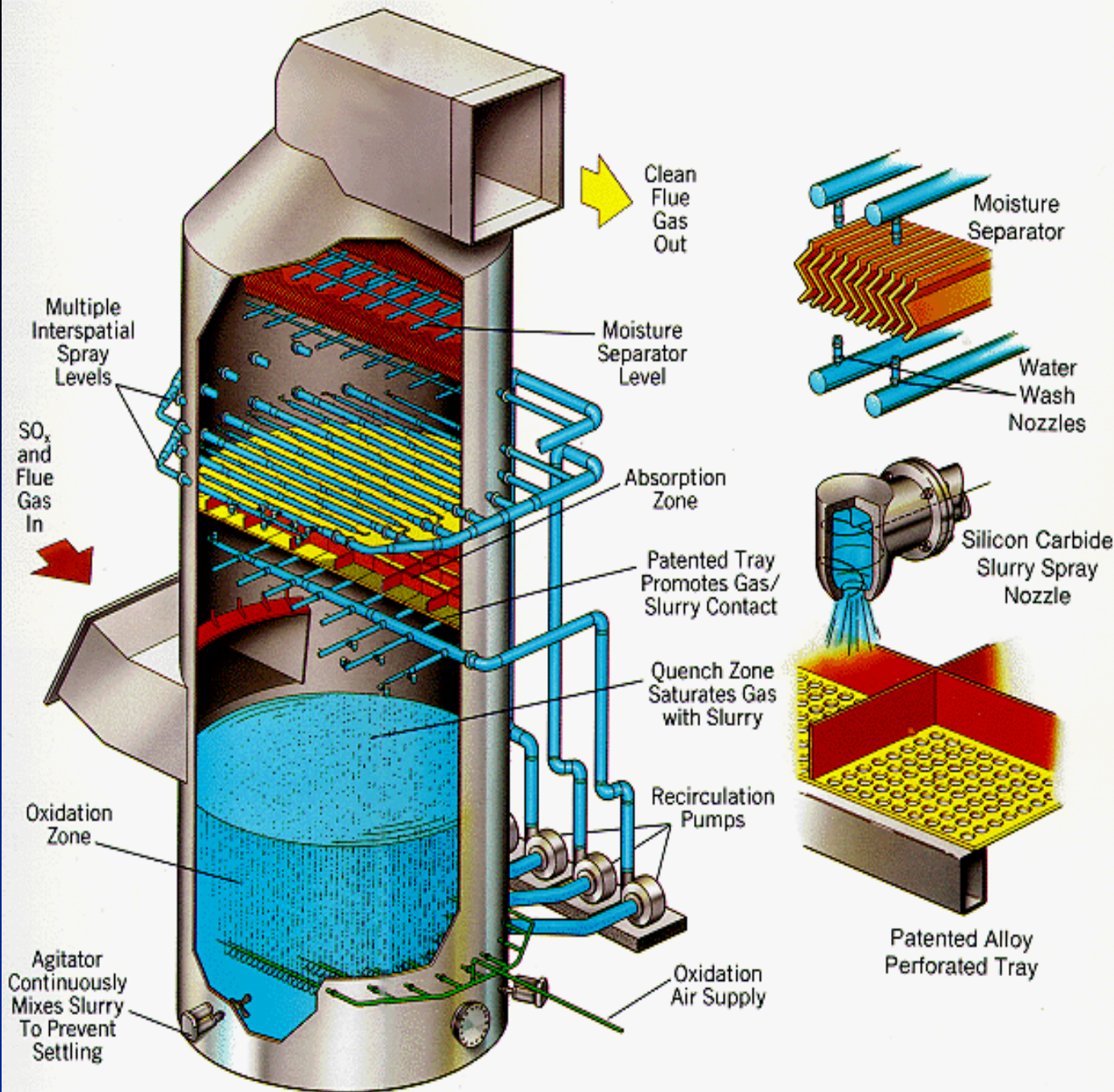
Packing

Scrubber inlet gas

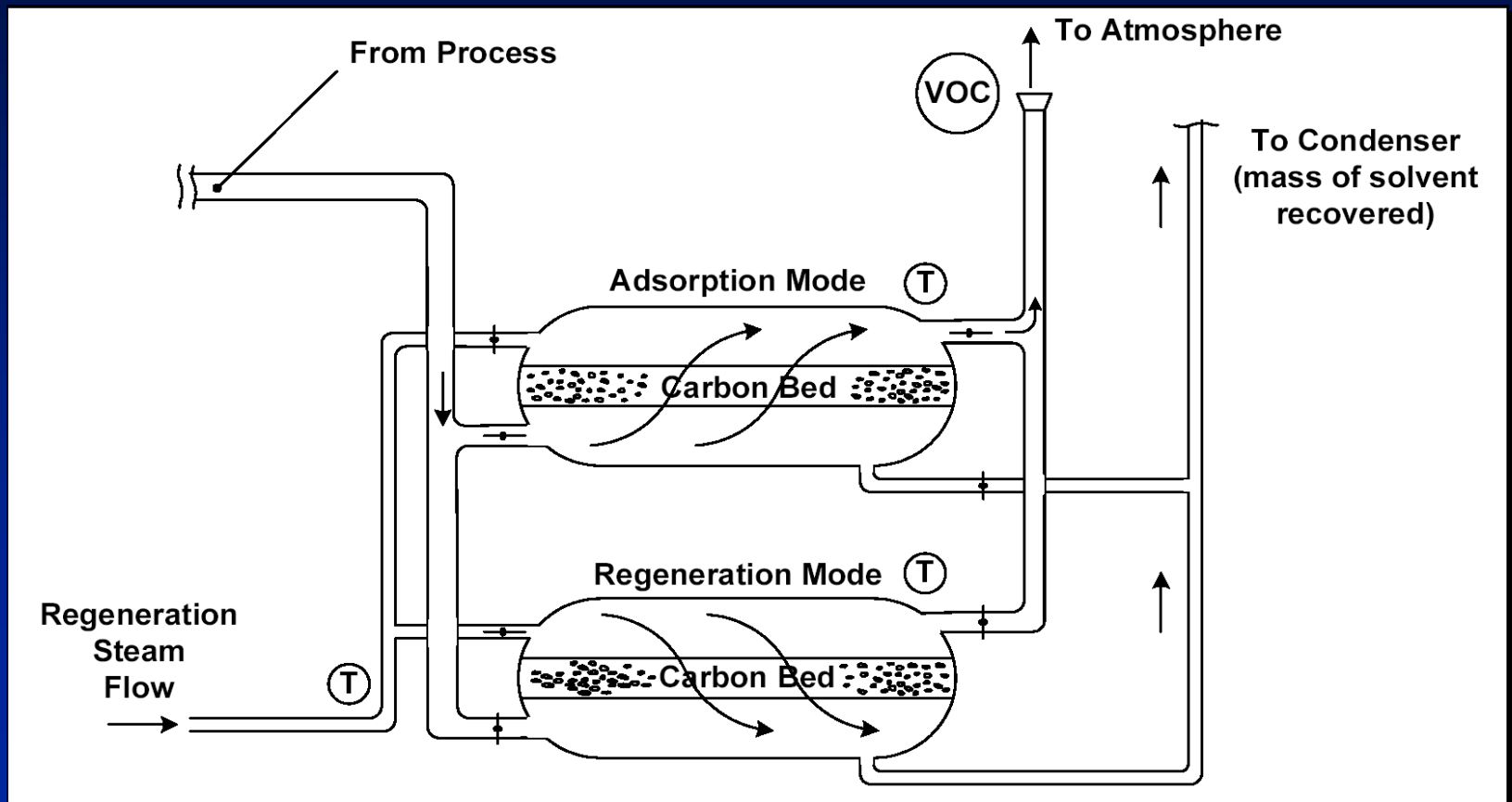
Slurry tank

