# A Classic American Manufacturing Story

*Virco's Innovative Influence on 21st Century Classroom Furniture*

VIRCO

Ground Breaking Ceremony
February 1, 1950 - Los Angeles, CA

# VIRCO – SERVING YOU FROM OUR U.S. FACTORIES SINCE 1950

## MASTER CRAFTSMEN OF WOOD, PLASTIC & STEEL

When Virco first opened for business in southern California back in 1950, we had one customer on our books. Our goal was – and still is – to provide reliable, high-value furniture and courteous, efficient service. Four years later, to meet the needs of our quickly growing customer base, we added another factory in Conway, Arkansas.

Ever since, as demand has increased, Virco has kept pace by continually expanding and upgrading our domestic facilities. Today, Virco serves you from two state-of-the-art U.S. locations: a 560,000 square-foot plant in Torrance, California and a multi-plant operation with 1,750,000 square feet of space in Conway. As America's largest manufacturer and supplier of furniture and equipment for K-12 schools – and a leading furniture and equipment source for convention centers and arenas, colleges and universities, hospitality providers, government facilities, and places of worship – Virco continues to give customers the unparalleled advantages of working with an experienced U.S. manufacturer.

*Virco works with a variety of nationwide suppliers who provide us with everything from raw materials and machinery to packaging and shipping, helping to keep US dollars at home to strengthen our economy.*

## SOME OF VIRCO'S AMERICAN SUPPLY PARTNERS

USS POSCO

MJB Wood Group, Inc.
FREE FROM LIMITS. CONNECTED TO SUCCESS.

GatorHyde

WILSONART INTERNATIONAL

VALLEY
OVER 80 YEARS
of Quality Service
Est. 1931
VALLEY PLATING WORKS, INC.

SMC
PACKAGING GROUP
PACKAGING THAT DELIVERS

Reliable Container Corp.

PCA
PACKAGING CORPORATION OF AMERICA

Gator-Ply®

PolyOne

3A COMPOSITES

EMPIRE FOAM INNOVATIONS INC.

