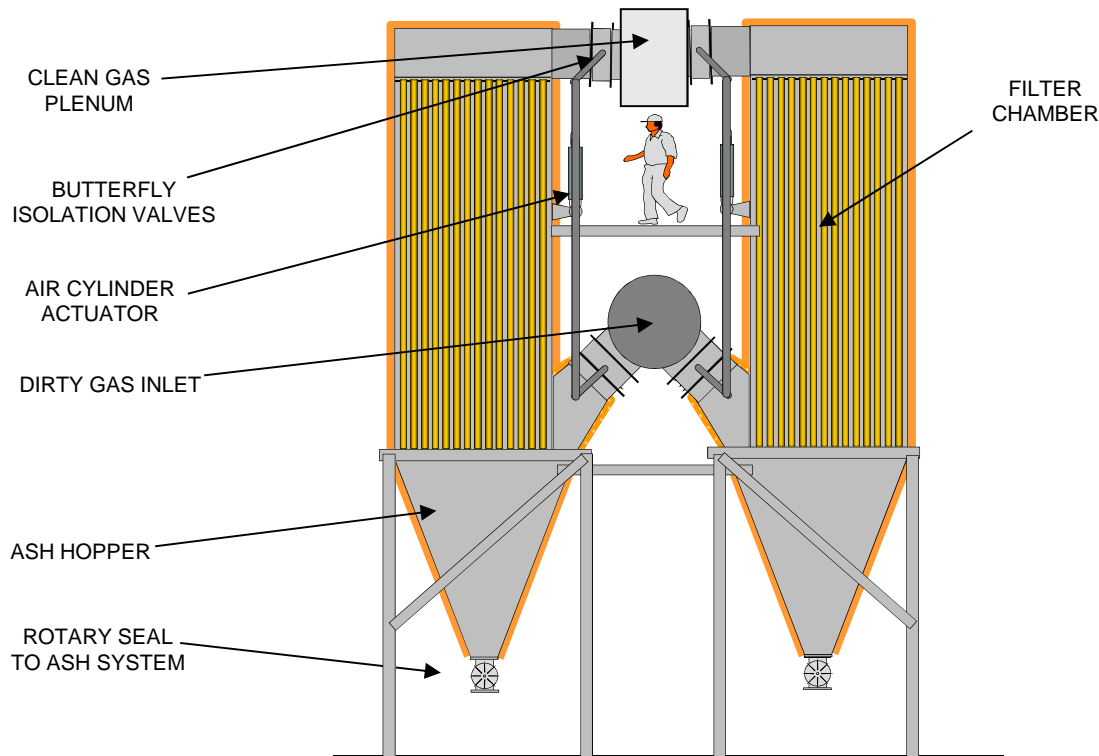


## PRODUCT DESCRIPTION P301

### MODULAR BAG FILTER



The Bag Filter is the only sure way to emit virtually zero particulate, or ash to the atmosphere from the combustion of many fossil and biomass fuels. However most power plants are required to operate on a high Availability so it is important that the Bag Filter can be serviced or repaired with the boiler operating, preferably at MCR capacity.

The DGA bag filter can be ordered with a spare module or with increased capacity to allow MCR to be maintained at all times, even with one filter unit out of service.

The isolation system is by twin soft seat actuated butterfly valves on each module which close to isolate the module allowing access to the filter chamber so that bags can be checked and changed as required. The remaining modules continue to operate normally.

