INTERPLANT STANDARD - STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR SELECTION AND INSTALLATION OF BASKET FILTER FOR INDUSTRIAL WATER**	**IPSS:1-06-040-01**
	Corresponding IS does not exist	

0. FOREWORD

0.1 This Inter Plant Standard prepared by the Standards Committee on Pipes, Fittings, Valves and Piping Layout, IPSS 1:6 with the active participation of the representatives of all the steel plants and other agencies, established manufacturers of Basket Filter for Industrial Water & was adopted in September 2001.

0.2 Inter Plant Standards for steel industry primarily aim at achieving rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories, and provide guidance in indenting stores or equipment for existing or new installations by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes (or types) from among the products mentioned in this standard for the purpose of company standards of individual steel plants. It is not desirable to make deviations in technical requirements.

1. SCOPE

1.1 This Inter Plant standard covers the guidelines for selection and installation of on-line basket type filters for industrial water supply in the steel plant.

2. NEED OF FILTERS

2.1 Water is an important input for processing of steel. It is mainly used as coolant in the steel industry. For recirculation system on-line filter is an essential element for water quality control as well as for meeting specific process needs.

3. SOURCE OF CONTAMINANTS

3.1 In recirculation process, water is exposed to solid contaminants and it goes on increasing, depending on the number of water cycle through CTs or cooling pond. The source of contamination can be analysed as under:

i) Fall of particulate matter from atmosphere in the cooling water pond.

ii) Growth of shells and vegetations in the pond of recirculating water.

iii) Inflow of silt and aquatic life along the make up water of the plant.

iv) Entrainment of dirt through the air in the upward drought cooling towers.

v) Dislodging of encrustation from pipe lines with the flow of circulating water.

vi) Arising of manufacturing process residues along the flow of water.

vii) Breakage of cooling elements/wooden fills etc. during heat exchange process of water.

viii) Arising of welding beads, gaskets etc. during repair of equipment and pipe lines.

4. TYPE OF BASKET FILTERS

a) ON-LINE SIMPLEX FILTERS

On line simplex basket filters are used where flow can be interrupted to allow removal of elements for cleaning purpose.

b) ON-LINE DUPLEX FILTERS

The duplex filters shall employ a simple, rugged and positive method for change over without interruption of flow, using two interconnected valve operated by shafts, ensuring positive sealing while isolating each side for cleaning of the elements.

The change over shall be electrically/manually operated type. It shall be provided with a "built-in" check so that at any point of time one filter is always is open condition.

5. SELECTION OF FILTERS

5.1 Selection of type & size of filter is dependent on the quantity of water in the recirculation system, the level and type of contaminants and filter fineness required.

The following parameters are necessary to be followed for selection of filters :

5.1.1 Process Water :

i) Sources of water :
ii) Max. – Min. flow rate (in M3/Hr.)
iii) Working pressure (in kg/cm2)
iv) Temp. of water (in deg.C)
v) pH value of water.

5.1.2 Suspended solids :

i) Total suspended solids (in mg/litre)
ii) Specific gravity of solids
iii) Type of solids : Granular, Flaky, Fibrous.
iv) Range/distribution of particle size.
v) Other contaminants in water.

5.1.3 Filter parameters :

i) Required degree of filtration (Micron/mm/ppm)
ii) Allowable pressure drop in clean condition (kg/cm2)
iii) Allowable pressure drop in 50% choked condition (kg/cm2)
iv) Permissible loss of water during backwash (Cu.M.)

5.1.4 Method of filter cleaning :

i) By line shut down (for simplex filter)
ii) Without shut down (for duplex filter)

5.1.5 Back washing : (Refer figure No. 1 & 2)

i) Automatic or Manual operation
ii) Desired frequency of backwash
iii) Time period for back washing

5.1.6 Supply of backwash water :

i) Static tank/system water
ii) Back wash water pressure
iii) Available quantity of back wash water

5.1.7 Material of construction :

i) Filter housing
ii) Filter flanges
iii) Filter element
iv) Disc & disc seating
v) Shaft/spindle

5.1.8 Dimension of filter :

i)	Inlet flange details	- NB, PCD,OD in mm
ii)	Outlet flange details	- NB, PCD,OD in mm
iii)	Backwash flange details	- NB, PCD,OD in mm
iv)	Limiting dimensions of filter	- In mm.

5.1.9 Drive shaft mechanism :

i) Mechanical/Electrical system
ii) Power supply system

5.1.10 Accessories : The standard accessories normally required are as under :

i) Matching pipe flanges for suction & delivery lines.
ii) Pressure gauge for inlet & outlet line.
iii) Differential pressure sensors.
iv) Manually/Electrically operated valves.
v) Drainage pump for disposal of sludge.
vi) Control panel for operation of filter.
vii) Drain, air & pressure equalising valves.
viii) Davit arrangement for handling filter element.

6. INSTALLATION

6.1 The filter shall be mounted on a sound foundation. There should be sufficient space all round for maintenance with suitable headroom for housing of filter.

The drain line shall be connected to the nearest wash water drain. The backwash valve and line shall be devoid of any risers or reducers for free flow of material along the backwash water.

7. PERFORMANCE TEST

i) Hydraulic test
ii) Pressure drop test
iii) Loss of backwash water for filter cleaning
iv) Total suspended solids at Inlet/Outlet.