NUCOR

Flakeboard

*Conway, Arkansas plant 1*

*Conway, Arkansas plant 2*

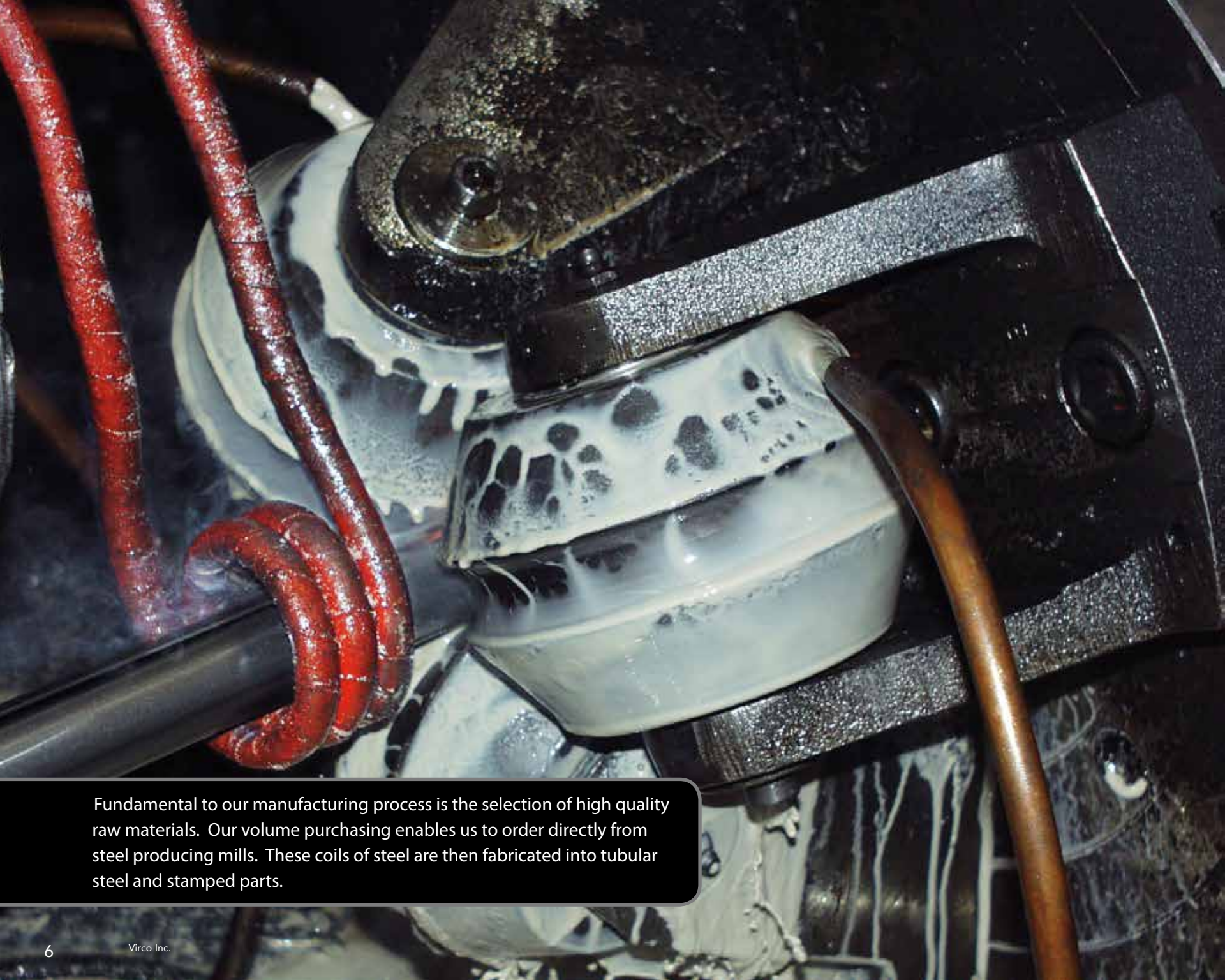
*Torrance, California plant*



## ADVANTAGES OF VIRCO'S IN-HOUSE MANUFACTURING PROCESSES

In the pages that follow, you'll see how Virco's U.S. facilities – and American workers – expertly process wood, plastic and steel to offer you thousands of dependable furniture and equipment choices with excellent lead-times and a rainbow of color and finish choices.

After reviewing this brochure, if you'd like to take a closer look at Virco, we'd be glad to welcome you in Torrance or Conway for a visit. We invite you to contact your local Virco representative – or call us at 800-448-4726 – to schedule a Virco plant tour.



Fundamental to our manufacturing process is the selection of high quality raw materials. Our volume purchasing enables us to order directly from steel producing mills. These coils of steel are then fabricated into tubular steel and stamped parts.

# STEEL FABRICATION/TUBE MILL

Virco's ability to make tubular steel components has always set us apart from the competition. By fabricating our own tubing – rather than buying it from a "middle man" – Virco gives our customers a quality control advantage, and a pricing advantage, that competitors who out-source their tubing simply cannot match.

Back in 1950, the first piece of manufacturing equipment installed in Virco's southern California factory was a tube mill, which transforms raw steel coils – some of which weigh over 20,000 pounds – into round, rectangular or specially shaped steel tubes.

