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Iverson Grand Sport Bike



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Iverson powder coats bicycles in 20 colors

new facility geared to powder coat 800,000 bicycles a year

■ The booming bicycle business will see some 16 million Americans buying bikes this year, according to the Bicycle Institute of America. In many instances, these buying decisions have been motivated by an interest in aiding the environment by polluting less and pedaling more.

Ecological concern also came into

play over a year ago when Iverson Cycle Corp. began planning the construction of a 400,000 sq ft manufacturing facility in Brookhaven Township, Long Island, New York. Iverson officials reasoned that since the bicycle has become almost the symbol of a clean environment, their new plant should be designed with a view to

establishing the foremost clean air and water standards.

As a result, equipment was installed for treating all industrial wastes. In addition Iverson became the first U.S. bicycle manufacturer to install powder coating facilities for finishing the metal frames of an estimated 800,000 bicycles a year.

Until completion of the plant earlier this year, all Iverson products were produced at seven different plants in Brooklyn. Even though the new plant is in full operation, Iverson is continuing operations at the older plants.

Iverson went on stream with its new finishing system in April this year, applying Tenite CAB (cellulose acetate butyrate) powder supplied by Eastman Chemical Products Inc. The complete powder application system was engineered by Interrad Corp. and utilizes Gema electrostatic guns.

The first components being powder coated are bicycle frames and forks. Eventually, fenders and chain guards will also be powder coated. Iverson has already applied powder in 20 different colors, with some of the popular ones being pearlescent white, deep yellow, peacock blue, flame red, orange, magenta, black and metallic bronze.

Details of the automatic powder coating system are illustrated in Fig. 1. Frames and forks, assembled of welded and brazed steel tubing, are hung manually on a 2000-ft overhead conveyor traveling at 30 fpm. The bike parts then pass through a three-stage wash consisting of a 140F Amchem iron phosphate treatment, a cool rinse, and a rust-inhibiting rinse at 160F. The



View inside automatic booth showing opposing electrostatic guns applying powder.



Powder feed rate and voltage for each gun are individually controlled from separate drawer-mounted control panels in central rack.

high temperature of the last rinse facilitates evaporation and helps keep water from collecting in the tubing as trapped water could inhibit curing of the coats. Also, areas where water is likely to collect are blown dry with compressed air as the parts leave the washer.

Following pretreatment the parts are dried for 4 min in a 350F oven, followed by a 3-min cool-down on a conveyor loop before entering the powder coating booth.

Powder coating is applied to a thickness of 3 mils in one of two

powder coating bicycles

automatic downdraft coating booths, each containing four Gema automatic electrostatic guns mounted two each on automatic reciprocators, one on each side of the booth. The coating system also allows for manual touch-up through a door in one of the booth's side panels.

"By installing two automatic booths, we are able to keep downtime to an absolute minimum," stated Larry March, supervisor of the powder coating line. "When we change colors, we simply roll the clean booth into position and begin cleaning the other booth."

The electrostatically coated parts pass from the powder application booth into an oven where the powder

Three-stage machine in which bicycle frames received iron phosphate pretreatment.



cures in 8 min at 350F. From the oven, the conveyor carries the finished parts to an adjacent area where they are unloaded manually and placed in racks ready for assembly. The conveyor completes its loop, returning the empty hangers to the loading station.

Central Control Console

Powder feed rate and high voltage at each gun are individually controlled from separate control panels mounted in a central rack. Powder is fed to all five guns (four automatic and one manual) from a single powder supply hopper. Stroke and speed of the reciprocators are remotely controlled and adjustments can be made while they are operating.

The central control console also contains a master control panel and color change controls. Interlocking controls shut down the entire system in case of trouble, and indicator lights pinpoint the location of the problem.

Powder Recovery System

Each booth has an overspray recovery system as illustrated in Fig. 2. A Fisher-Klosterman cyclone recovers more than 90% of the overspray for reuse. Recovered powder is collected in a caster-mounted drum. The small quantity of fines passing through the cyclone are collected in a self-cleaning Mikro-Pulsaire air-type bag filter. The filter is followed by a 4500 cfm exhaust, a muffler that reduces the noise level of exhaust air to less than 90 decibels, and an absolute filter which removes all remaining particles

Fig. 1 Layout of Powder Coating System at New Iverson Manufacturing Facility