The modules are designed to be standard sizes which can be delivered to site as fully assembled Units which fit into an erected frame and connect to the distribution manifold. The number of modules is dependent on the size of boiler

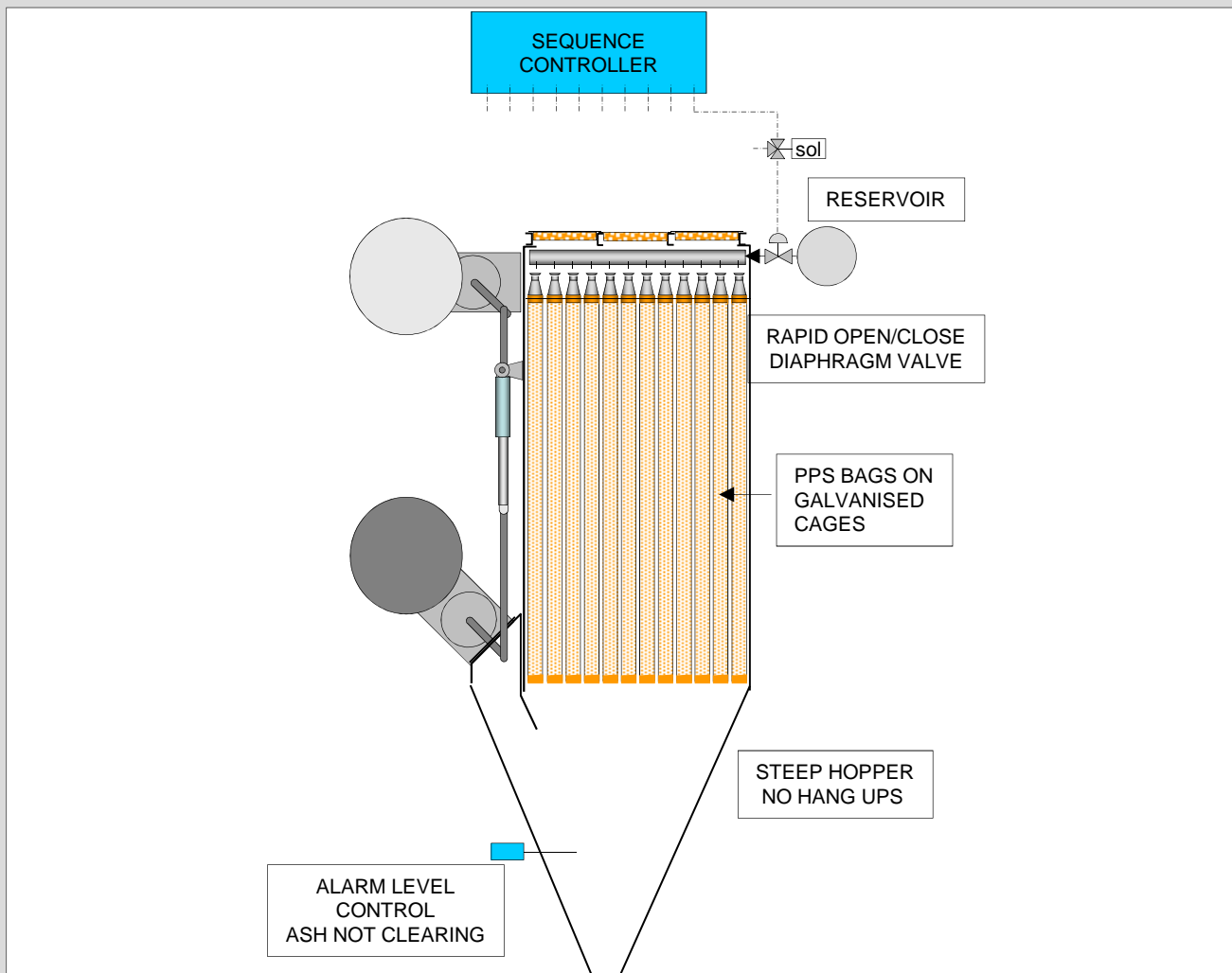
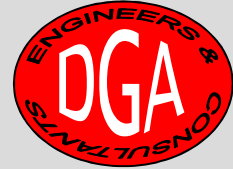
After erection on site the filters are insulated and clad with removable panels where access is required, such as the top and side doors to the filter chamber, for bag removal.