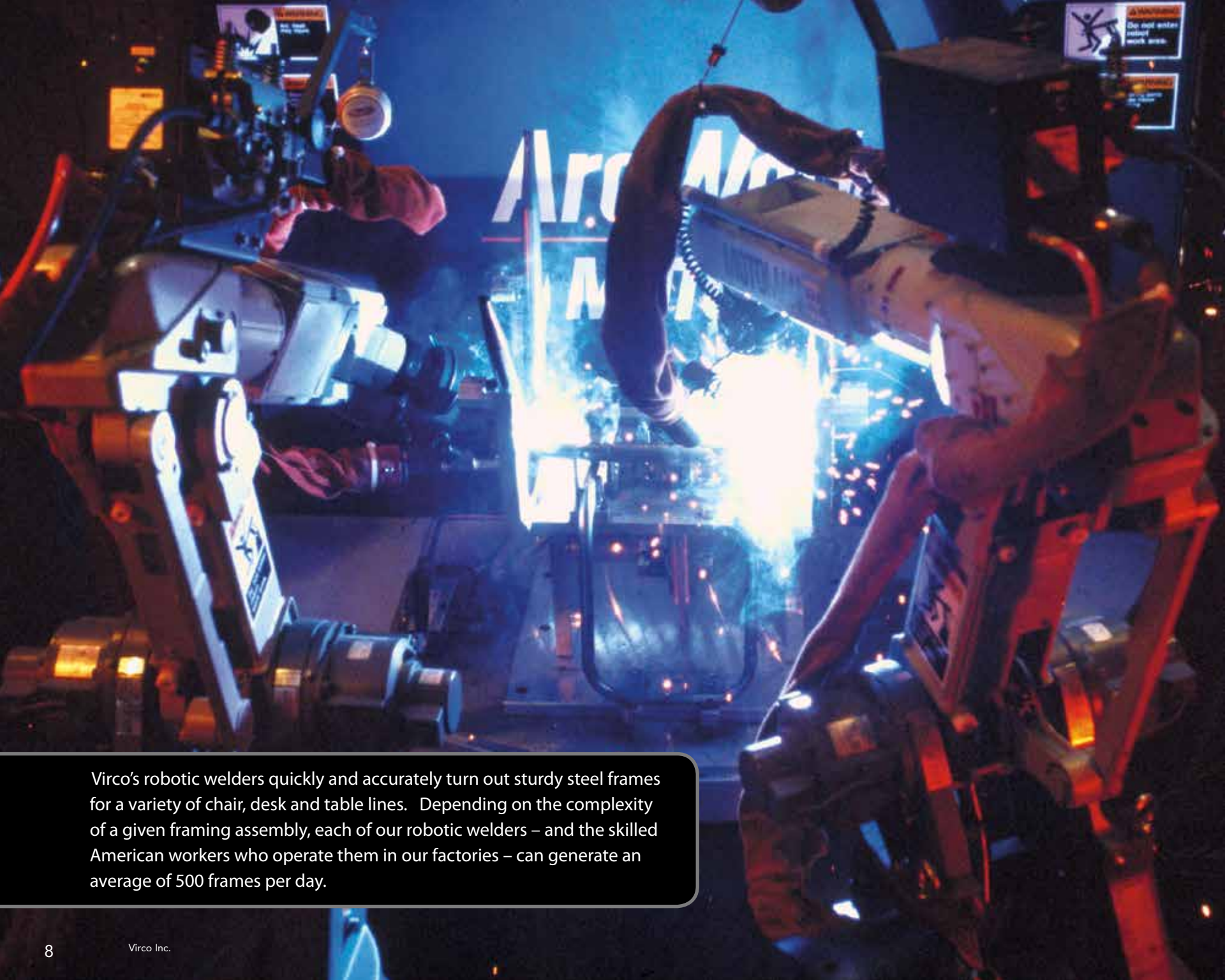
*Virco's tubular steel fabrication operations include the use of slitters – like the one above – which cut large steel coils into smaller widths; we currently produce 17 different diameters of tubing.*

Virco currently produces 17 different tube diameters for use in our various furniture and equipment lines. To satisfy customer demand for our products, Virco purchased more than 18,000,000 pounds of steel coil in the 12 months prior to the release of this brochure.

Because Virco maintains a total of seven American-made tube mills – five in Conway and two in Torrance – we're well equipped to fabricate millions of pounds of tubular steel every year. Dozens of in-house stamping and bending machines let us manufacture the full range of high-strength steel components that give Virco products their well-earned reputation for reliable, long-term performance.

In addition to our tubular steel manufacturing capabilities, Virco recently established a fully equipped flat metal forming department in Conway, where we now produce our own vertical files, lateral files, metal cabinets, storage pedestals and related items. By increasing the number of steel components we fabricate in house, we're giving you an even greater range of affordable, high-value Virco-made products.

*Virco is able to offer a full line of metal filing and storage products to complement our popular metal based Plateau® and Parameter® office desks.*



