

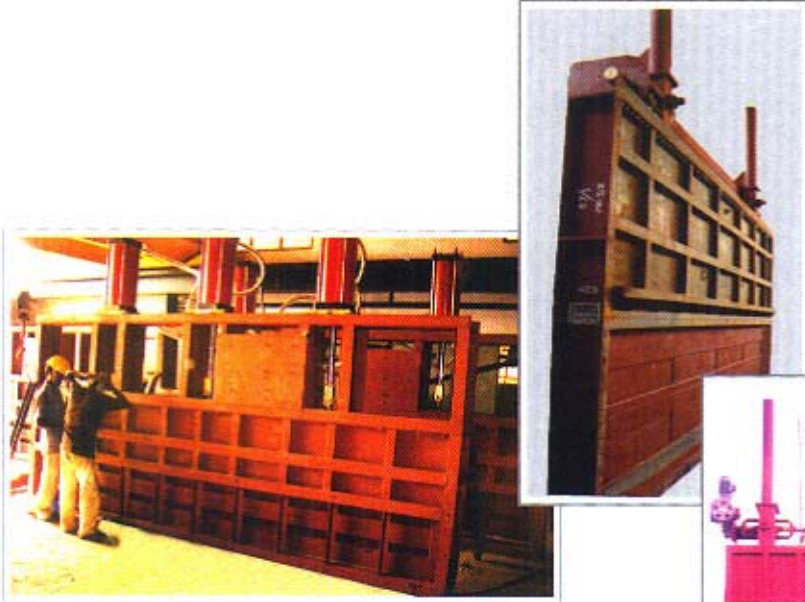
DAMPERS

FOR FLUE GAS CONTROL



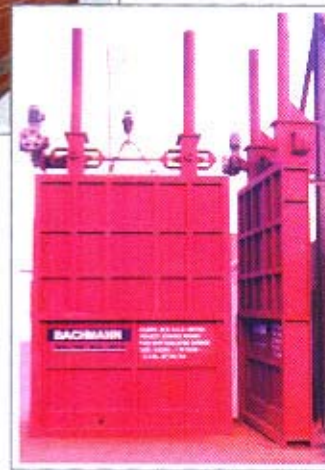
Guillotine Dampers

The ideal isolation device, BACHMANN guillotine dampers incorporate a patented flex-seat seal system, closed bonnet and a heavy duty rack and pinion drive. The self-cleaning seals that guarantee a 99.9% sealing efficiency even in high dust environments, and the rugged construction have resulted in this becoming the industry standard. There is not a single reported failure amongst the hundreds of installations over the last 25 years.



An extra-large width guillotine damper in the standard dual-rack, top-drive, closed bonnet configuration

Flex-seat Guillotine Dampers with linear pneumatic drive operators, installed at a thermal power plant in Romania, operating since 2003.



Electric actuator and gear-box driven Guillotine Dampers for a cement plant application.

Slide Gates & Diverting Gates

These heavy duty constructions are extensively used in material handling application. Typically lined with or fabricated out of abrasion resistant steels, they isolate or divert solid material such as clinker dust and coal ash.

These Electric actuated Slide Gates for cement mills feature a fully machined solid blade which gives 100% cross blade isolation under heavy dust load.



Glandular Spade Valves

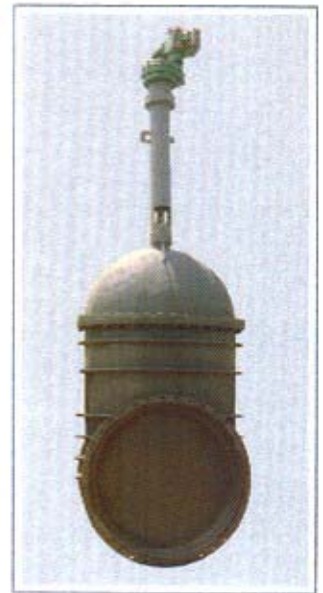
This blade plate damper design for achieving 100% cross-blade gas isolation without using seal-air fan was originally developed by Metroflex, UK. Very popular in applications such as ESP inlet and outlet, it features a unique dual bulb-sealing system and an open bonnet.