The ash is collected in the hopper on each module. The hopper has valley angles of  $\sim 60^\circ$  which is steep enough to prevent hang ups or bridging. This ensures that the dust does not build up and potentially cause a fire. A single point level probe is also supplied for each hopper to ensure that the hopper is emptied continuously.

The filter bag material is selected from various manufacturers to suit the temperature of the exhaust gas, and various chemical characteristics which may effect the bag life. For boiler applications PPS is the preferred material.

## PRODUCT DESCRIPTION P301

### MODULAR BAG FILTER



#### DESIGN BASIS

The DGA Bag Filter is designed to provide a long life if used as required by the Operation and Maintenance Manual which is delivered with the unit.

This specifies all the major criteria on which the filter is designed ie

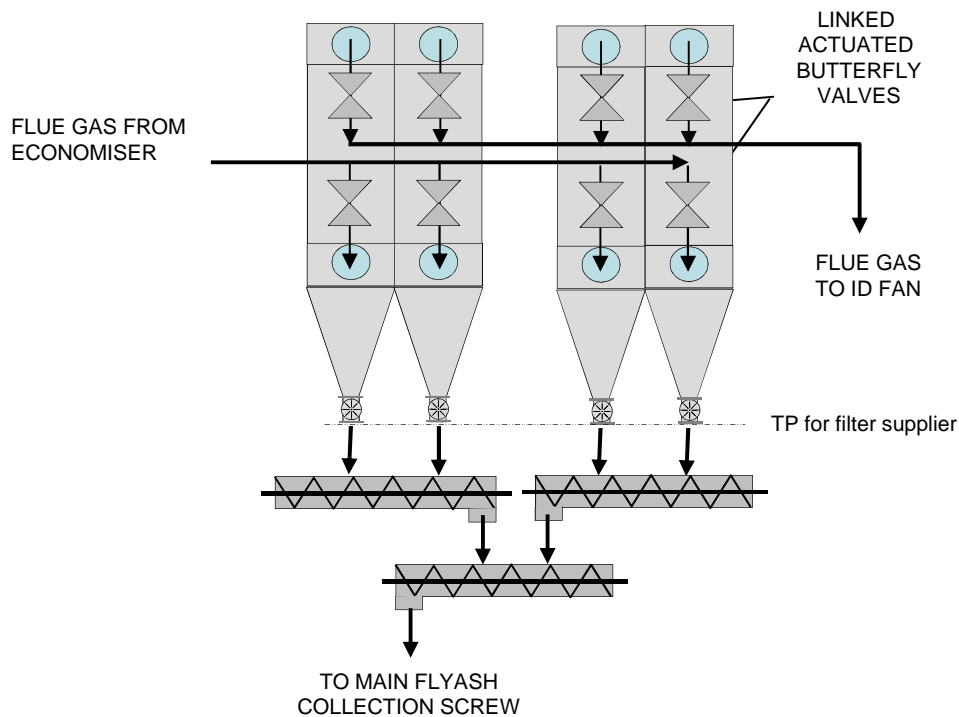
- Air to Cloth ratio in m/s
- Operating temperature – Normal and Peak
- Can velocity
- fuel ash
- cleaning air pressure
- cleaning frequency

We select the best cleaning and control equipment available and this is from GOYEN, or equal. Use of these controls and careful design and manufacture ensure that the bags remain operational for a life of up to 3 years before they need changing or as recommended by the filter bag maker..

Bag Life cannot be subject a formal guarantee as the plant must be run exactly as stated in the manual or the bag maker will not warrant the life. However this can be taken as the best operating regime.