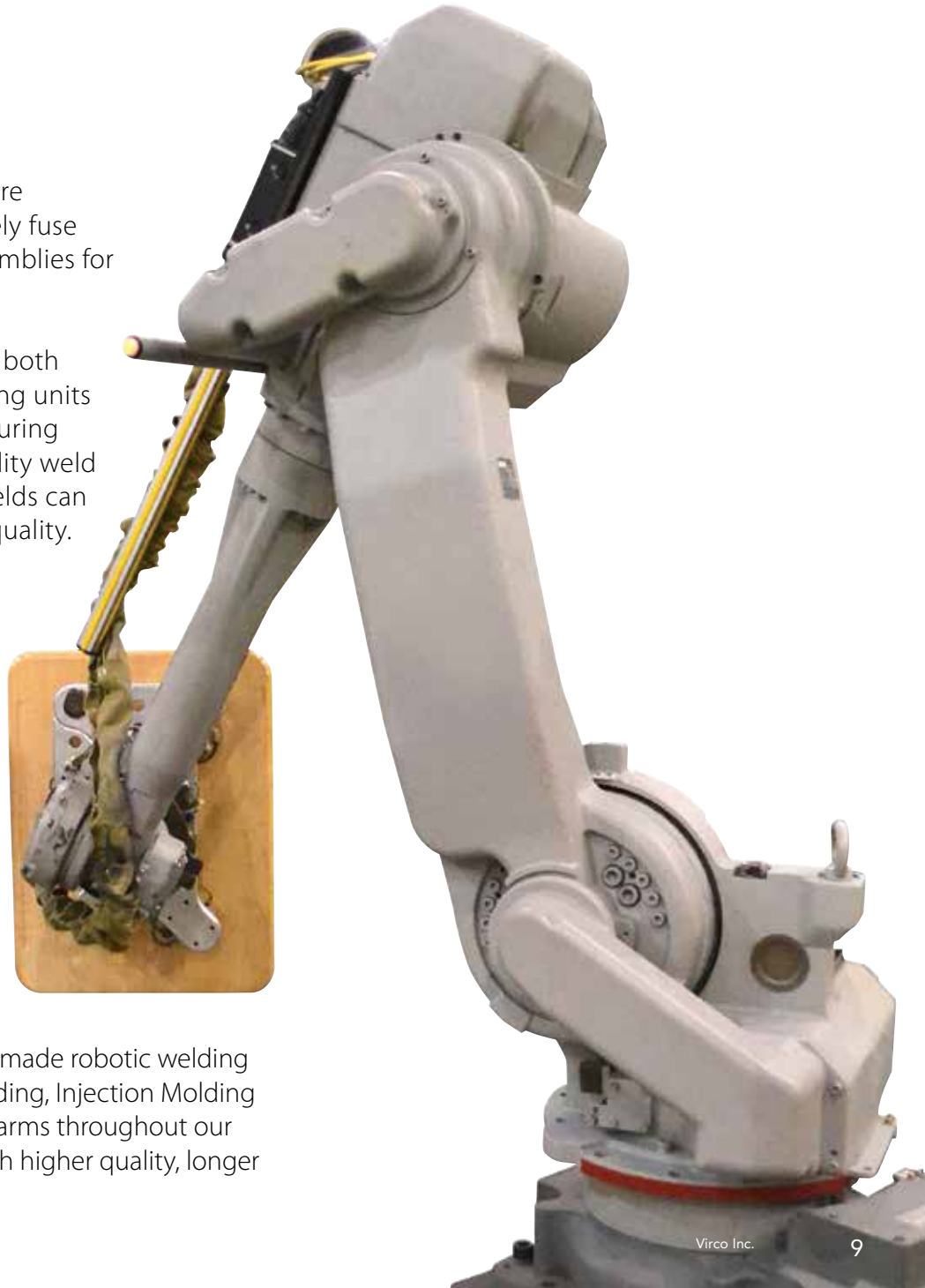
Virco's robotic welders quickly and accurately turn out sturdy steel frames for a variety of chair, desk and table lines. Depending on the complexity of a given framing assembly, each of our robotic welders – and the skilled American workers who operate them in our factories – can generate an average of 500 frames per day.

# ROBOTICS

After various tubular and stamped steel components are fabricated in our facilities, robotic welding units securely fuse these components into legs, backs and other sub-assemblies for Virco products.