Stack Cap Damper

Act as a safety device at Boiler stack outlets for release during over-pressure condition. Mechanically self-opening when the differential duct to atmosphere pressure exceeds a pre-calculated value, they also safeguard boiler internals from rain. The compact BACHMANN design eliminates all protruding parts making it rugged and reliable.

Fabricated Gate Valves

These non-standard gate valves are tailor-made to suit the specific application requirement. They are suitable for liquid, gas or air application and have all inherent valve features like positive isolation screw drive.



Electric actuator driven rising spindle design Fabricated Gate Valve installed at Vizag Steel Plant, India has a 2600mm diameter duct opening.

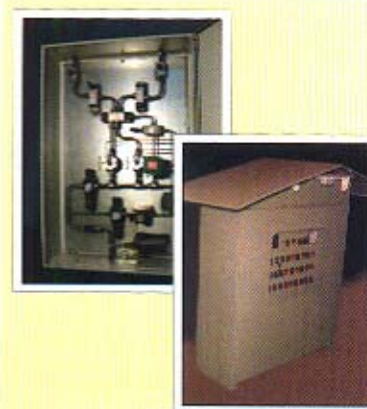
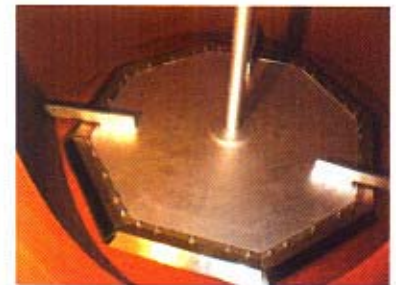
Poppet Valves

This unusual design features a pneumatic or electric driven shaft operating a vertically rising horizontal blade. Steel plant designers favour this construction for their very high reliability under exacting conditions of high temperature and dust load. Typical features include quick-acting pneumatic cylinder operation and an air-accumulator driven quick-shut off under pneumatic air supply failure condition.



The Duplex leaf seal arrangement consists of two rows of "pressure-assisted" seals which provide 99.95% sealing efficiency (100% with seal-air system).

A close-up view of the poppet damper blade assembly meant for a steel plant application. It incorporates a Simplex leaf-seal arrangement and a heating coil arrangement for maintaining sticky flue gas particulates above their condensation temperature.



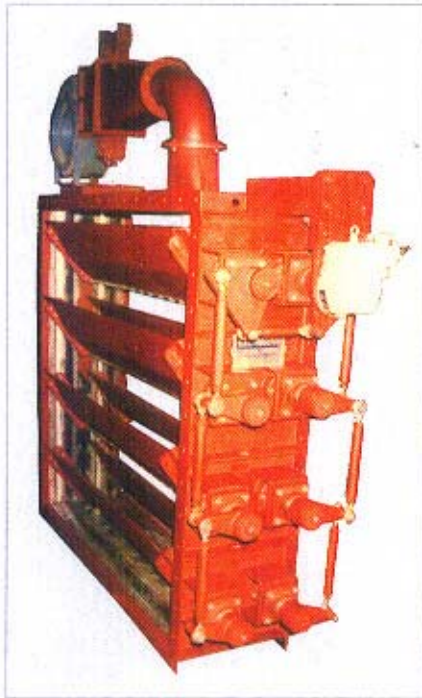
The tailor-made BACHMANN control panels utilizes electric and pneumatic accessories of best quality reputed brands. Virtually any type of drive control with logic interlocks, local monitoring and remote feedback systems is possible.

