

05 SAFELY CHARGING SOLIDS WITH DIFFICULT FLOW CHARACTERISTICS INTO REACTORS

THE CLIENT'S NEEDS

As part of a new product manufacturing process, an existing client needed to charge multiple bulk bags of an explosive powder into a reactor. This powder was also known to have extremely difficult flow properties and would bridge across or rat-hole above outlets and openings.



400 ft³ charge hopper on load cells with four (4) fluidizing gas zones in bottom conical section



Induction fan module for fugitive dust extraction and capture

OUR SOLUTION

An extensive Process Hazard Analysis was conducted to ensure the safety of the final system design. DDPS provided a bulk bag unloader and Powder Pump test system on-site to determine the powder's flow characteristics under dense-phase vacuum transfer. Additionally, DDPS conducted testing to ensure the hopper design would provide proper flow into the transfer system.

The process system components were designed as skid mounted sub-assemblies for ease of installation and to:

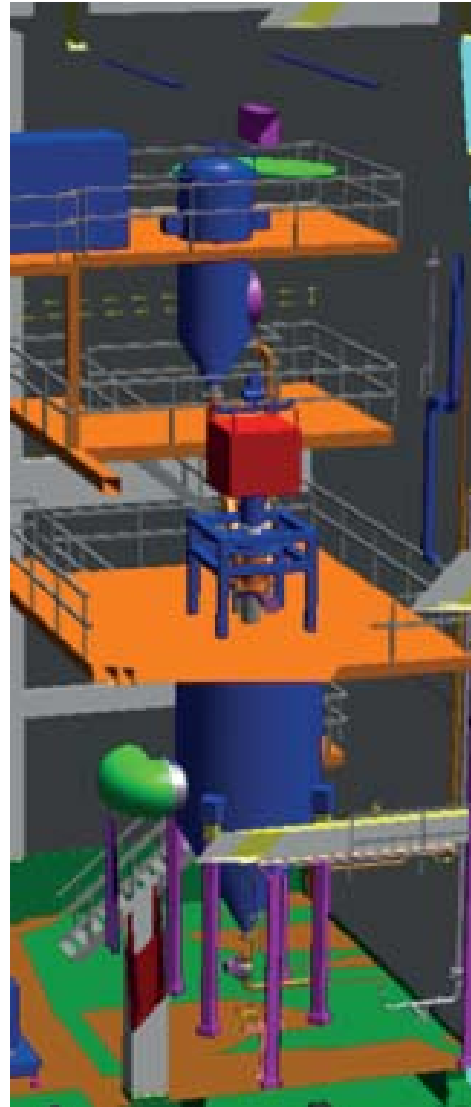
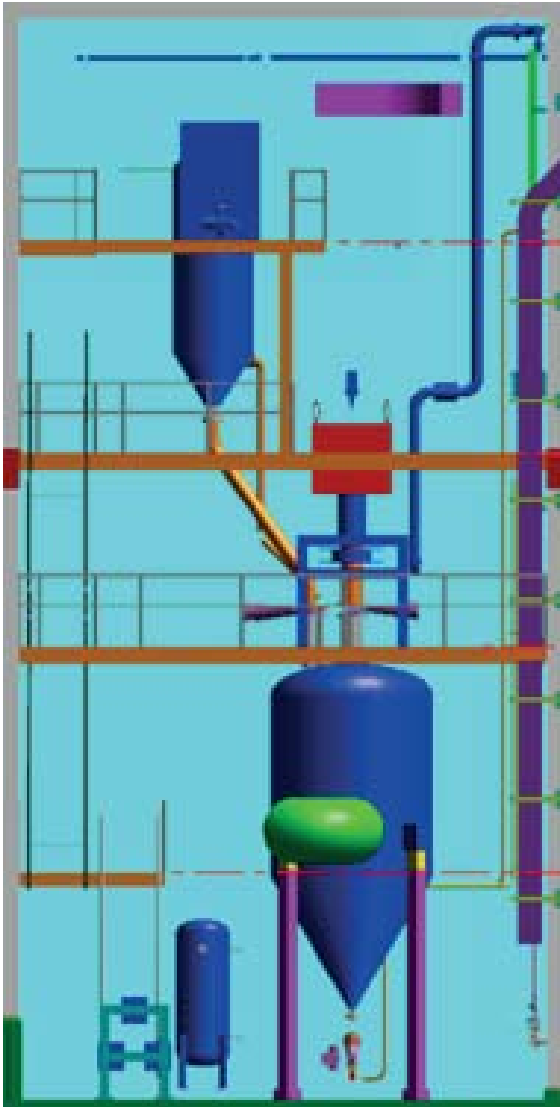
- ensure the entire system remains inerted and grounded during operation
- allow safe material charging from bulk bags into the weigh hopper
- provide adequate and reliable flow of powder out of the hopper
- conduct safe, efficient transfer of the powder into the reactor

DDPS developed a step-by-step DCS control program Functional Description and supported successful installation and start-up of the system.

RESULTS & BENEFITS

The customer was able to begin safe, reliable production of a new automotive additive product to reduce emissions. High demand for the product resulted in a duplication of the system at a second site to increase production.

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