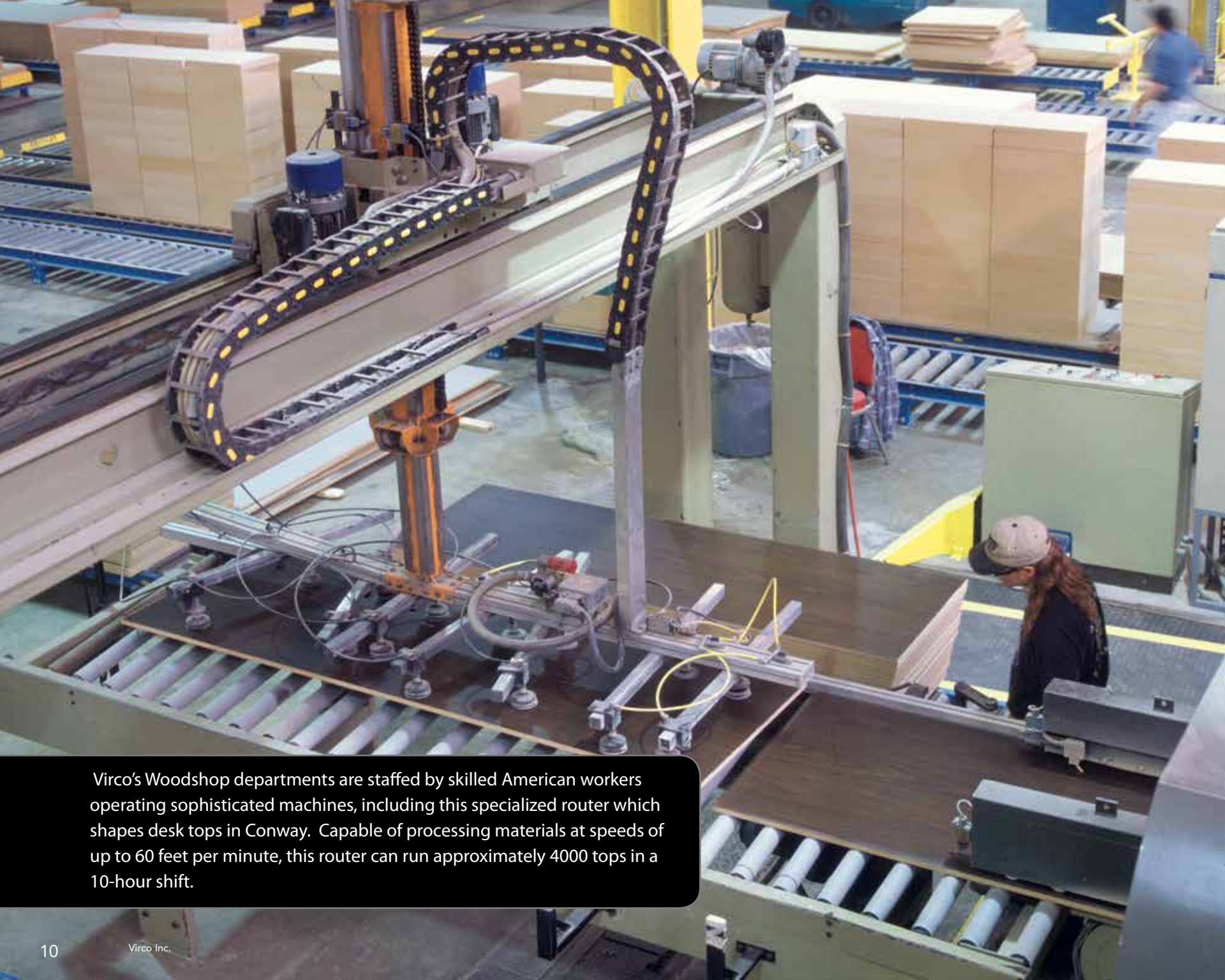
Virco began using robotic welders during the 1990s in both Conway and Torrance. Today, we rely on robotic welding units to cost-effectively enhance Virco's advanced manufacturing operations, in which precisely formed parts insure quality weld joints. With upfront investments in technology, our welds can be applied at minimal cost for superior Virco product quality.

Virco has the largest number of robotic welders in our industry. Welding has always been a critical operation in the manufacture of classroom/institutional furniture, recognizing the mandate for safety and durability. On a related note, Virco is the K-12 furniture market leader in vision-assisted assembly, in which robots photographically locate components for drilling and screwing to expedite and lower the cost of product assembly.



