


C-TRU PROCESS EQUIPMENTS 53, Satyam Ind. Estate, Subhash Road, Jogeshwari (E), Mumbai 400060 INDIA	LITERATURE	Doc No. : 02-L-002	
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INTRODUCTION AND APPLICATIONS OF BASKET STRAINERS			

Just What is a Basket Strainer?

An official definition adopted by the Fluid Controls Institute is : **A closed vessel with cleanable screen element designed to remove and retain foreign particles down to 0.0254 mm Ø from variable flowing fluids**” Note the term foreign particles. Strainers do not necessarily remove only dirt. They take out material that is not wanted in the fluid and this can sometime **be a valuable product that may be saved.**

How They Can Improve a Process

The problem of unwanted materials in a pipeline is a never-ending one. Whether the flowing material is seawater, oil, paint or a variety of food or chemical products, there is often something present that can cause trouble. Dirt, foreign matter or even clumps of the product can clog or damage pumps, spray nozzles, condensers, and similar equipment. Sometimes a finished product has to be rejected because of the presence of undesirable solid matter.

Basket strainers remove unwanted particles from the pipeline flow. Furthermore they are relatively inexpensive compared to the equipment they protect or compared to the down time, products or loss of production if they were not doing their job in a piping system.

Strainer and Filter Differences


What is the difference between a strainer and a filter? Actually there isn’t any since a strainer is in reality, a coarse filter. The question is then one of semantics. Generally it is assumed that if the particle to be removed is not visible to the naked eye, the unit is filtering, and if the particle is visible, the unit is straining. The average human eye can detect a specific particle between 50 and 70 microns. Most people cannot see anything smaller than 325 mesh, or 44 microns. Since 200 mesh is equivalent to 74 microns, a general rule would be that if the screening device is coarser than 200 mesh it is a strainer.

One of the best uses for a strainer is in conduction with a filter. By installing a strainer directly ahead of a filter, the large heavy pieces that would clog the filter are removed. The filter is then free to do its major job of fine particles removal and does not have to be cleaned so often.

Water Handling

This is probably the greatest area of usage for basket strainers. They take sand, gravel, etc; from lakes, streams and wells that might damage or clog equipment. They take leaves, insects’ feathers, etc from cooling tower waters where the system is open to the atmosphere. They strain out hair and lint from large swimming pools before the water passes through to a filter. Basket Strainer are an important part of desalination equipment where they take out dirt, or unwanted matter from the water before it is treated for salt removal. Spent wastewater from industrial use is frequently passed through a basket strainer to take out material that should not go into the sewer or waterway.

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Food Industry

Basket strainers are used to remove traces of grape skins and seeds from wine and to remove bits of pulp, skins, or other unwanted matter from fruit juices. They are used to take out lumps from chocolate syrup and wax from honey. The baking industry strains bone and gristle from molten lard with basket strainers and also uses them to remove bits of dough, seed, etc; from water they discharge into sewer systems to conform to environmental regulations.

Marine Industry

Basket strainers are used in the Marine Industry for many purposes. One of the most important is handling seawater in cooling lines, fire control lines, sanitary lines, and general cleaning lines. This water comes from outside the ship and can contain a good deal of undesirable matter. Strainers are also used on board ships to clean fuel, hydraulic and lubricating systems

Process Equipment

Expensive equipment is often protected against damage from scale, dirt, by-products, etc; or from costly shutdown due to the presence of these materials by installing a strainer ahead of them in the line. Heat Exchangers, condensers, and pumps use strainers on their intake sides. Flow meters and spray nozzles are kept from clogging by basket strainers.

Paint, Ink, and Latex

The presence of “fish eyes” (lumps of un-dissolved resin) skins and clumps of pigment is a perpetual problem. They are hard to detect and can spoil a batch run. Basket strainers are used to remove all of them.

Electric Utilities

Strainers are used in the power industry to clean water and to protect equipment as described above. They also screen transformer oil to avoid clogging of the circulating lines.


Pharmaceuticals and Cosmetics

Ointments, lotions and similar products that may contain clumps of un-dispersed or un-dissolved matter are pumped through basket strainers. In the manufacture of lipstick, for instance, unwanted lumps can ruin the product.