### SCHEMATIC

The following shows how ash is collected from the Filter modules



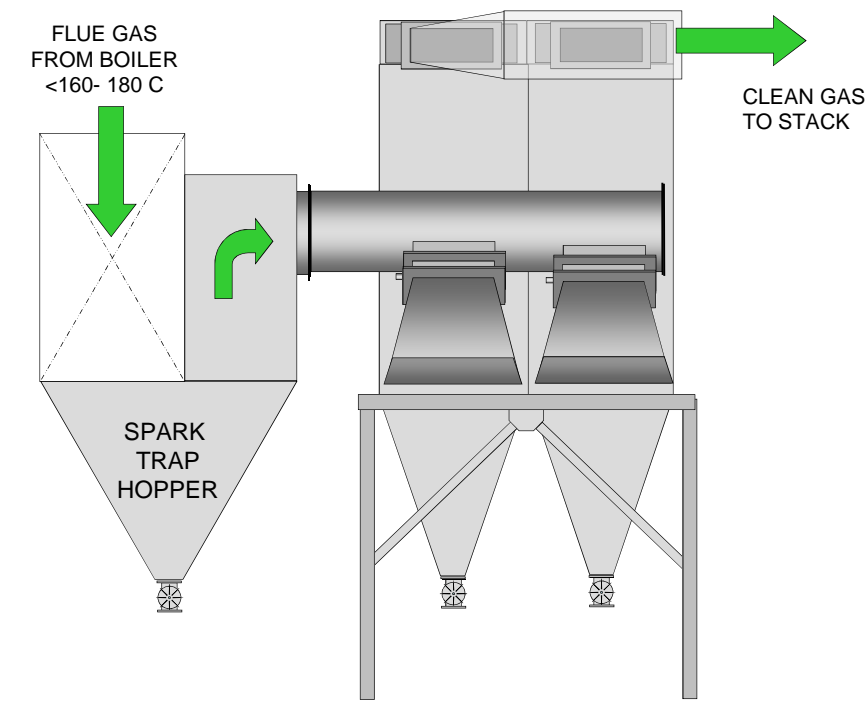
### FEATURES

- PPS\* bags on galvanised wire cages
- snap collar locates filter bags in tube plate – no leaks
- isolatable modules so can maintain filter on line, even change bags
- bags removed vertically through roof panels
- optional spare module so boiler MCR possible with one module isolated
- high temperature butterfly valve for isolation
- steep angle flyash hopper to prevent hang ups
- level probe for continuous check that ash is discharged
- broken bag detector, allows early detection of failure
- can be fitted with dry scrubber to capture acid gases (not included)
- gas tight casing in carbon steel.
- pulse duration controlled by separate controller
- air consumption reduced by fast action air valves

\* Bags in alternative materials available for higher temperature gas, different characteristics to suit application eg P84, Teflon etc

#### PROTECTION OF FILTER

For the Filter to be effective the gas must be presented to the filter without carrying potentially inflammable “sparklers” from the combustion. These can start a smolder fire in the bag house so a guard cyclone is generally offered for installation before the filters. The alternative is the ducting and hoppers should be designed to leave a large low velocity area where these larger particles can fall out of suspension. We have called this a spark trap.



For most fuels this is only precautionary, but when burning very wet fuels a proportion of the fuel will not burn out leaving a higher than normal carbon in ash. This can burn as a smolder fire when collected either in a Bag Filter or ESP.

#### HIGH GAS TEMPERATURE

The bag life can be shortened by passing high temperature gas through the filter for protracted periods. The filter should be interlocked to prevent this occurring.

DGA can supply an attemperation system which sprays atomised water into the flue gas in a controlled manner to reduce the temperature. However this system should be fitted with a safety system to check that the water is properly atomised or damage will result to the bags

#### FOR WASTE FIRING PLANTS

DGA can also supply the bag filter with a dry powder mixing tower so that the unit forms part of a dry scrubber system. This is suitable for control of acid gases (HCl and SO<sub>2</sub>) which may be Emitted from the combustion of fuels. It can also be injected with Active carbon for the removal of Heavy metals (Hg, Cd etc) and dioxin and furans.

DGA offers a whole range of equipment for handling and burning biomass, fossil and waste fuels