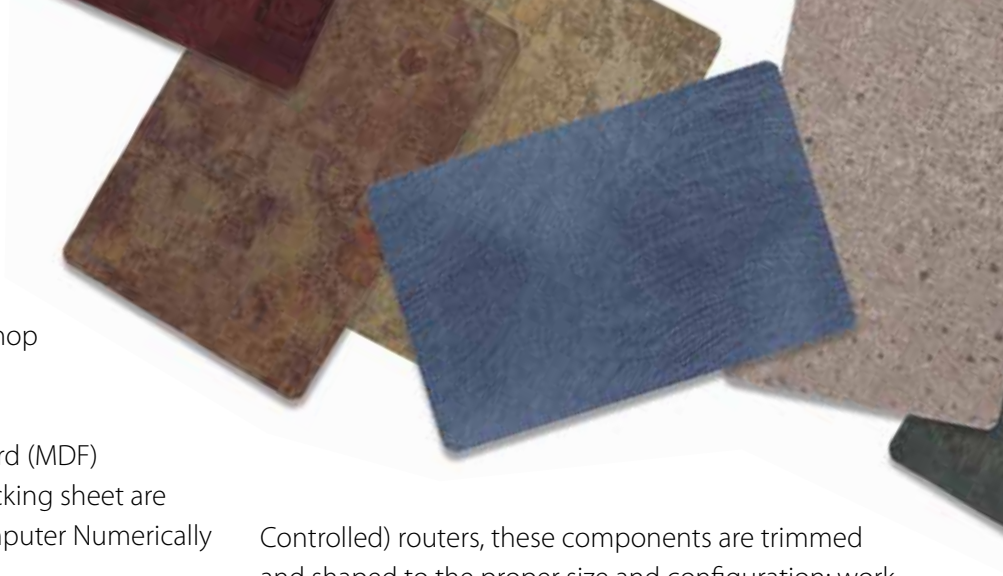
## VIRCO'S ROBOTIC HELPING HANDS

Along with our robotic welders, Virco employs American-made robotic welding systems in our Fabrication, Woodshop, Compression Molding, Injection Molding and Final Assembly departments for a total of 55 robotic arms throughout our facilities. Virco's ultra-efficient operations provide you with higher quality, longer lasting furniture and equipment.



Virco's Woodshop departments are staffed by skilled American workers operating sophisticated machines, including this specialized router which shapes desk tops in Conway. Capable of processing materials at speeds of up to 60 feet per minute, this router can run approximately 4000 tops in a 10-hour shift.

