

**CLIENT:** Confidential Pharmaceutical  
**LOCATION:** Confidential  
**SCOPE OF WORK:** Design / Procurement  
**PROJECT:** Vacuum Granulation Retrofit

**DATE:** 2001



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**PROJECT DESCRIPTION:**

Manufacture of several granulated product lines. These products are processed and dried during the operations of this process.

**Project Highlights:**

- ◆ New Process Granulator - horizontal paddle type mixer with granulating choppers. Unit equipped with vacuum granulation capability and is jacketed for heating and cooling.
- ◆ Vertical processing scheme employed to minimize equipment and material movement.
- ◆ Loss-in-weight solids feed system utilized.
- ◆ New Solvent Feed System and Paste Mixer
- ◆ New process vacuum system design utilizing liquid ring vacuum pump technology including a two (2) phase flow discharge seal liquid cooler design.
- ◆ New Fluid Bed Dryer System for final product drying including inlet air preconditioning and explosion vent design. As the Fluid Bed Dryer exhaust air is a significantly higher flow and more dilute solvent-in-air stream than the granulator overheads, a separate exhaust air post treatment solvent recovery system is utilized for this service.
- ◆ New drying air solvent recovery system using a fiber-type carbon adsorption package with steam regeneration. Unit is designed to remove potential trace levels of MeCl<sub>2</sub> (<200 ppm inlet concentration).



- ◆ Instrumentation upgrades including enhanced flow and solvent weight instrumentation for better process monitoring, control and guarding against freezing.
- ◆ New low temperature Vent Condenser utilizing low temperature Syltherm XLT (-100 OF range)
- ◆ New Process Refrigeration System for chilling Syltherm XLT.
- ◆ Building design compliant with cGMP requirements.
- ◆ Complete system validation (performed by others).

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