

FOURESS



TWIN SEAL FLAP ISOLATOR

The Perfect Answer To Coal Mill Isolation

The Isolation Of Primary Air To Pulverised Fuel (PF) Mills

Safety and reliability have been a challenge in today's coal fired boilers at thermal power stations. FOURESS, in technical consultation with a few discerning customers developed the perfect solution to the pressing problem of effective Isolation of PF mills. This has been done with the ingenious concept of TWIN SEAL FLAP (TSF) Isolator, which guarantees 100% sealing efficiency for safe access to on-load maintenance of PF mills.

Majority of the coal fired boilers in India use guillotine gates as Isolating equipment for PF mills. This technology has become out dated owing to its ill-equipped provisions. As such, Maintenance Engineers on the site face a host of problems, some of which are as follows:

- Existing guillotine gates do not use an effective sealing system. This results in leakage of gas to the downstream. High velocity coal laden gas further aggravates the leakage making it virtually impossible for maintenance personnel to take up on-load maintenance. Thus an additional blanking plate becomes essential.
- The entire operational area gets polluted due to transit leakage during operation of the guillotine gate.
- There is frequent failure of cylinder seals owing to heat radiation during operation.
- Guillotine gates often get jammed because of high temperature (warping), mainly due to narrow guides and improper bearings.

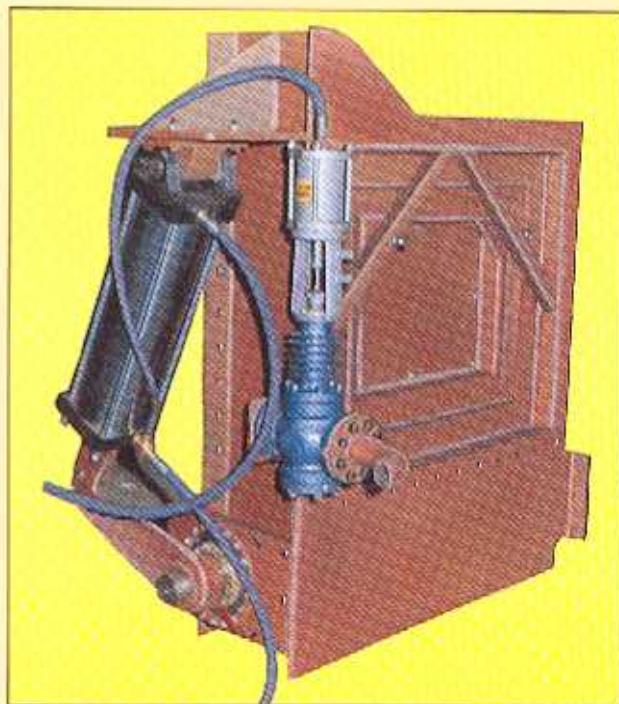
To put an end to these crippling problems, FOURESS devised a simple product called **TWIN SEAL FLAP (TSF)**, which provides the precise solution to the above mentioned drawbacks in guillotine gates.

The perfect Isolator, **TWIN SEAL FLAP** has proved its efficacy, ever since its first installation at Koradi Thermal Power Station in 1982 and subsequent installations of over a 100 units in a number of Thermal Power Stations in India.

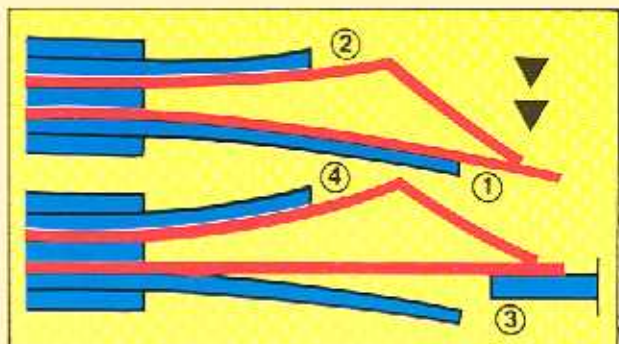
IN-BUILT CHARACTERISTICS OF TWIN SEAL FLAP ISOLATOR

SEALING SYSTEM

The **TSF** Isolator is provided with double row of seals, made of superior SS 316 material. Each row of sealing system provides

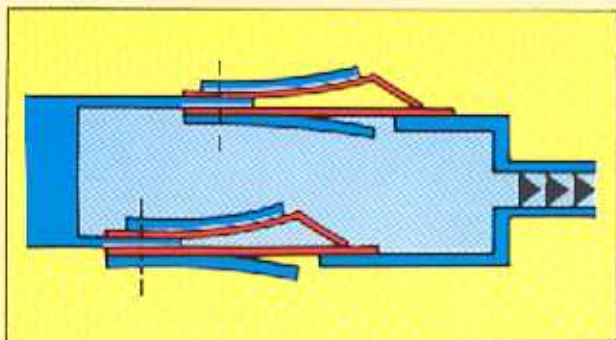


99.98% sealing efficiency on cross sectional area. Care is taken to ensure that leakage from the first row of seal is discharged into the atmosphere through a vent valve thereby ensuring 100% leak tightness across the duct.



The sealing system is suitable for pressures upto 2000 mm WG and temperatures of about 500°C. The seal consists of a thin metal leaf strip (1) predeflected by a bias spring. (2) The seal strip is pressed against the

landing surface (3) forming a flat 20 mm wide sealing surface around the blade periphery. The operational deflection of the sealing element is about 17 mm and it can tolerate upto 12 mm misalignment, without any decrease in sealing efficiency. In the open position the seal is prevented from fluttering by a support plate (4) against which the seal strip is held by the bias spring.



