VORTICAL TYPE GRANULATORS IN THE CHEMICAL INDUSTRY

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At present Ukrainian enterprises are specialized in the manufacturing of different granular products from solutions and fusions using granulation towers. This equipment requires great money input for its making, technical maintenance and repair. It is rather complex to be produced and maintained because of its dimensions. Setting up of new enterprises based on the manufacturing of granular products by means of false boiling vortex layer granulators is one of the ways expenses of decline for producing granular porous products and increasing their quality. To achieve this goal we must introduce the newest developments of modern science and technology.

A short description of tower type granulation equipment is given. The variants of granulation towers modernization have been considered. A new sample of a false boiling vortex layer granulator together with an experimental technological scheme of granular products manufacturing have been worked out. A number of experiments have been carried out to study the laws of granules distribution in the vortical granulators. The mathematical model and algorithm for the calculation of the involute gas stream movement in granulator are given. The article gives the grounds of application of involute symmetric to the axis gas stream for manufacture of the granulated products.

As the vortical granulators are not widely used the characteristics of a involute gas stream have not been studied well in research literature. The experiments to study the processes taking place in vortical granulators. The affects of different technological and structural parameters on the process of obtaining granulated products are carried out many experimental samples. Different ways of gas stream twirling were examined and its affect on the layer stability was defined.

By means of experimenting, photographing and filming a physical model of diphasic stream interaction within the limits of working cavity of the false boiling vortex layer granulator was worked out. The ways of subsequent improvement of gas-distributing units for providing of constant vortical granules motion were defined.

Using an experimental granulator we got a granulated product. Its test showed that it did not yield a similar product which was produced in a granulation tower.

The vortical layer granulator researches face a lot of problems, but experimental data of obtaining granulated products having particular properties in an involute gas stream show the expedience of introducing of such a devise into production.