DAMPER SELECTION CHART

DAMPER FEATURES	SLIDING BLADE TYPE			FLAP OPENING TYPE					SPECIAL TYPE		
	Guillotine	Grandular Spade Valve	Slide Gate	Butterfly	Multi-Louver	Double Row Louver	Flap	Stack-Cap	Poppet Valve	Coffee-Pot	
ISOLATION/MODULATION	Isolation	Isolation	Isolation	Both	Both	Both	Both	Both	Both	Isolation	
CROSS BLADE LEAKAGE											
- Solid-Seat	Medium	X	Medium	Medium	Medium	Medium	Medium	Medium	Medium	X	
- Flex-Seat	Low	Zero	Low	Low	Low	Low	Low	Low	Low	X	
- Flex-Seat with SAF	Zero	X	X	Zero	Zero	Zero	Zero	X	Zero	X	
- Soft-Seal	X	X	X	Low	Low	Low	Low	X	X	Low	
NUMBER OF BLADES	One	One	One	One	Multiple	Multiple	One/Two	One/Two	One	One	
OPERATION TIME											
- Manual	Very Slow	Very Slow	Very Slow	Slow	Slow	Slow	Slow	Slow	Slow	Slow	
- Electric (Rotary)	Slow	Slow	Slow	Medium	Medium	Medium	Medium	Medium	Medium	X	
- Electric (Linear)	Medium	Medium	Medium	Fast	Fast	Fast	Fast	Fast	Fast	Fast	
- Pneumatic (Linear)	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	
- Pneumatic (Rotary)	X	X	X	Fast	Fast	Fast	Fast	Fast	X	X	
- Hydraulic	X	X	X	Fast	Fast	Fast	Fast	Fast	Fast	Fast	
LEAKAGE TO ATMOSPHERE	No	Yes	No	No	No	No	No	Negligible	No	Negligible	
AVAILABLE FEATURE											
- Positioner	X	X	X	Yes	Yes	Yes	Yes	Yes	Yes	X	
- Ext Limit Switch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
- Position Indicator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
- Fail-Safe	Stay Put	Stay Put	Stay Put	Open/Close Stay Put	Open/Close Stay Put	Open/Close Stay Put	Open/Close Stay Put	Open/Close Stay Put	Open/Close Stay Put	Open/Close Stay Put	
- Quick-Shut	X	X	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
HIGH DUST APPLICATION	Yes	Yes	Yes	No	No	No	No	No	No	No	

Louver & Butterfly Dampers

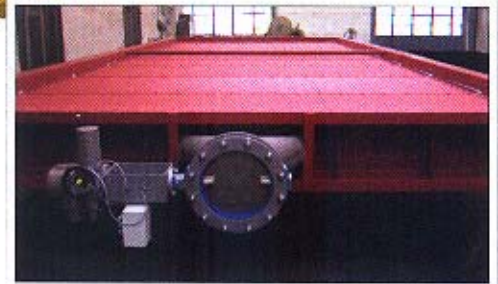
Versatile in both isolation and modulation duty, featured with the BACHMANN heavy-duty linkage arrangement and flex-seat sealing, make this the most reliable and rugged product available in the market today.



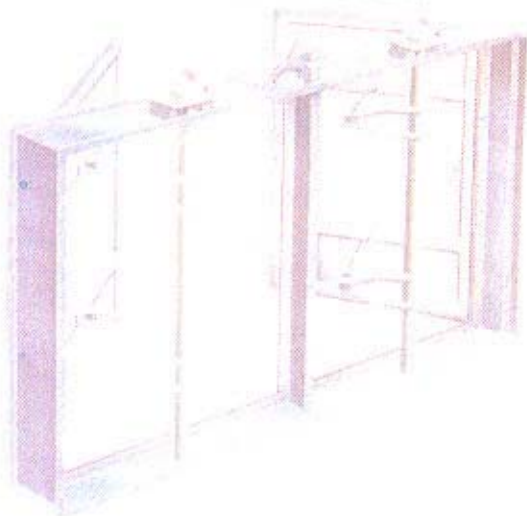
Double-row Louver Damper with flex-seat seal and seal-air fan system ensures zero cross blade-leakage.



Multi-louver Damper with electric drive operator. The opposed blade design is ideal for modulation of flue gas flow.



This Tandem Damper ensures 100% isolation as it has a valve for injecting pressurised air. When fully open, it has an open cross-flow profile that creates very low pressure drop.



Flap Dampers

The damper is contained within the duct opening and its less weight means that it reduces the duct load and induced wind loads on the ducting system. A suitably designed drive system will give quick open or close (as desired) operation in case of drive supply failure.

Link rod arrangement for positive motion transfer has allowance for adjustment of angular misalignment.

Positive damper **shaft sealing** is achieved by means of a spring loaded non-asbestos gland packing assembly.





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