



# Liquid Application Case Study – Commercial Architectural Extrusions Industry

## Investing in Technology Is Business as Usual

*If it is easy to take the paint finish on an architectural extrusion for granted, perhaps it is by design. Architects work hard to make the bits and pieces that support the elegant facades of a building blend together, creating an organic look.*

We may see the brilliant team colors of Raymond James Stadium in Tampa and not notice the details. Or, we might admire the muted earth tones that blend aluminum and bricks with ivy on the stone towers of Wesleyan University's student center. We may even marvel at the incredible expanse of sunlight and glass that make the Opryland Hotel an architectural achievement. Each of these edifices is held together with thousands of extrusions designed to make it work without becoming a distraction.

Architectural extrusions can be a tricky business. Because product specifications are so rigidly defined, companies rely on customer service, fast turnaround and other value-added services to stand out. Competition is fierce, oftentimes just a penny or two per part can mean the difference between winning and losing large orders in what is often regarded as a "shape it, paint it, ship it" business.

Successful extrusion manufacturers provide service and support while controlling costs through innovation and new technology.

But all start with the same ingredients – large quantities of #6063 aluminum alloy that come to plants by the truckload.

One of the leading extrusion manufacturers in the United States produces millions of pounds of aluminum extrusions each month so, saving 10 percent

to 30 percent through better finishing is a very big deal.

"Forty percent of our production gets liquid painted," says the company's finishing manager. "And for those products, the cost of painting accounts for up to one-third the cost of our finished product. That's why we've focused on how to paint more economically and efficiently, and with better quality."

Their 240,000 ft, 26-acre manufacturing center, feeds 26 national service centers.



**The equipment recipes programmed into the Nordson system controller sprays just what is required, keeping film build on target.**

Eventually, much of the product ends up at a state-of-the-art liquid paint facility.

The line is capable of providing paint finishes that meet any architect's design, including primer/basecoat/clearcoat finishes worthy of an automotive assembly line.

Extrusions are created in a turnkey finishing system.

At the heart of the paint operation are the spray booths where Nordson RA-20 rotary atomizers apply paint in a highly

controlled manner designed to provide exceptional transfer efficiency. A single bell per booth is used in each of two primer applications. Two booths face opposing directions; one provides coverage to one side of the part while the second applies paint to the other side.

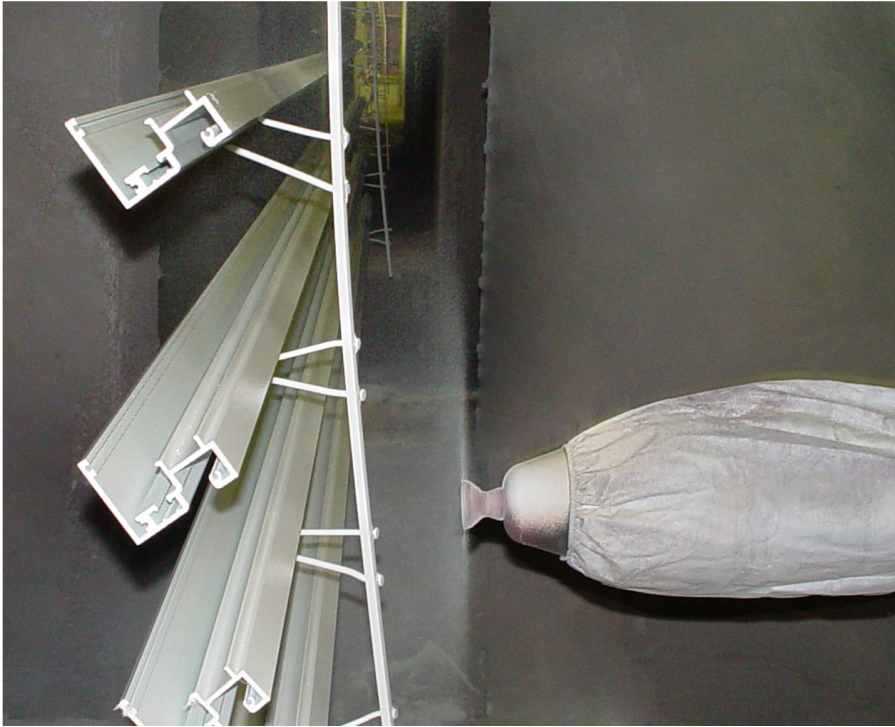
The primer booths are followed in turn by pairs of basecoat and clear topcoat booths — except that each of these succeeding stations uses two electrostatic bells per booth for coverage.

The line typically runs at 11 fpm, but even at the highest speed of 14 fpm, the paint line can outpace the upstream extrusion processes.

In this operation, the paints are special coatings designed for extreme performance using a resin system. The average cost per gallon is around \$70 to \$80 with some special formulations running as high as \$140 per gallon. At those prices, transfer efficiency is more than just something nice to have — it's a necessity if you want to stay in business. Nearly all of the painted extrusions need to comply with standards set by the American Architectural Manufacturer's Association (AAMA), which can require as many as 4,000 hours of salt-spray resistance as well as color and appearance retention for up to 10 years.

The decision to go with the Nordson RA-20 rotary atomizer technology was based partly on the customer's testing and research, and on the company's own track record with similar Nordson equipment in other facilities. That Nordson rotary atomizer system has been in full, reliable production mode since the early 1990s.

In addition to the application equipment, there is a five-stage pretreatment system to remove soils and contaminants from the parts prior to coating. The chromate conversion dip process also prepares the metal so that good adhesion to the aluminum is possible.



**With the Nordson rotary atomizer system, the customer has focused on how to paint more economically and efficiently, as well as with better quality.**

The pretreatment system, as well as the booths, conveyor and ovens were supplied by one of the few companies to specialize in extrusions and the unique problems that 30' long aluminum parts can present.

While a good portion of the extrusions are anodized, liquid paint is popular because of the wide range of standard and custom-blended colors that can be achieved. There is a full-time color stylist as part of the production team to provide exact color match.

Currently, the paint facility operates two shifts per day, five days a week with around 10 staff dedicated to the paint operation, handling everything from loading and unloading to inspection, touchup and supervision.

Although the company uses 24'3" standard size extrusions, the range of shapes and sizes is varied with up to 1,500 different part styles. "Controlling the process is critical when you have such a wide range of possibilities," explains a company representative.

"You can't just 'set it and leave it' and be efficient," he says. "We must change the finishing system parameters — a lot of them — on the fly." The 60" vertical part window has eight different spray gun trigger zones, which can be pre-programmed into the Nordson system controller. Depending on the part sizes and racking configuration being used, the equipment recipe will spray just what is required, keeping film build right on target.

While 30 percent of the company's production is a single, bone white color, the remaining production can be any of literally hundreds of different colors.

Investment in technology is business as usual where the company believes in ongoing research and development on the forefront of building design. "Every investment we make is geared toward achieving the levels of service and quality that our customers' success requires — and that goes for our paint process as much as anything else we do."

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