Fluidized-Bed Paint Stripping at Ford

Fluidized-bed paint stripping helped Ford improve safety and efficiency...

Recently, Ford Motor Company's assembly plant in Hapeville, Georgia, installed a large-capacity fluidized-bed paint-stripping system to replace its caustic soda and methylene chloride systems. This equipment is used in daily production for removing cured and uncured paint from 17-ft-long auto-body skids, paint-room grates, hooks, chains and other paint manufacturing tools. The result is improved working conditions and efficiency and a cost-effective solution to a major problem involving hazardous materials.

The installation of a fluidized-sand-bed paint stripping system underscores Ford's ongoing commitment to state-of-the-art, environmentally friendly production techniques. The fluidized bed cleans the organic matter from the metal and reduces it to a harmless vapor. The small amount of residue remaining is completely inert. Disposal problems have been completely eliminated.

Despite being slow processing methods, caustic soda and methylene chloride have long been recognized as highly effective in removing paint buildup on metal parts. Using these chemicals have always required careful in-plant handling, meticulous housekeeping and expensive maintenance, even during plant downtime. Steam is needed continuously to keep caustic soda in a usable form, and, like many other paint removal systems, these create hazardous sludge and waste disposal problems.

The main component of the fluidized bed at Ford is a large, thermally insulated chamber filled with an exact amount of calibrated quartz sand. This chamber is 39-by-39-by-236 inches, and has a finely perforated bottom section that allows a controlled mixture of air and gas to blow into the tank. This causes the sand mass to liquefy. The air/gas mixture is ignited by a pilot burner above the surface of the bed. It quickly reaches a bed operating temperature of approximately 800F. Using a control panel, temperature of the bed can be precisely adjusted to meet specific needs and to achieve maximum efficiency.

Parts and fixtures are loaded by a forklift into a specially designed basket. A hinged gate in the middle of

the basket facilitates loading and unloading. A five-ton, scissor-type crane lifts and lowers the loaded basket into the liquefied sand bed, and the chamber cover is closed.

Ford operates the system on a 60-min cycle and the average production for an eight-hr shift is about 40 auto-body skids and 160 paint-room grates, plus varying amounts of hooks, chains and other parts. The caustic soda system previously used required 24 hrs to soak 28 skids.

When asked why Ford elected to clean parts in-house, the reply was two words: cost and control. Management said it could do this work at less cost, and the internal control allowed flexibility in the cleaning process to meet fluctuating production needs.

Securing the approval of the Georgia Department of Public Resources was not a problem. Company officials said that Georgia has been a long-time promoter of non-polluting alternatives for the disposal of solid and liquid waste.

In a world calling for safer and cleaner environmental procedures and greater protection for employees from hazardous materials in the workplace, fluidized-bed paint stripping appears to be another good idea. Ford Motor Company is aware of this already. **PF**

captions:

1.

AUTO BODY skids prior to paint stripping

2.

AUTO BODY skids after stripping in a fluidized bed

3.

PARTS CLEANING basket is lowered into the fluidized sand-bed chamber

4.

PILOT BURNERS ignite the air/gas mixture above the surface of the bed

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