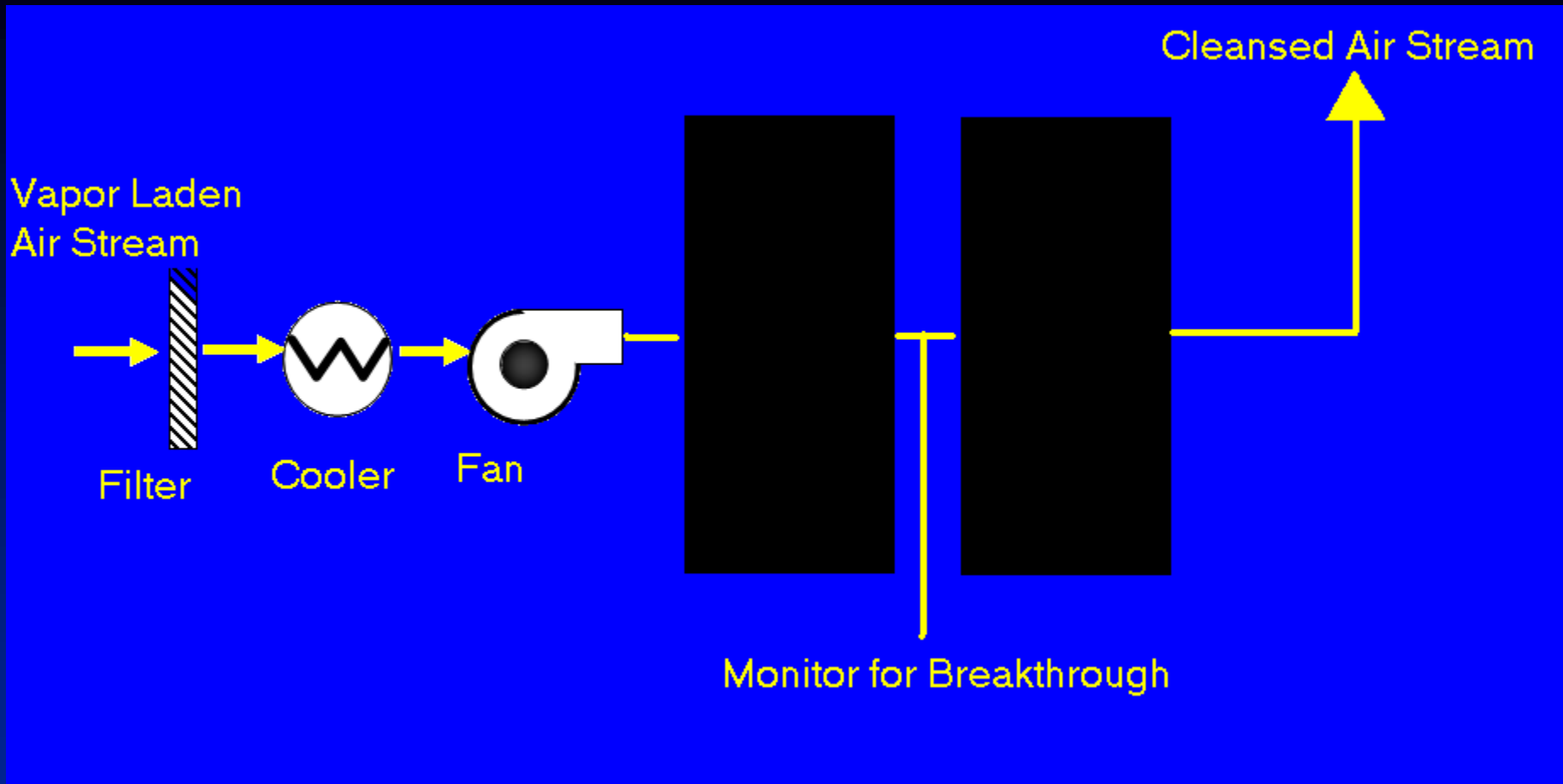
SO_x Control

Wet FGD



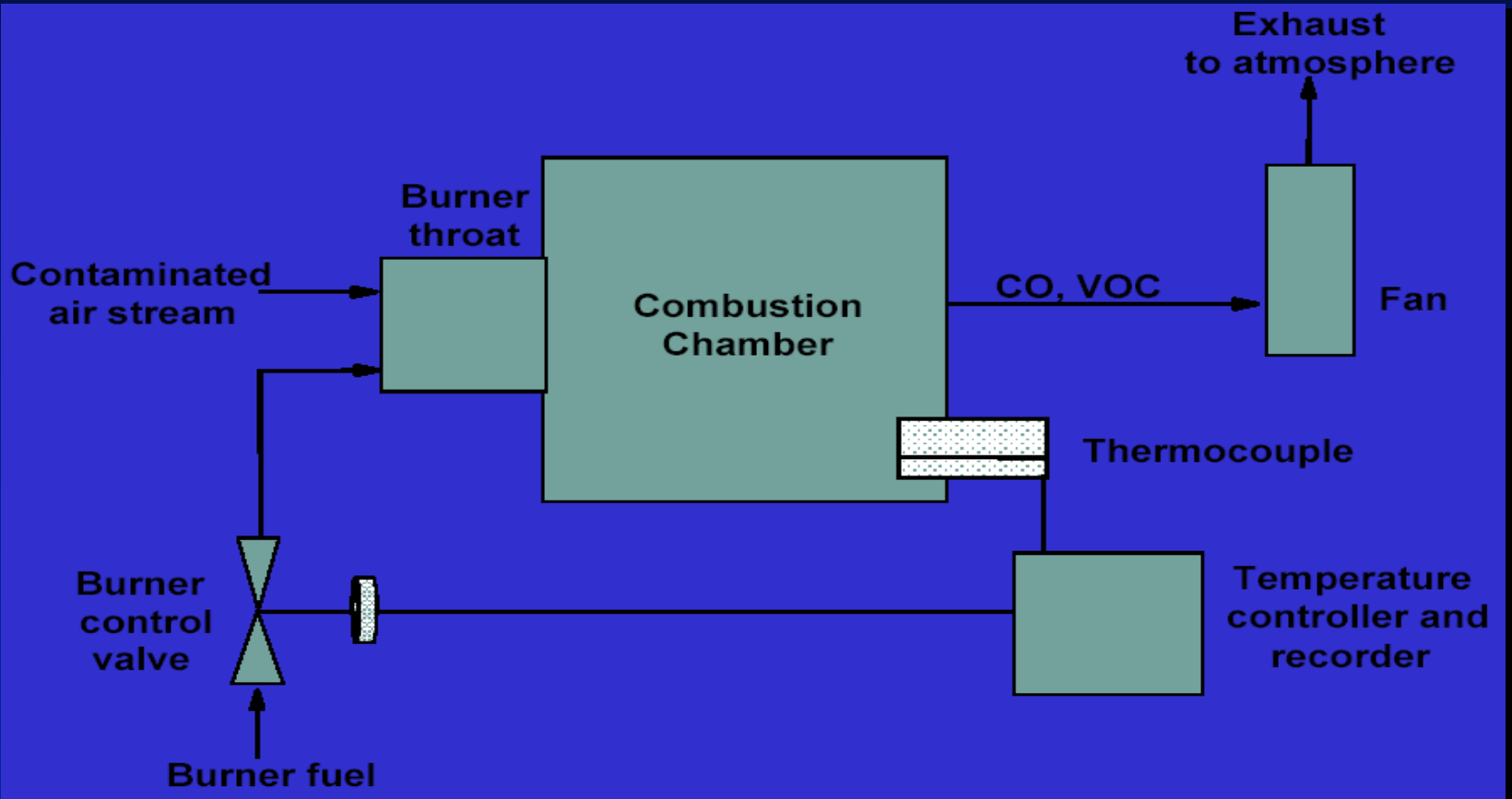
Carbon Adsorber – Fixed Bed Schematic