8. SUPPLIER'S INFORMATION

8.1 The following additional information, may be obtained from the supplier along with the offer :

i) Design code

ii) Design capacity

iii) Size of filter

iv) Design pressure

v) Design temperature

vi) Specification of

a) Body

b) Filter element

c) Reinforcing sheet

d) Gaskets

vii) Flange rating

viii) End connections

ix) Drain valve

x) Airvent valve

xi) Pressure equalising valve

xii) Davit arrangement

xiii) Empty weight of filter

xiv) Laden weight of filter

xv) Gross area of the basket

xvi) Basket cleaning procedure

xvii) Material of construction

xviii) List of accessories including spares

xix) Dimensioned GA drawing

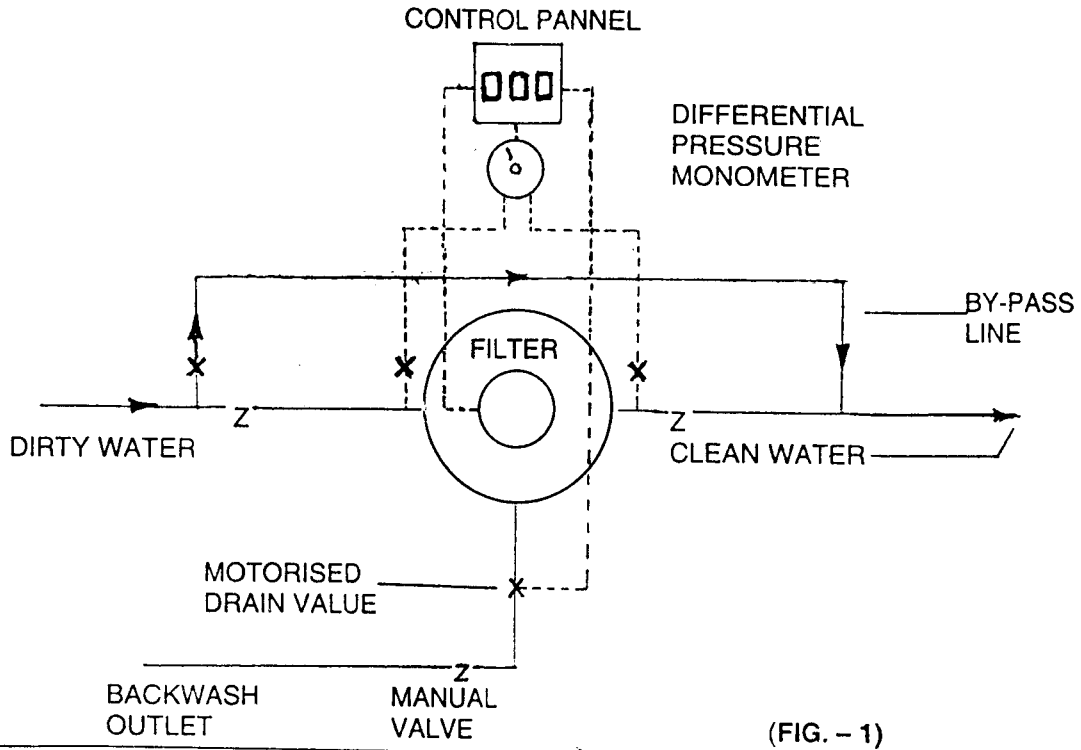
xx) Pressure (P)/flow(Q) curve for filter

xxi) Relevant details on power supply.

xxii) Erection details/supports

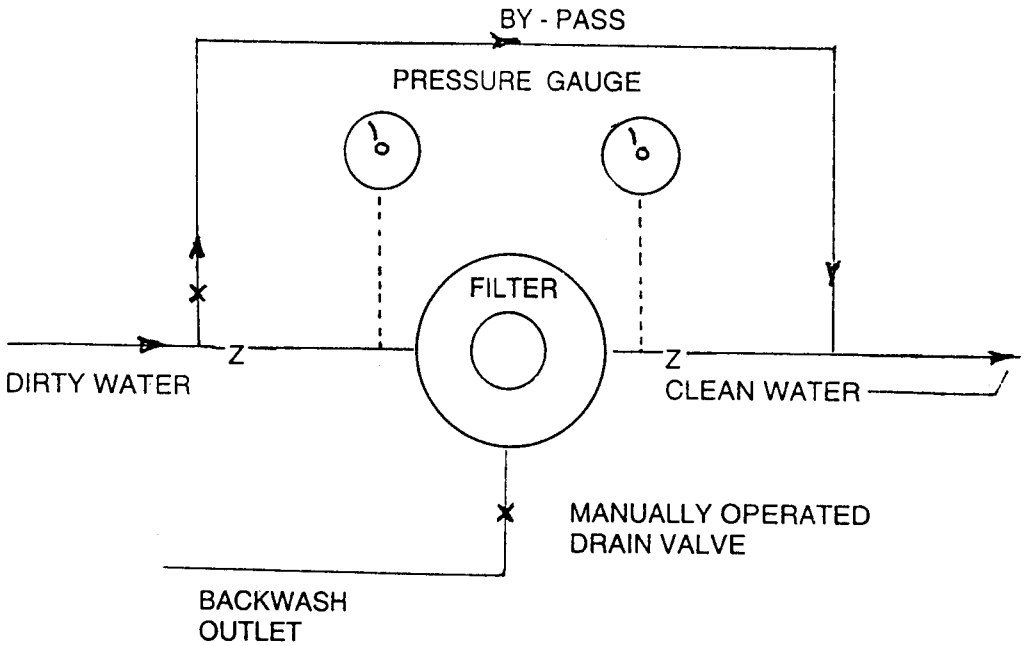
SCHEMATIC DIAGRAM OF BASKET TYPE FILTER

AUTO OPERATED BACKWASH FILTER



(FIG. – 1)

MANUALLY OPERATED BACKWASH FILTER SYSTEM



(FIG. – 2)