TRANSIT LEAKAGE

Since the **TWIN SEAL FLAP** is a completely enclosed type design, there is no possibility for transit leakage during operation.

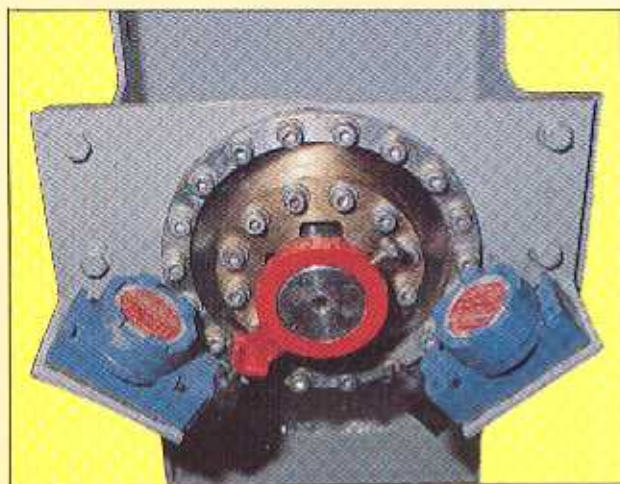
ACTUATION / DRIVE

The pneumatic cylinder is provided with viton seals. The body is insulated with ceramic fibre and prevents seal failure due to heat radiation. The piston is wrapped with high tensile nylon bellows to prevent dust accumulation on the piston rod.

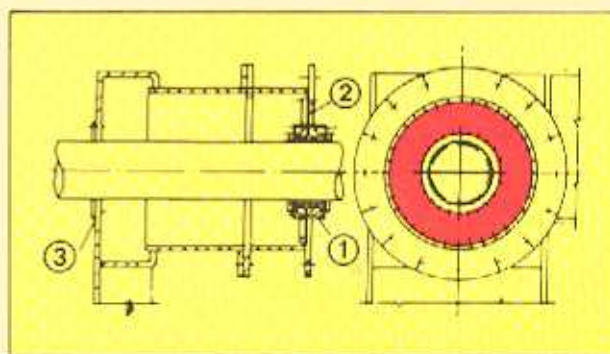
The drive is available with pneumatic/electric/manual and is externally mounted for easy operation / maintenance.

HIGH TEMPERATURE BEARINGS

The bearing incorporates a unique design concept:



- It consists of a gun metal bush (1) mounted in a concentric ring which is in turn connected to a mounted plate by a flexible stainless steel diaphragm (2).
- The simple design allows the central bearing system to deflect angularly besides providing the self aligning capability.
- The shaft seal (3) comprises of two split annular or ring like flexible metallic discs. These are mounted in a machined housing fixed to the inside of the frame, held in place by a stainless steel plate, enabling the gland seal to float to accommodate shaft movement.



OTHER ADVANTAGES

- ✓ **TWIN SEAL FLAP** ensures operational simplicity as it opens and closes at 90° operation.
- ✓ All critical components of the isolator like the blade when opened is away from the flow path to ensure a considerable less pressure drop.
- ✓ The compact structure of the **TSF** is a great advantage in the case of retrofit jobs. Since the weight of the **TSF** compared to gate for the same size of the duct is approximately half, no external supports are required. It can also be fitted into the existing duct without any modification.
- ✓ Fouress manufactures **TSF** Isolator to suit Customers' Specifications.

✓ The Fouress **TSF** Isolator are installed in horizontal, vertical and inclined positions. The main shaft of the isolator can be arranged to suit any orientation. Limit switches are supplied in pairs to control the terminal positions of the Isolator blade which facilitates interlocking with other electrical controls.

✓ The Fouress **TSF** Isolator are not only suitable for on-off application but also for regulation duty.

The fields of application of Fouress TWIN SEAL FLAP ISOLATOR extends to many industries and activities including

Thermal Power Station

- Coal Mills
- P.A. Fans

Oil Refineries

- Drop Out Doors

Gas Turbine

- Heat Recovery Steam Generator
- Auxiliary Fans

Diesel Engine Sets

EXPERIENCE

POWER PLANTS

MSEB (KORADI, NASIK, BHUSAWAL), MPEB (SARNI, KORBA, GEB, UKAI), OSEB (TALCHER), NTPC (RAMAGUNDAM, FARAKKA, SINGRAULI) ETC.

CEMENT PLANTS

KCP LTD. (NEEMECH CEMENT PROJECT), DHAR CEMENTS, ACC (CHANDA), RAYMOND CEMENTS, MADRAS CEMENTS ETC.

REFINERIES & PETROCHEMICALS

EIL, (MADRAS REFINERIES, COCHIN REFINERIES, HPCL - VIZAG REFINERIES, BPCL BOMBAY, BONGAIGOAN REFINERY, IOCL - GUJARAT REFINERIES), L & T (RELIANCE PETROCHEMICALS), IOCL (GUJARAT, BARAUNI, MATHURA, HALDIA) ETC.

DESULPHURISATION PLANTS

TATA ELECTRIC COs., TROMBAY).

FERTILIZER

BHPV (HFCL, BARAUNI) ETC.



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