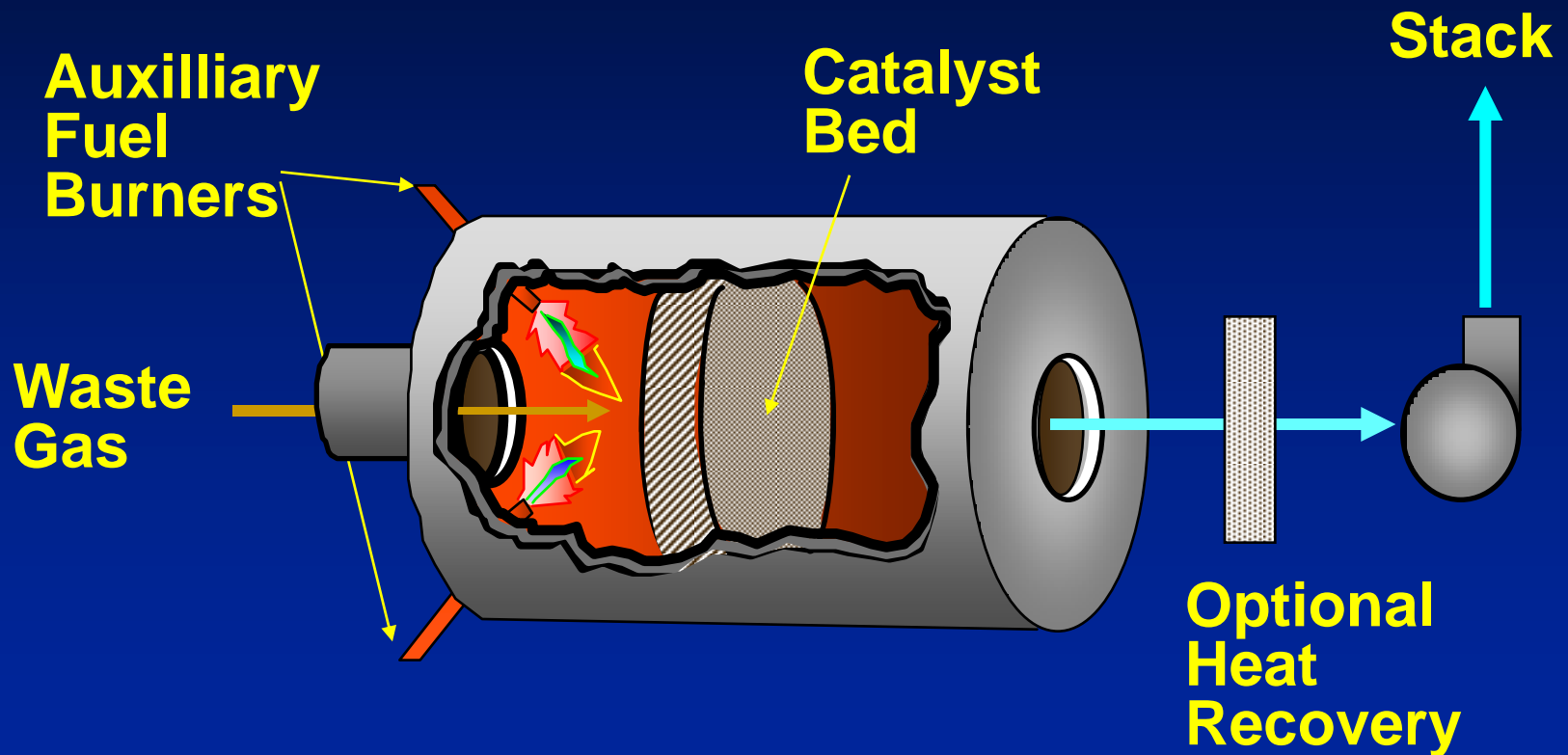


Carbon Adsorption System

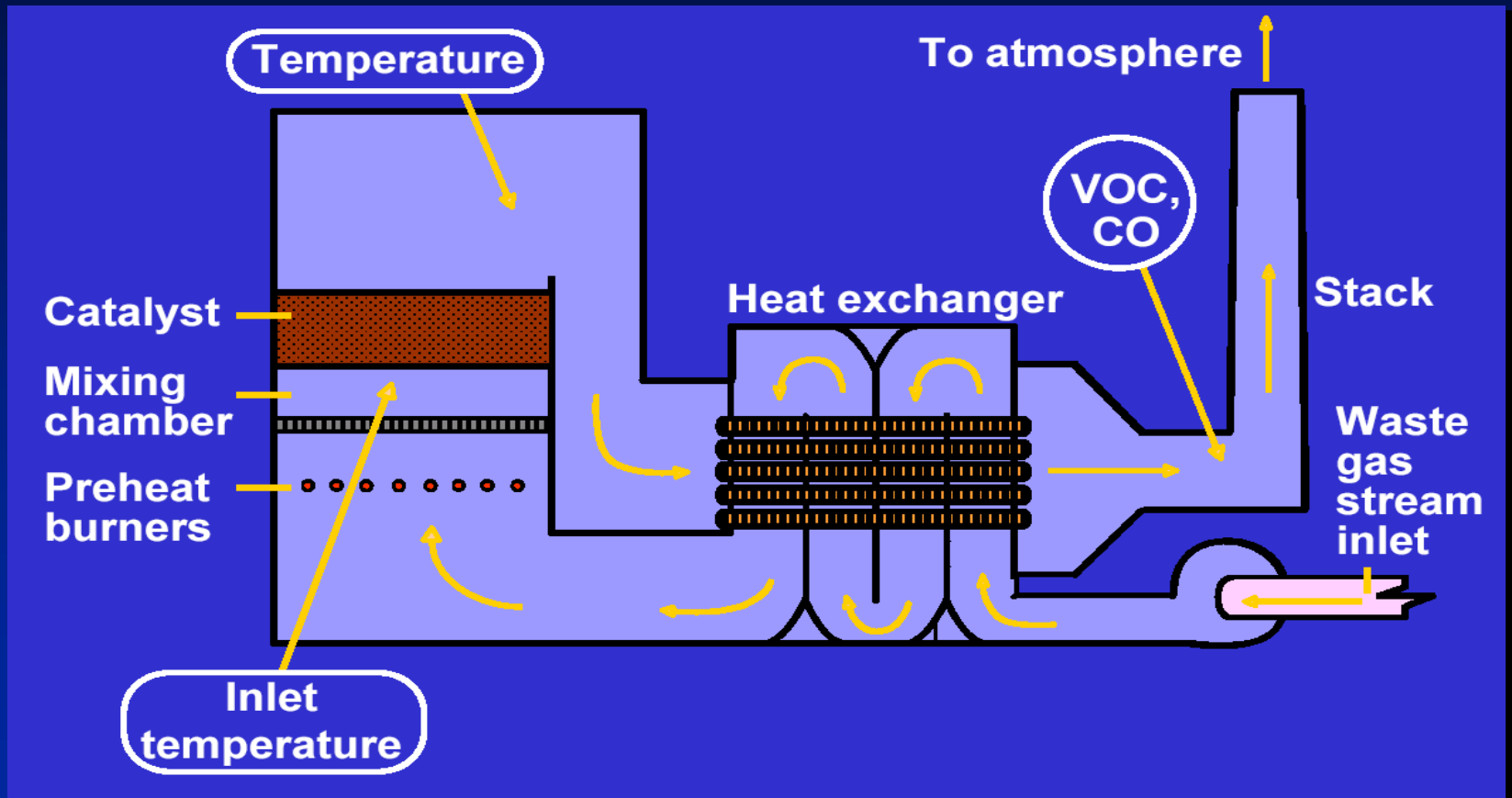
Thermal Oxidizer - Schematic



