



Case Study



DuBois Experts Design Pretreatment Systems for Years of Success

OPPORTUNITY:

The customer manufactures heavy-duty buses for mass transit systems. Historically, they outsourced some fabrication and the paint pretreatment of their small parts. In 2014, their senior management decided to work towards bringing all of their production in-house to improve quality and increase capacity. To meet this goal, they opted to build a new facility. Early in this process, they partnered with their local DuBois technical team to help evaluate the paint pretreatment options and the suppliers of washers. This new, state-of-the-art facility was to contain a five-stage washer for smaller components, a Gantry washer for assembled buses, and a wand pretreatment area for difficult-to-reach areas.

KEY GOALS:

The project had to meet several criteria to be successful:

- Quality standards had to be established and maintained.
- The chemistry's material compatibility required qualification with the Gantry washer manufacturer.
- The pretreatment coatings required approval from the powder and liquid paint suppliers.
- The team needed a commitment from management and buy-in and training for operators on washer and bath maintenance best practices to achieve consistent success.
- The system needed to treat a unique combination of substrates, including Bondo®, fiberglass, and aluminum.



THE DUBOIS SOLUTION:

The DuBois team determined that the flexibility of a five-stage spray washer would be required to process the wide range of sizes of internal bus components required. A second washer, a Gantry style, was selected to wash the exterior of the buses. This washer allows the bus to drive into a bay, then a spray arch moves back and forth along the entire bus length.

Because the customer was new to this type of production, they did not have a quality standard. The DuBois team educated them on the utilization of ASTM B-117 Salt Spray and ASTM D-1654 Coating Evaluation, industry standards that allow a manufacturer to test and evaluate corrosion resistance. This was an important step towards establishing a coating quality standard.



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The DuBois Applications Engineering Department leveraged their knowledge of both automotive plastic cleaning and metal pretreatment to address the unique mix of substrates included in Bondo®, fiberglass, and aluminum. They developed the following six-step process for the Gantry washer:

- Step 1: IPW-4001
- Step 2: City Water Rinse
- Step 3: GF Acid Clean 339
- Step 4: City Water Rinse
- Step 5: DuraSeal
- Step 6: RO Water Rinse

Due to concerns of cross-contamination, the team selected all acidic products. This minimized the potential for insoluble salts to form and deposit on the bus surfaces. Another key to success was selecting IPW-4001 as the cleaner. Its robust wetting package was ideal for cleaning the Bondo®/primer surfaces. GF Acid Clean 339 is a highly effective acidic liquid cleaner, ideal for removing process oils and oxide from aluminum surfaces in one simple step. It is highly buffered to control etch rate and provide uniform micro-etched surfaces for further processing. DuraSeal was selected to form a corrosion-resistant zirconium oxide coating on the aluminum surfaces.



A new five-stage stainless steel washer was determined to be the best solution to pretreat the smaller bus components comprised of aluminum, steel, and galvanized steel. The team selected the following process for the job, utilizing products that are proven and widely used in the industry:

- Stage 1: GF Clean 1052
- Stage 2: City Water Rinse
- Stage 3: DuraTEC 400
- Stage 4: City Water Rinse
- Stage 5: DuraLink 450

GF Clean 1052 is a multi-metal safe alkaline cleaner. It will remove most soils and is built to minimize sludge formation, neutralization, and foam, making the bath relatively easy to maintain. DuraTEC 400 and DuraLink 450 form a zirconium oxide coating on the parts, significantly improving paint adhesion and corrosion resistance.



KEY BENEFITS:

Throughout implementation, the customer had the full support of the DuBois technical team. The DuBois Applications Engineering Department ran pilot batches and evaluated coating performances. The field team worked tirelessly to implement the appropriate solutions, write operating manuals that were easy to use and understand, and train the operators on bath and equipment maintenance. At the conclusion of the project, the team continued to provide operator training and regular service. Upon moving these operations in-house, the customer noticed improved corrosion resistance and finish quality, as well as increased capacity. Over the years, DuBois and the customer have continued their partnership with great success.



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