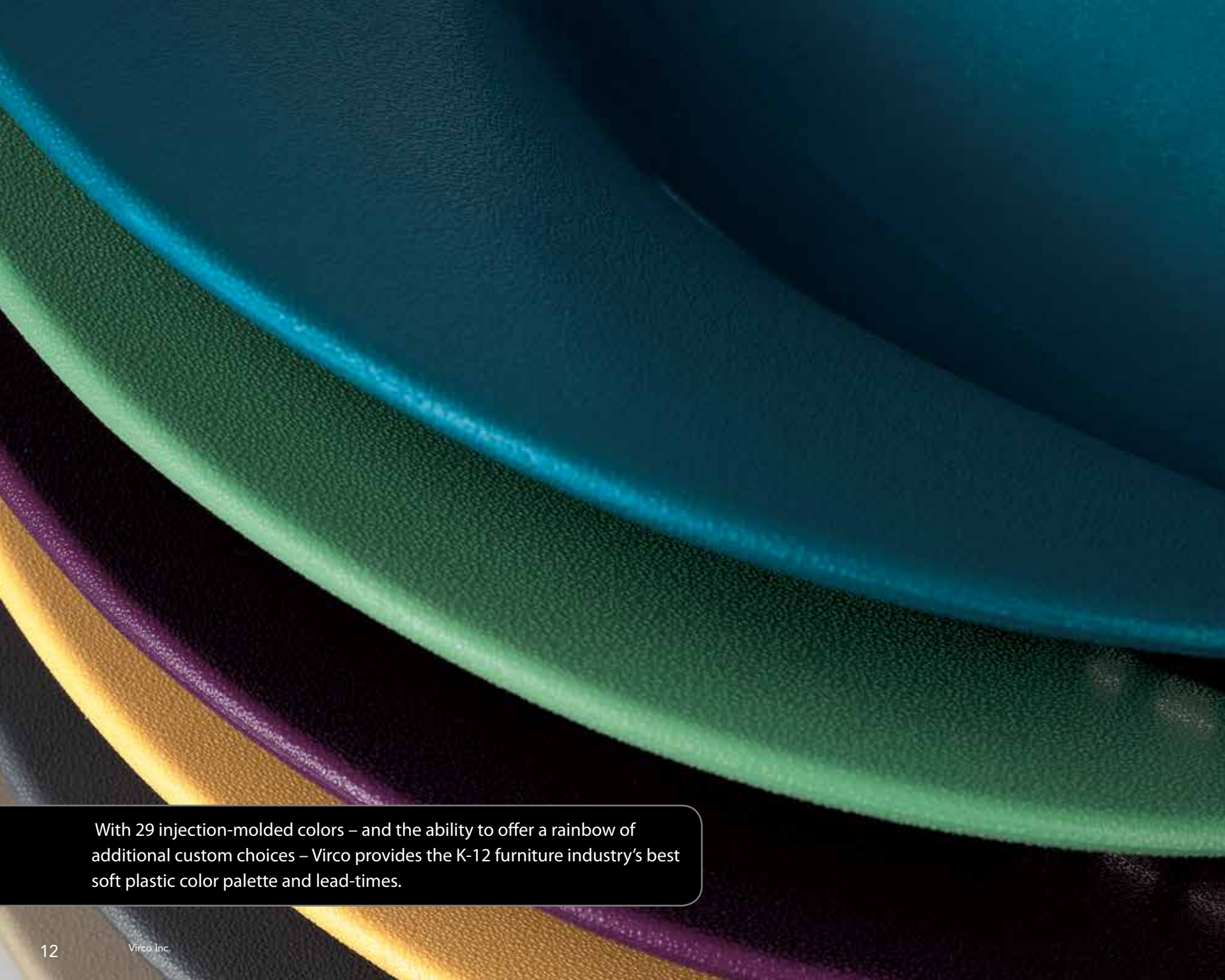
# WOODSHOP



For products like desks, tables and chair/desk combo units, Virco manufactures high-pressure laminate work surfaces in the Woodshop departments of our Torrance and Conway factories.

We start with particleboard, plywood or medium-density fiberboard (MDF) substrates, to which a plastic laminate top sheet and a bottom backing sheet are bonded under intense pressure. Then, using one of our CNC (Computer Numerically Controlled) routers, these components are trimmed and shaped to the proper size and configuration; work surface edges are then either sealed with lacquer, with T-mold plastic banding or with Virco's premium urethane-based Sure Edge® finish.

To enhance the efficiency of our operations, Virco's Conway and Torrance Woodshop departments recycle scrap wood and wood dust that would otherwise be sent to a landfill. In fact, through the year 2016, Virco has recycled more than 160,717,364 pounds of wood-related materials since 1991.



With 29 injection-molded colors – and the ability to offer a rainbow of additional custom choices – Virco provides the K-12 furniture industry's best soft plastic color palette and lead-times.

# COLORFUL INJECTION-MOLDING

Virco's fully integrated manufacturing operations include extensive injection-molding capabilities at our Conway factories. As with other aspects of our operations, Virco's ability to mold a complete range of soft plastic chair shells for our diverse seating lines gives us a cost- and quality-control advantage over competitors who rely on vendors for injection-molded components.

Taken together, Conway Plant 1 and Plant 2 have 22 injection-molding machines that turn out polyethylene shells for our best-selling 9000 Classic Series™ product line and a variety of polypropylene shells for our popular ZUMA®, Sage™, Metaphor® and I.Q.® seating collections. Robotic technology enhances the speed and accuracy of our injection-molding operations.

Compared to competitors who lack these capabilities, Virco gives you more plastic chair shell color choices and better lead-times. We also welcome special orders for seating with custom-colored shells.

*Virco was one of the first K-12 manufacturers to bring the colorful, long-lasting value of molded plastic seating into the classroom when we introduced the 9000 Classic Series™ chair, having sold nearly 60,000,000 units since 1964.*

*Metaphor® Series* *ZUMA® Series* *Sage™ Series* *Virtuoso® Series* *I.Q.® Series* *9000 Series* *2000 Series*

An experienced Conway Plant 3 operator prepares to load one of our hard plastic presses. With high skill sets that can take months or years to perfect, Virco's hard plastic production team makes components that meet the highest quality standards.

