ReCyclone® EH Case Study: ZnO Reactor

ZnO Nanoparticles recovery

FOREWORD

In 2009, ACS was approached by Innovnano, one important micro and nanoparticles of metal oxides manufacturer in Portugal to increase the yield of one manufacturing facility.

Innovnano is a subsidiary of CUF, centenary in the chemical industry. CUF is the largest Portuguese chemical group, with production facilities in Portugal and Spain.

CASE DESCRIPTION AND OBJECTIVES

The intention of the company was to reduce losses of the wet scrubber, treating 260 m^3/h of gas and placed downstream the reactor. Ultimately, the objective was to recover all particles on a dry basis.

Filters were excluded because of particle hold up and risk of condensation in a very humid environment.

ACS proposed a full insulated and heat traced Electrostatic **ReCyclone®**. The equipment was composed by one *Hurricane* and one electrostatic recirculator. The Median Volume Diameter (MVD) of the particels is 1.3 µm and efficiency was expected to be higher than 95 %.

OPERATING CONDITIONS

- Actual flow rate (m^3/h) 260
- Temperature (ºC) Ambient
- Inlet concentration 5-50
- Median particle size (µm) 1.3

PERFORMANCE

- Efficiency (%) > 96

GENERAL ARRANGEMENT

The equipment was composed by 1 *Hurricane* and 1 electrostatic recirculator (Fig. 1).

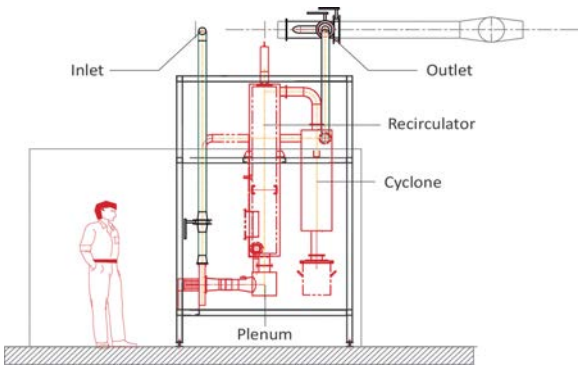

Fig. 1 – General arrangement of the Hurricane System.

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