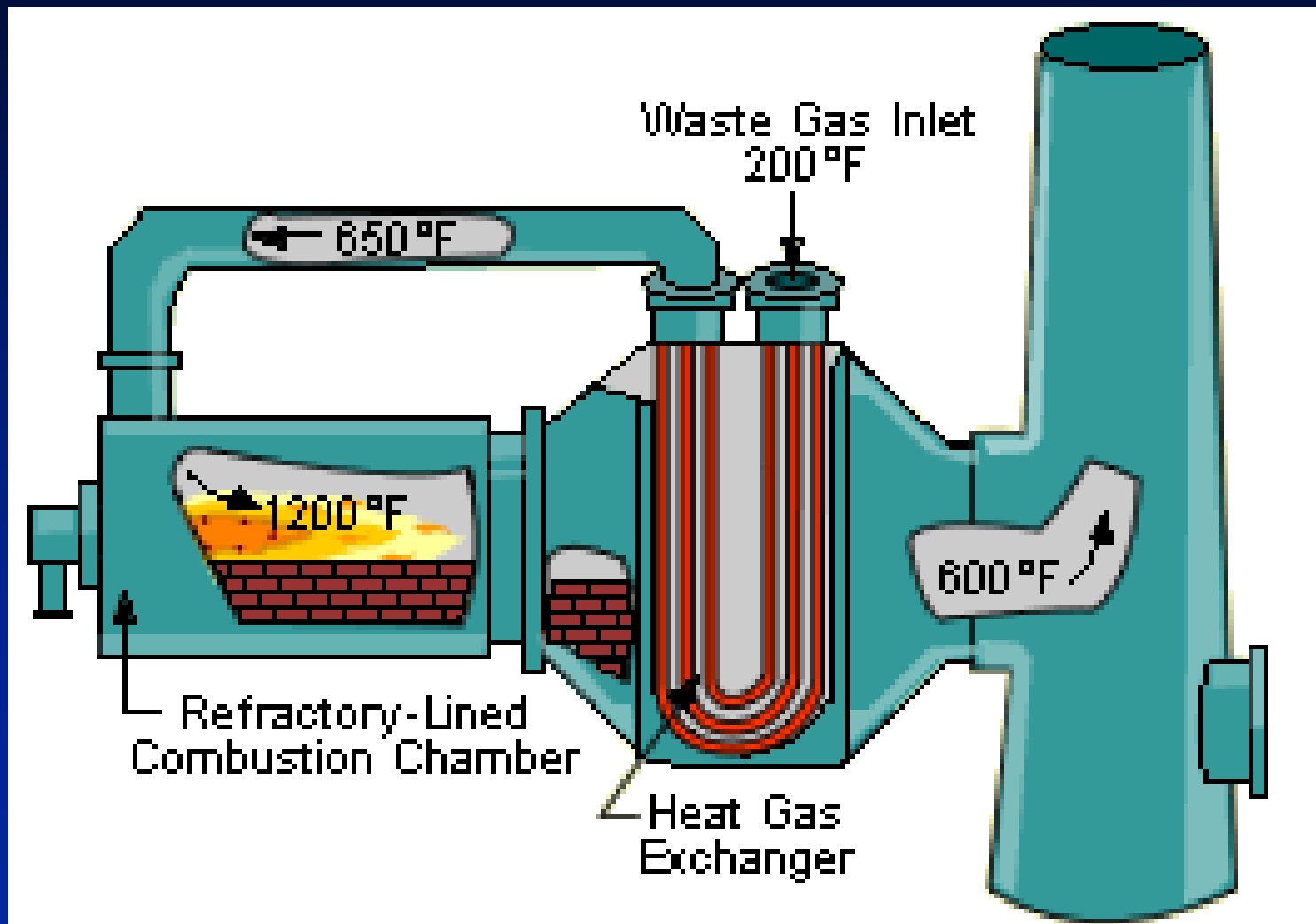
Catalytic Oxidizer/Incinerator



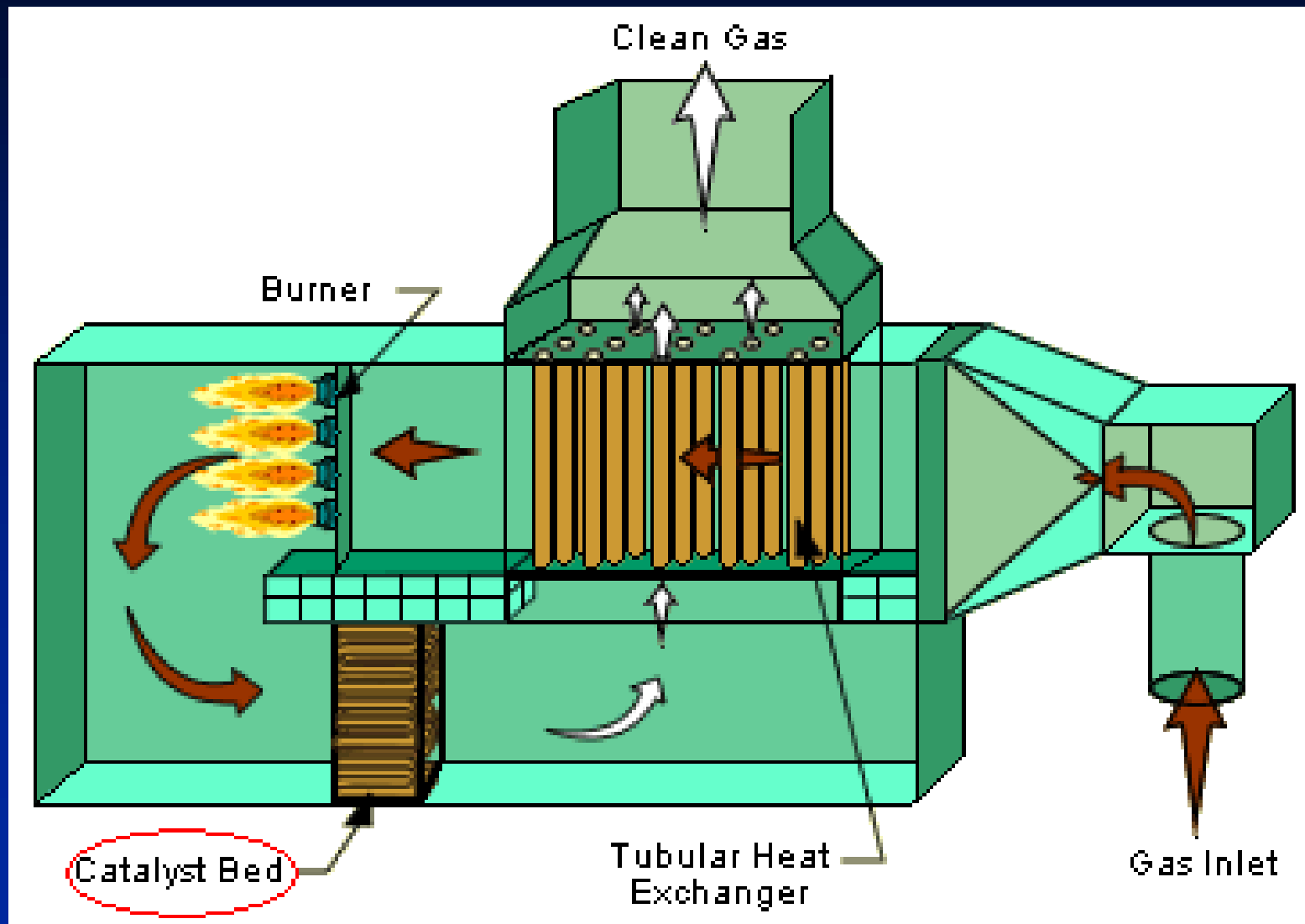
Catalytic Oxidizer Incinerator Schematic