Refrigeration

Brine lines can pick up dirt or corrosion products from action of the salt. Basket strainer forms an important part of the piping systems in refrigeration plants to keep the brine clean.

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Petroleum

Basket strainers clean unwanted material from petroleum products ranging from crude oil to gasoline. A specific case is fuel oil that can contain gums or tars or other dirt that can plug the nozzles of an oil burner. Every industrial oil burner is equipped with a basket strainer to screen these out. Strainers are used in similar ways in refineries and in oil handling operation to keep undesirable material away from pumps, meters and other equipment.

Pulp and Paper

The problem of unseen lumps in coatings in the paper industry is an ever-present one. Smooth paper finishes require that coating be free of un-dispersed clumps of pigment. Basket strainers in the coating lines catch and hold the lumps. They are also used to clean traces of pulp or paper from white water effluent before it is discharged into the environment.

Ceramics

Just as the paper industry needs lump free coating so does the ceramic industry. The presence of unwanted solid particles in glazes, for example can mean rejection of a product. Basket strainers are installed just ahead of glaze spray equipment to prevent this.

Transportation


A basket strainer installed on a tank truck or railcar that must dispense liquids, can catch solid material that is not wanted. Many chemical products undergo changes in storage or transport that result in solid residues. The presence of solids in liquid fertilizers or pesticides for example, can cause clogging of spray equipment. For this reason many tank trucks and cars are equipped with strainers.

Chemical Processing

This industry is perhaps the largest user of basket strainers. There are innumerable areas where the presence of a basket strainer means a cleaner product, protection of equipment, or simple separation of solids from liquids. There is scarcely a chemical operation involving liquid flow that cannot be improved or guaranteed longer running life by installation of a basket strainer in the line.

When installing basket strainers it is a good idea to use two of them in tandem. This is especially true when there is a great deal of material to be taken out of the line and the particles vary in size. If a single strainer with a fine mesh lining were used alone, it would fill quickly and necessitate very frequent cleaning. By using two strainers in series, the first with a larger opening to trap the large particles and the second with a fine mesh lining, the load is spread out and time between cleaning is also spread out.

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Don't be misled by the pipeline size

A strainer size is not automatically the same as the pipe size. It may be larger. In the case of highly viscous liquids, for instance, where pressure drop through a mesh lined basket can cut down flow considerably it is sometimes necessary to use a strainer several sizes larger than the pipeline in order to ensure adequate flow. However, this is not undesirable because aside from the slightly larger initial investment, there are no subsequent added costs. Basket Strainers last almost indefinitely and there is almost nothing to wear out. If there is an unusually large amount of material to be taken out of the line then a large strainer is almost certainly required. Too small a unit will fill quickly necessitating frequent basket cleaning. This will work out expensive in the long run. If a basket has to be changed more than once an hour, the strainer is probably too small.

Application Considerations

The nature of the product also has an influence on the strainer size. Soft, gummy materials like tars and resins are more difficult to remove and clog baskets more quickly than crystalline material. In such cases too a larger strainer is recommended. The size of the basket strainer therefore is a function of the job to be done. It should not automatically be the same as the pipeline

There are no industry wide standards on face-to-face dimensions for basket strainers. For this reason the strainer of one manufacturer may not fit in a space designed as per another manufacturer. If there exists any doubt it is best to check the face-to-face dimension of the particular unit that is going into the line.

What to Consider Before Buying a Basket Strainer

When buying a Basket strainer, price that is often the prime consideration should be the least. A well made properly designed Basket strainer will last almost indefinitely. Its initial cost is therefore not important compared to the features when spread out over a service life of many years. Check:

- Are the seats properly machined to eliminate bypassing of dirt?
- Is the body strong enough to resist mechanical shock and avoid accidents?
- Are blow-off connections heavy enough to avoid leakage of failure?
- Is the screen made properly to eliminate possibility of collapse?
- Ratio should be minimum 3. The larger volume will afford a slower clogging process that result in a longer period between cleanouts. Ask the vendor to provide element dimensional details for verification.

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