



New Industrial Dust Filter: U Bend Water Syphon

S. S. Arulappan

Retired Associate Professor, Department of Mechanical Engineering, National Institute of Technology, Trichy, India 620015

ABSTRACT: Instead of Bag filters and Cyclone filters, Water filter can be used for separating microparticles in Power stations, Cement factory, Flowers mills and where ever particle separation is needed. Water filters are so positioned at the bottom of the Chimneys like a syphon bend. In the bend of the syphon some required quantity of water is to be maintained. This syphon is just a U bend. In the bottom always with enough quantity of water filled and circulated. The circulated water carries the micro particles which may be reused back by allowing the particles to settle in a settling tank.

INTRODUCTION

Micro particles settling all around the industry are the major problem for everyone around the vicinity of largescale industries manufacturing ground food flowers, large power stations where coal is being burnt to produce steam to drive a turbine which in turn drives an alternator to produce electricity. Further Cement Industries, many other Industries like fertiliser and chemical Industries the proposed water syphon can be used to filter the particles instead of leaving the microparticles into the atmosphere.

1.1 Syphon Filters:

Large scale industries or medium or small industries, particle separators are being used to filter microparticles. Both the filters used as of now are cyclone filters and Bag filters. These filters and their inability to filter micro particles escaping and passing through them Creates environmental problems. Separation or filtering them completely or to a maximum extent is the aim of the proposed syphon filters.

1.3 Suction Effect in Syphon Created by Chimney:

Passing the outlet through a certain milli meters of water column in the U bend provides the effective way for filtering the microparticles. Tall Exit towers or Chimneys for the gases with fine particles like ashes in a thermal power plant, creates a suction effect underneath the water column in the syphon U bend. This way fine ash particles are prevented from being left into the atmosphere. The ash particles or any other fine particles gets filtered to a maximum extent in Syphon U bend water filters proposed.

RELIEF FROM POLLUTION

When large quantity of Coal and other products are ground or pulverised and used in industries their fine unused particles have to be filtered before leaving them into the atmosphere through the chimneys. For example, nearly 1047 million Tons of coal is being mined per year for use in thermal power plants in India alone. This data is for the fiscal year 2024 -2025. When it's the case of entire world much more or very large quantity of coal is being crushed or Pulverised. The pulverised coal is being burnt and fine ash particles are leaving the chimneys of the thermal power plants crossing bag filters and cyclone filters.

Hence more efficient water syphon filter is now proposed as a better alternative for pollution removal. When it's the case of other industries like wheat flower and Cement clinkers being powdered and so huge quantity of fine particles have to be filtered.

CONCLUSION

Pulverised Coal, Pulverised Cement powders, Fine grinded say wheat powder or any other fine powdered particle industries can use this U bend Water Syphon filter system proposed now by this work.

+++++