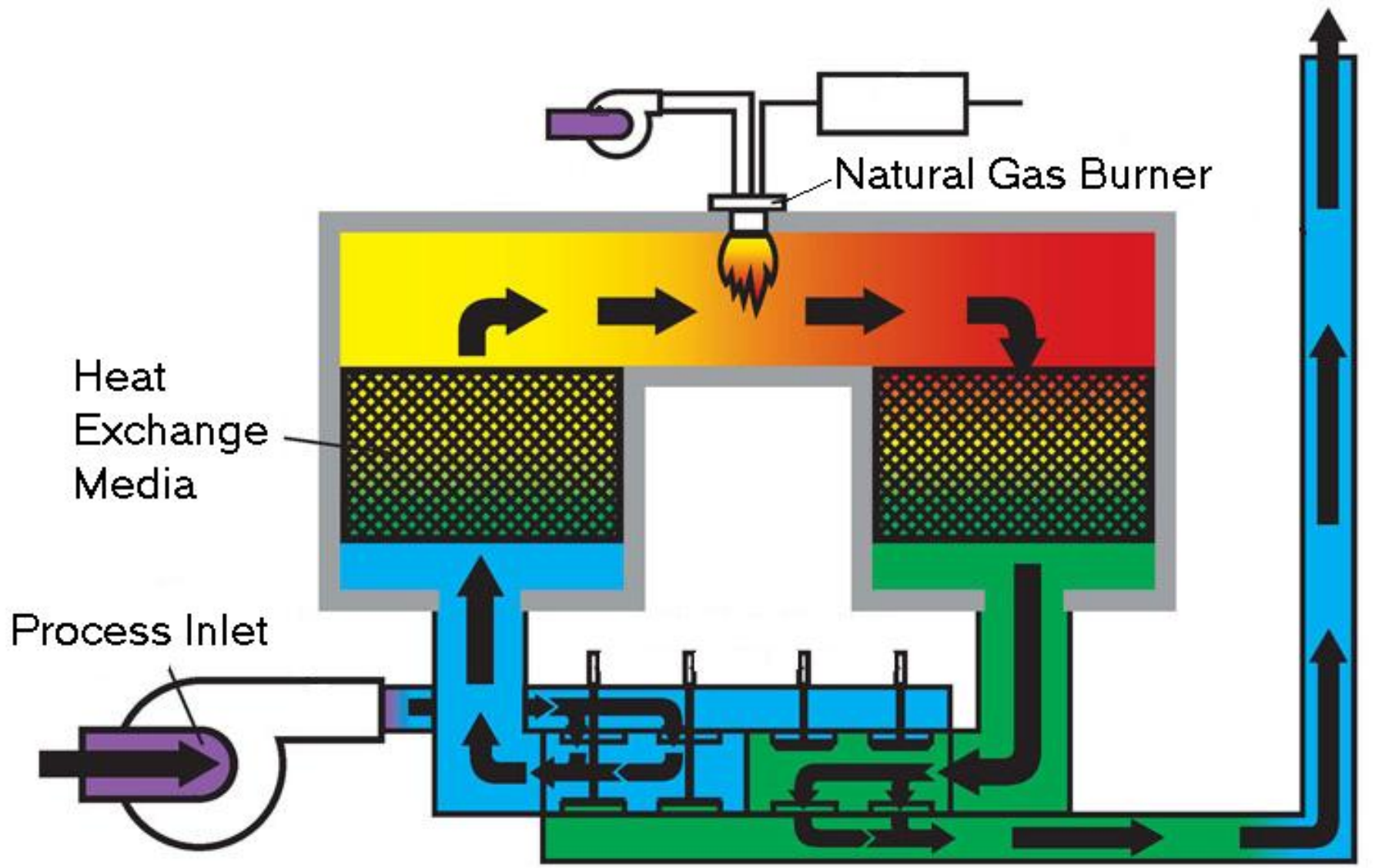
Recuperative TO



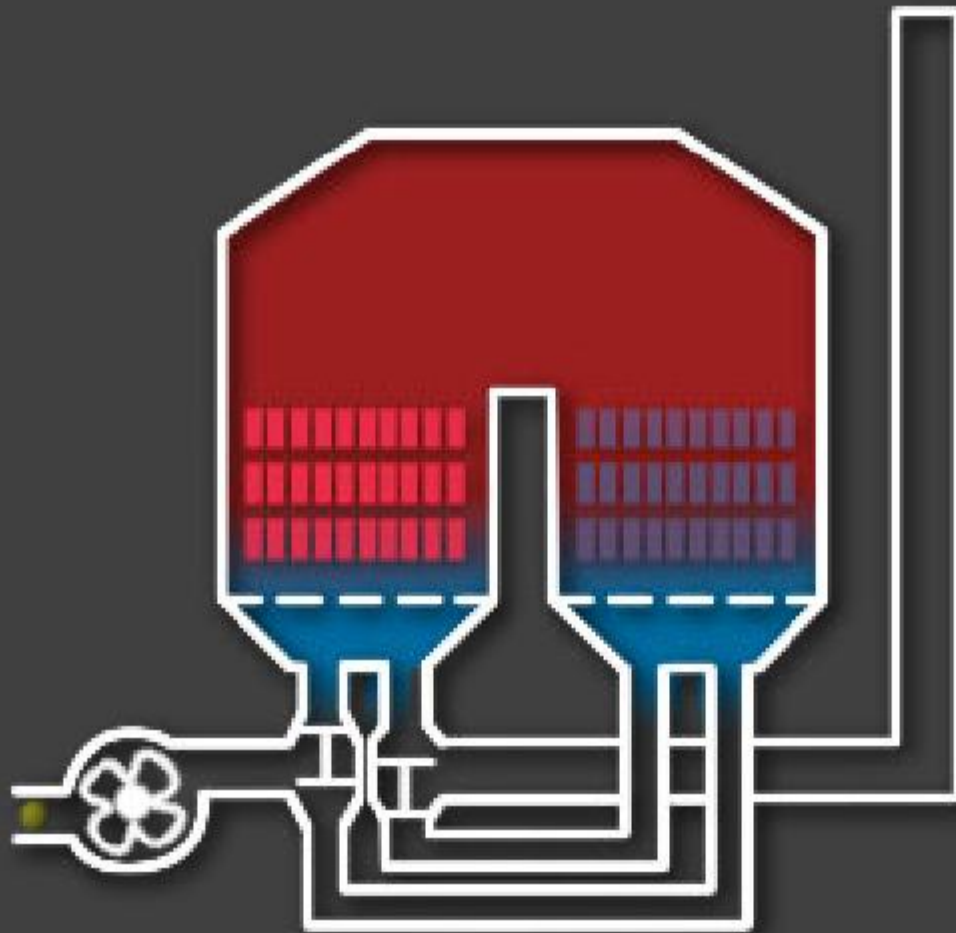
Catalytic Recuperative



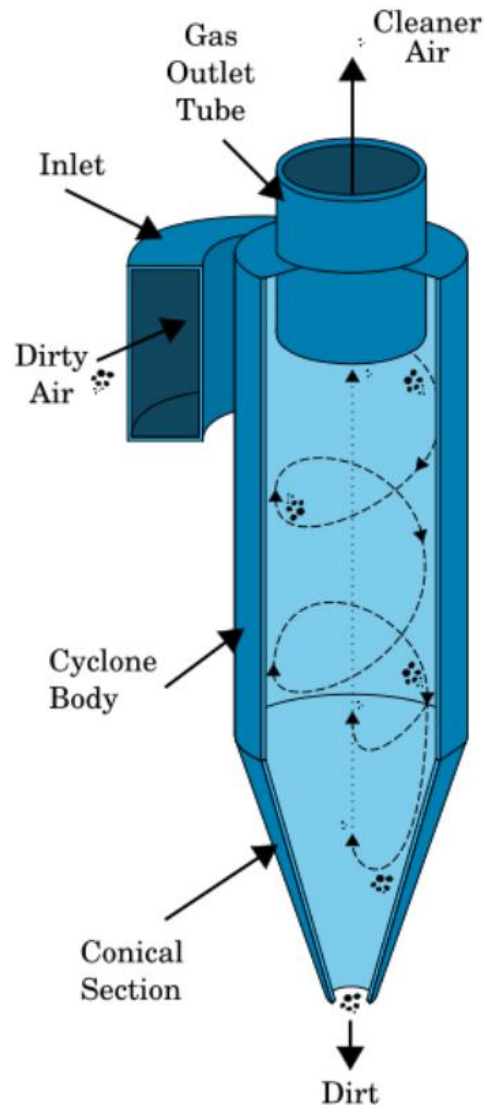
Regenerative TO



RTO Operation



