

IN-LINE GUARD SCREEN

1. Introduction

The use of **In-Line Guard Screens**, also known as a **static strainer**, has become a favourable option due to the continuous downscaling of maintenance staff on mines. This product has earned its acceptance as part of a continuous process in removing solids from slurry or water stream.

PrepQuip's In-Line Guard Screens removes unwanted oversize material in water or slurry streams, preventing the occurrence of blockages and protecting downstream equipment. In-Line Guard Screens are supplied as standard or customised units and can be operated manually or automatically as per the clients request.

In-Line Guard Screens **line size** ranges from **80 to 500mm (NB)**, with **screen apertures** of **0.5mm, 1mm, 3mm, 5mm, 10mm** and can handle **capacities** from **41 to 1590 m³/hr.**

2. Benefits of the In-line Guard Screen

- Most process equipment is sensitive to oversize material and debris accidentally being present in the process stream. E.g.: The inlet or spigot of a cyclone can block if oversize material or debris are pumped to the cyclone. Blocking of spray nozzles with debris in process water can lead to process downtime. Most process equipment with nozzles e.g. Downcomers in the Turbo Column, will block if oversize debris is fed to the system, which can lead to unplanned maintenance and downtime with the subsequent loss in production.



- The screening surface inside the In-Line guard screen is manufactured from abrasion resistant wedge wire. The wedge wire profile tapers away from the incoming pulp, which reduces the chance of screen blinding.
- The In-Line guard screen is designed with a self-cleaning system. The screen contains a debris-flushing outlet, which routes the pulp across the screen instead of through the screen. The flushing outlet is normally equipped with a dumping valve. When the dumping valve is opened, the debris collected inside the screen is flushed out. This self-cleaning action reduces or even eliminates the need to open the screen to remove debris, therefore reduces downtime and production losses.

3. Operating principle

The feed is either pumped or gravity fed to the Guard Screen. The pulp flows through the cylindrical wedge wire screen situated within the body of the outer casing. The undersize material pass through the screen aperture and in turn via the outlet flange. The screened pulp is now free of any oversized particles.

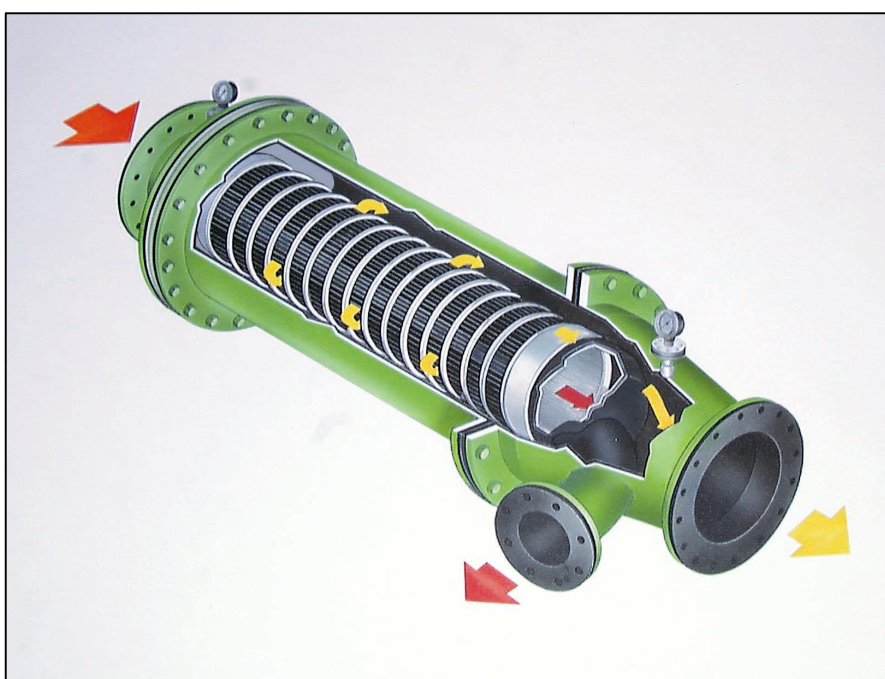


Figure 1: In-line guard screen



The material larger than the screen aperture will collect inside the wedge wire screen. As the material builds up, the screening area is reduced. If more than 80% of the screen area becomes unavailable, the liquid flow through the screen will become restricted and decrease. This decrease in liquid flow will result in an increase in pressure on the feed side of the screen and a decrease in pressure on the discharge side. To prevent excessive build-up inside the screen, the system has to be flushed on a regular basis. The In-Line guard screen is designed with a dumping arrangement to prevent total screen blockage.

A dumping valve is connected to the debris outlet flange of the In-Line guard screen, as shown in the diagram on the previous page. By opening the dumping valve, the pulp is forced to flow through the screen cylinder, therefore, removing any oversize material.

The debris outlet can be equipped with a hand valve for manual dumping; alternatively, an automated dumping valve system can be installed. The screen must be flushed at regular intervals (e.g. once a shift) to prevent screen blockage, however, dumping cycles will have to be determined for each application.

AUXILIARIES

The following auxiliaries are available that could be fitted onto the In-Line Guard Screen:

1. Manual operation

- Manual valve.
- Diaphragm type pressure gauge.

2. Automatic operation

- Pneumatic valve.
- Pressure transmitters.



- The transmitters can be connected to the filter PLC or SCADA system on the plant.
- The dumping occurs on a timed basis from the filter PLC (set time) or from a local field mounted adjustable timer.



Figure 2: Screen Installation - Sishen Mine



Figure 3: Screen Installation Conduit Protector (De Beers)

Please feel free to contact us at process@prepquip.com or visit our website www.prepquip.com for more information.