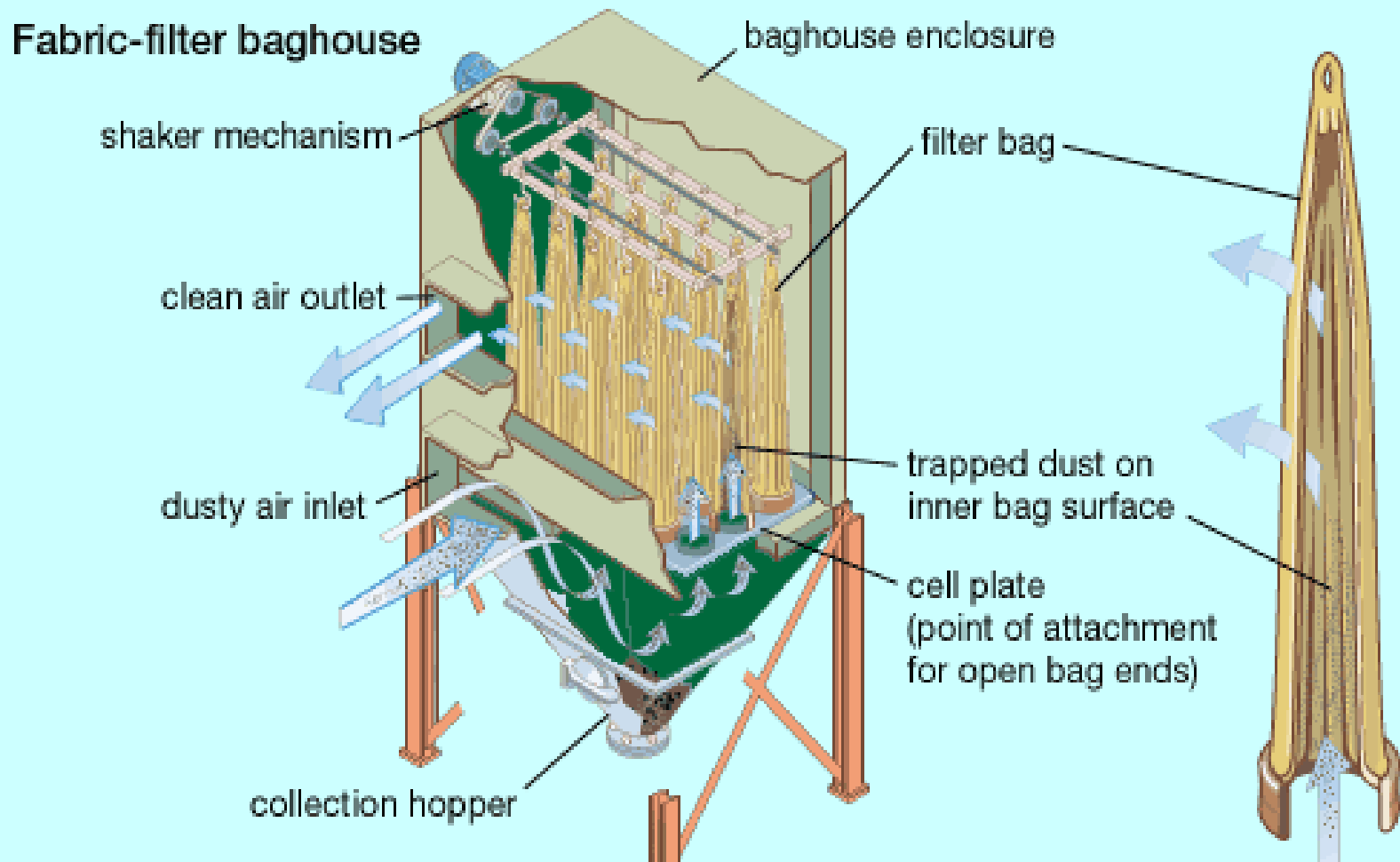
PM Control Techniques - Cyclone



How a Cyclone Works

Baghouse Cleaning Methods

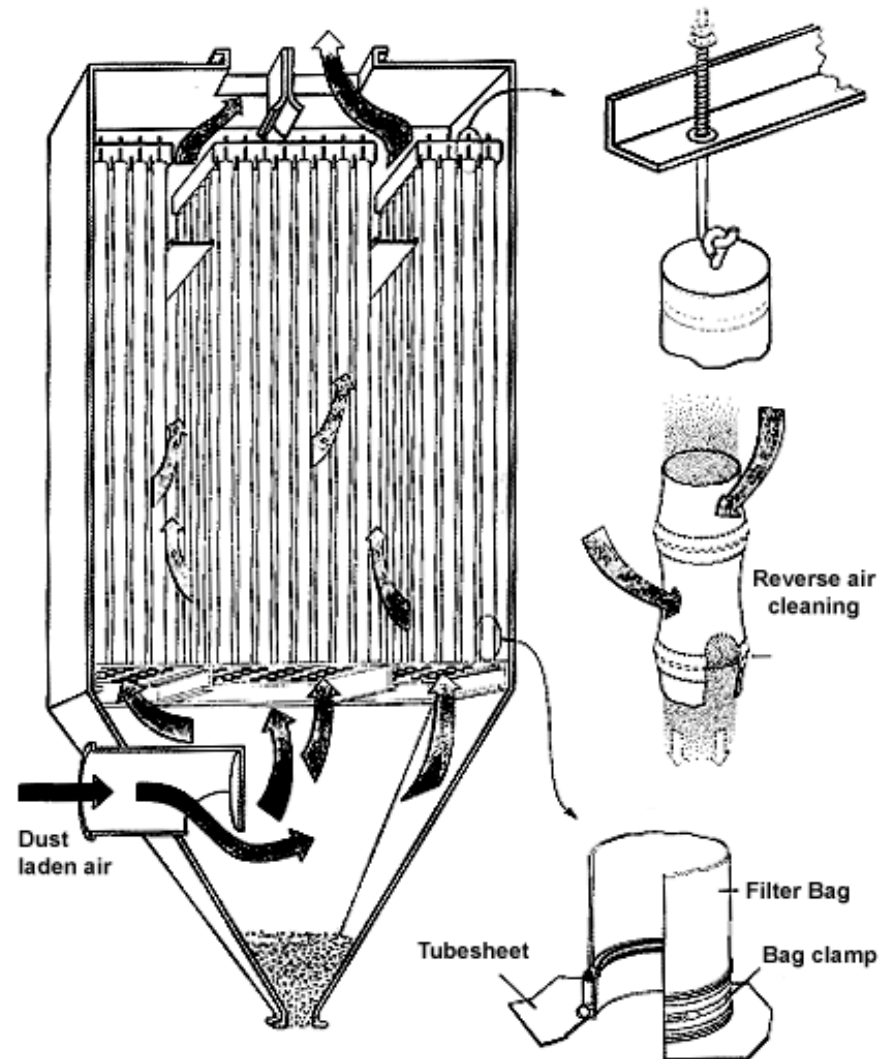
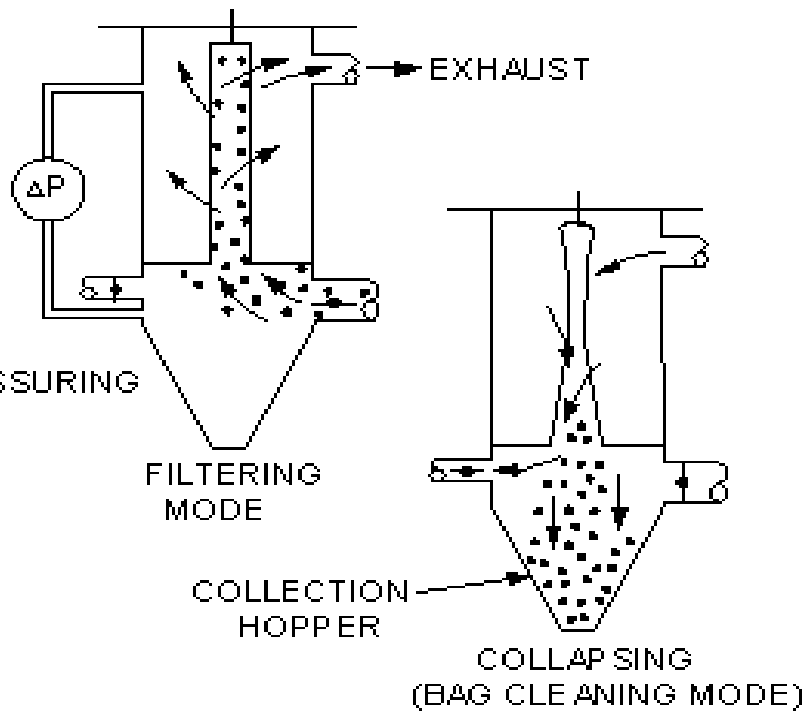
Mechanical Shaker

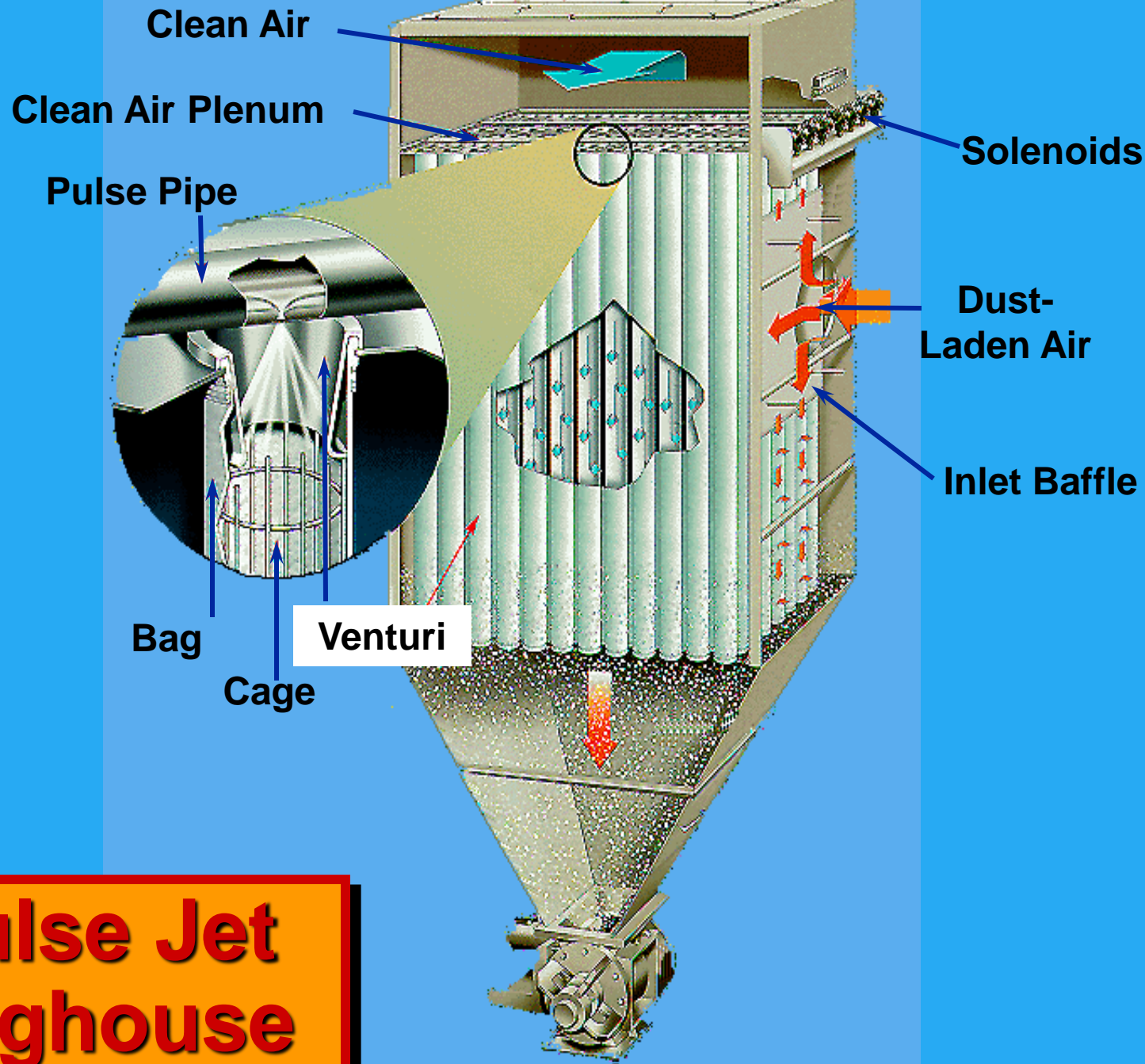


Baghouse Cleaning Methods

Reverse Air

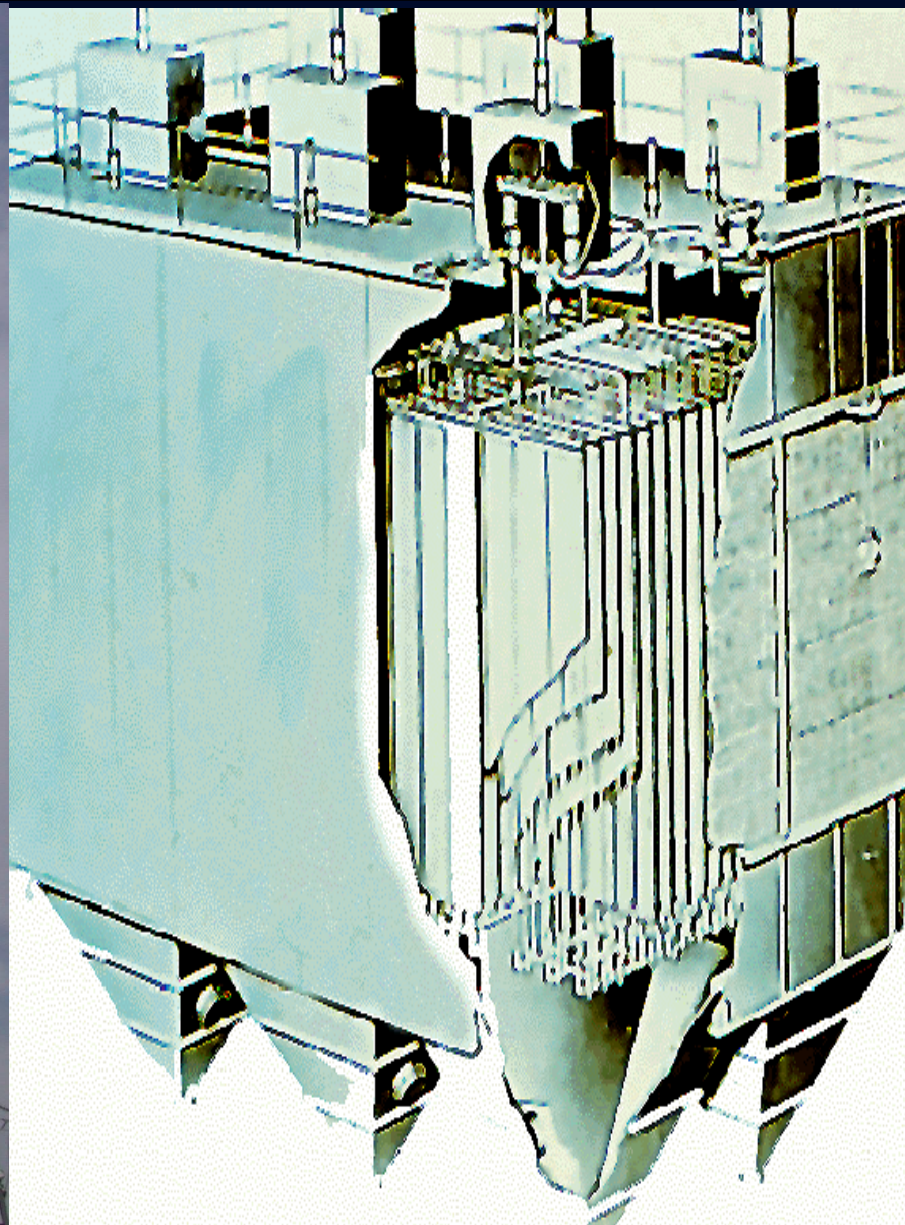
SINGLE BAG SCHEMATIC

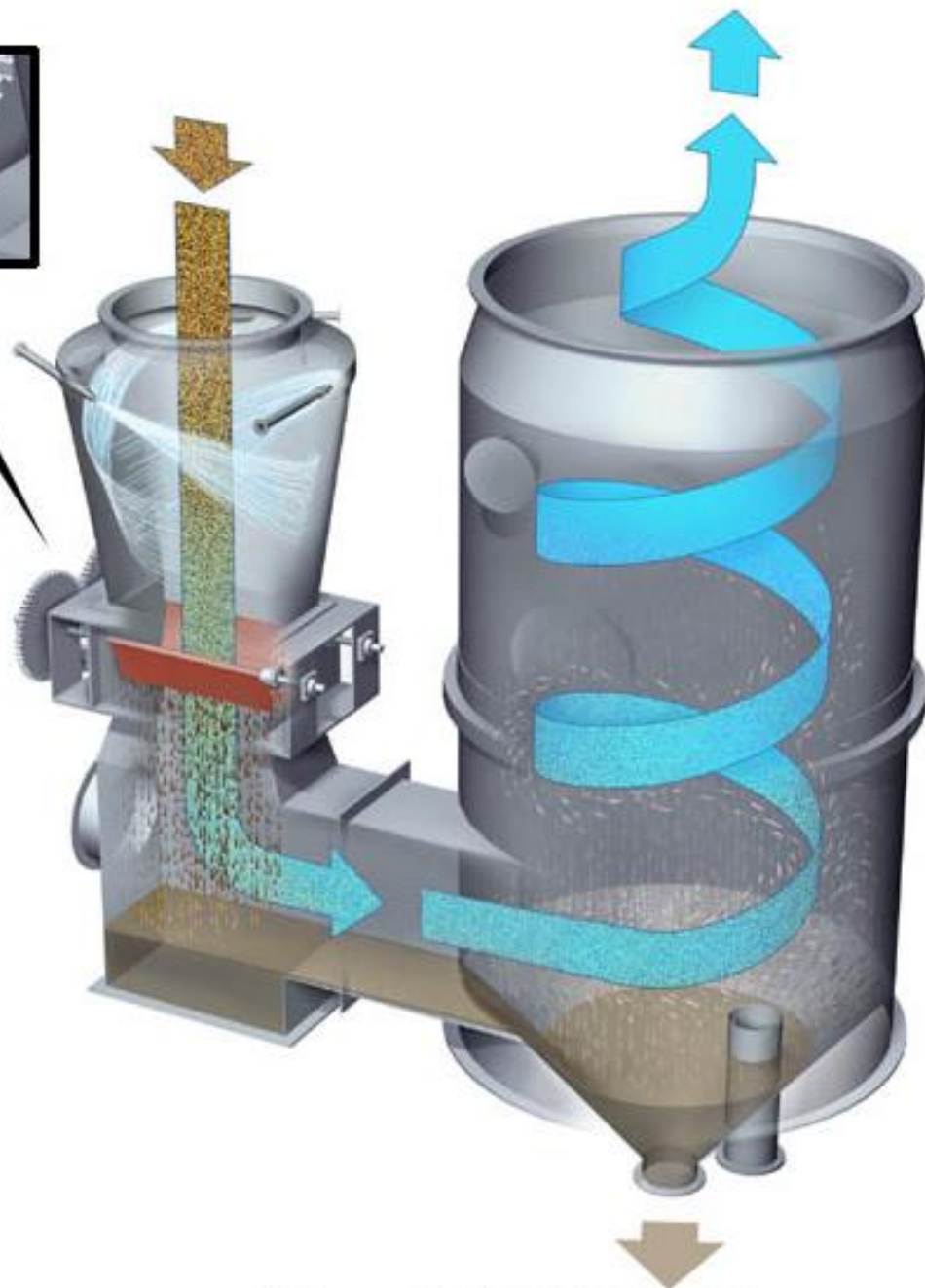




Pulse Jet Baghouse

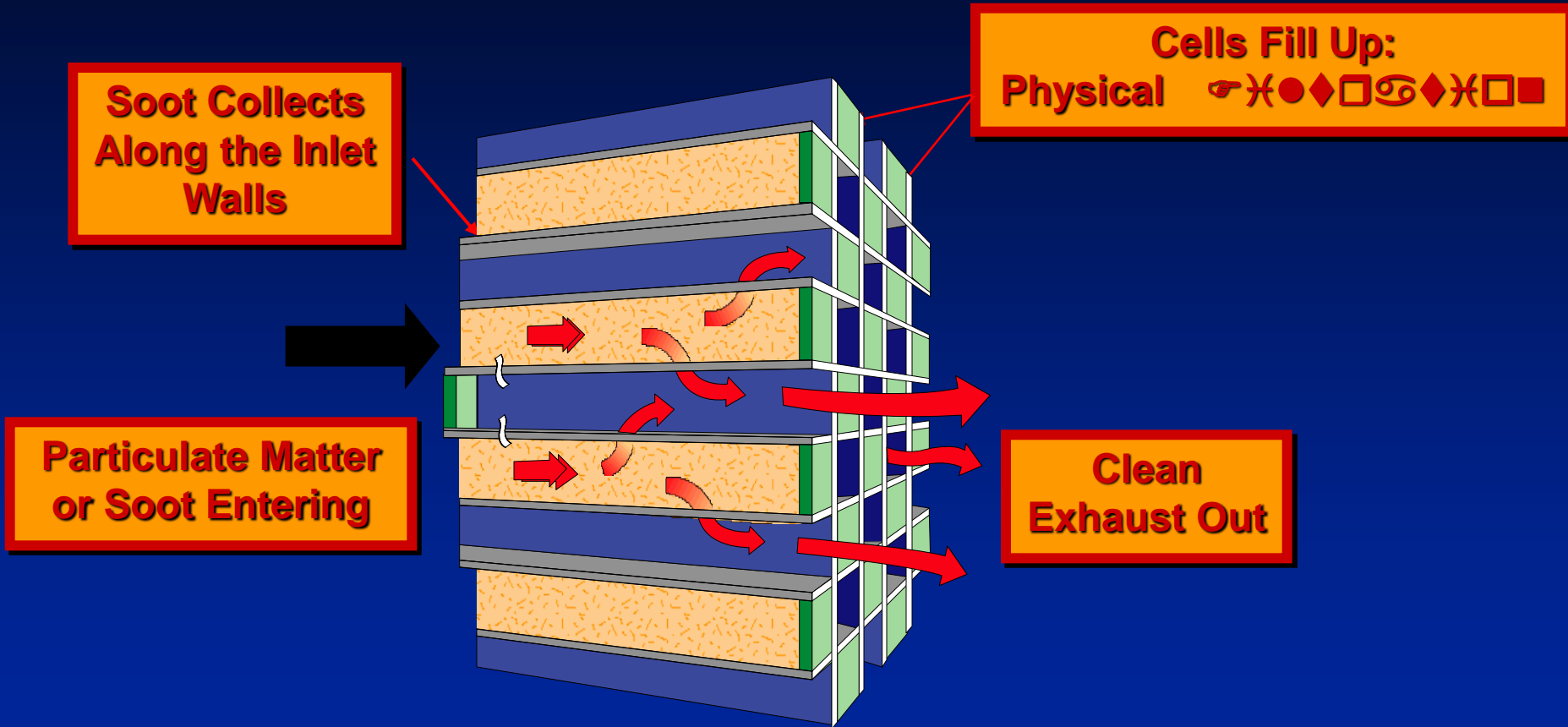
Electrostatic Precipitator





Venturi Scrubber

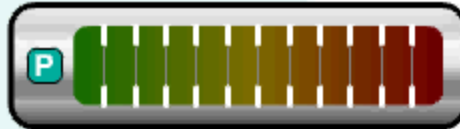
What is a DPF



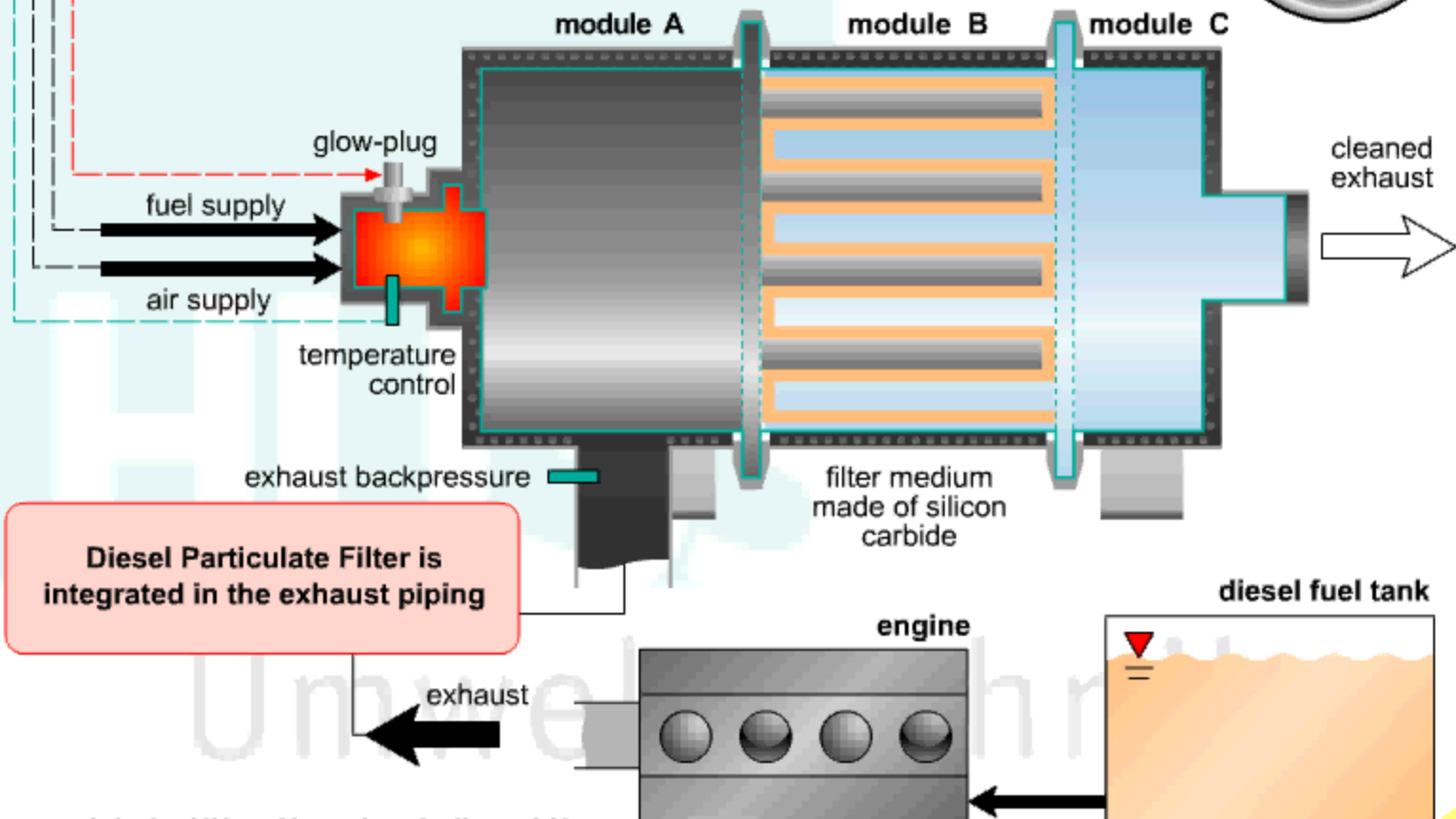
control unit



exhaust backpressure



operating hours



Diesel Particulate Filter is integrated in the exhaust piping