# HARD PLASTIC

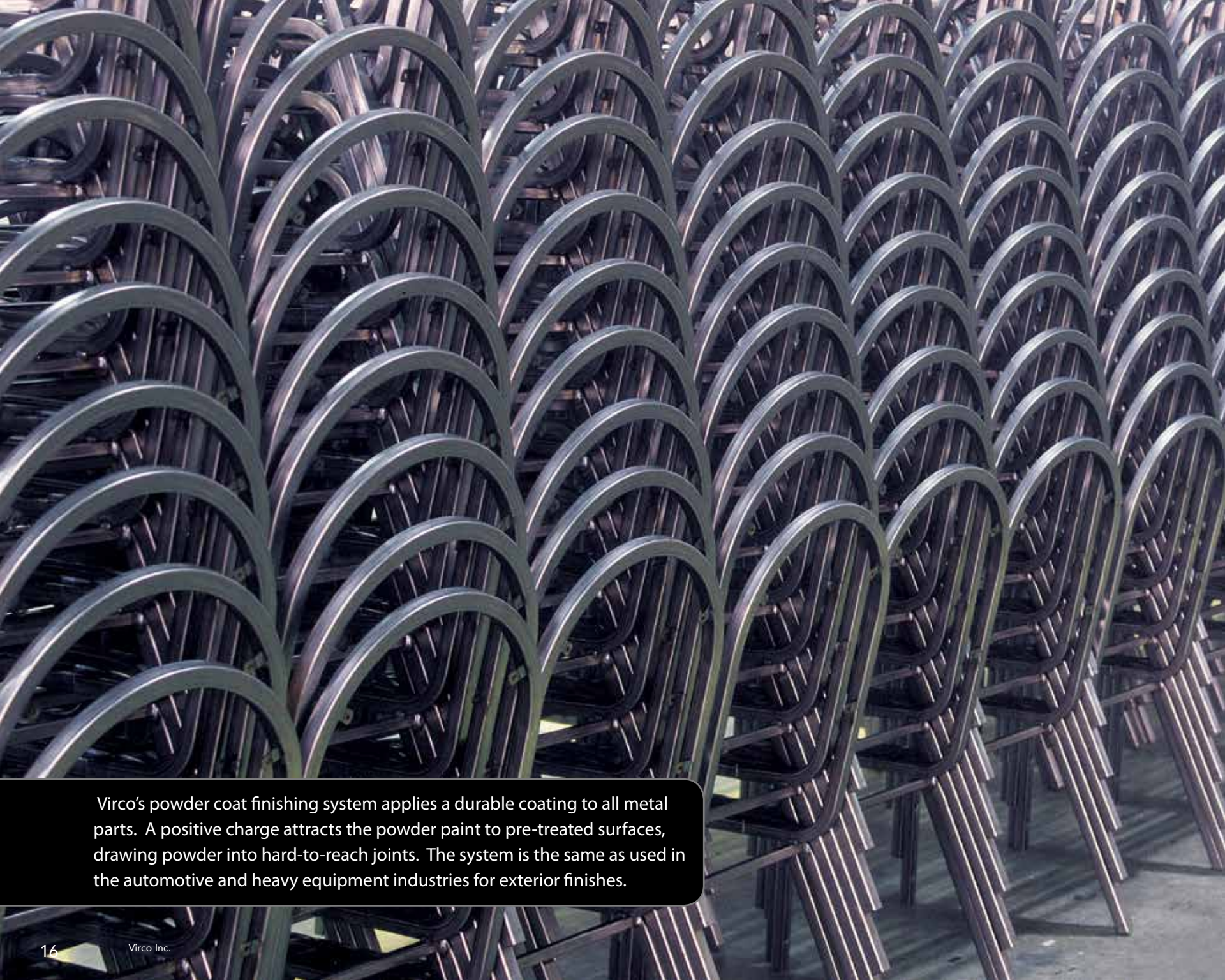
Many Virco student desks and combo units can be equipped with compression-molded hard plastic work surfaces made in our Conway Plant 3 facility. To make these colorfast, flameproof, scratch-resistant components, we mix wood flour, melamine resin, pigments and other materials, mold them under heat and pressure, then polish the finished work surfaces before attaching them to selected classroom furniture items.

At Virco, we support our core operating principles of safety, quality and housekeeping with the industry's most advanced hard plastic dust control system. More than 170 molds and 120 presses enable us to make 100% of our hard plastic components and offer custom-imprinted work surfaces with customer-supplied logos.

Virco's fully equipped compression molding facility lets us run up to 14,000 hard plastic pieces in a 24-hour period. We've also invested in an American-made grinder to insure maximum utilization of recyclable hard plastic materials.

Traditionally, most Virco hard plastic has been sold under the Martest® 21 brand. More recently, we introduced Fortified Recycled Wood™ (FRW™) hard plastic; our grinder can process recyclable materials for use in FRW hard plastic components.

*Here, a printed wood grain overlay is placed into the press where its graphic will be fused into a desk top though a combination of heat and pressure forming a finished product that is extremely hard and smooth. Work surfaces can be customized with customer-supplied logos or other artwork.*



Virco's powder coat finishing system applies a durable coating to all metal parts. A positive charge attracts the powder paint to pre-treated surfaces, drawing powder into hard-to-reach joints. The system is the same as used in the automotive and heavy equipment industries for exterior finishes.

# POWDER COAT PAINT LINE

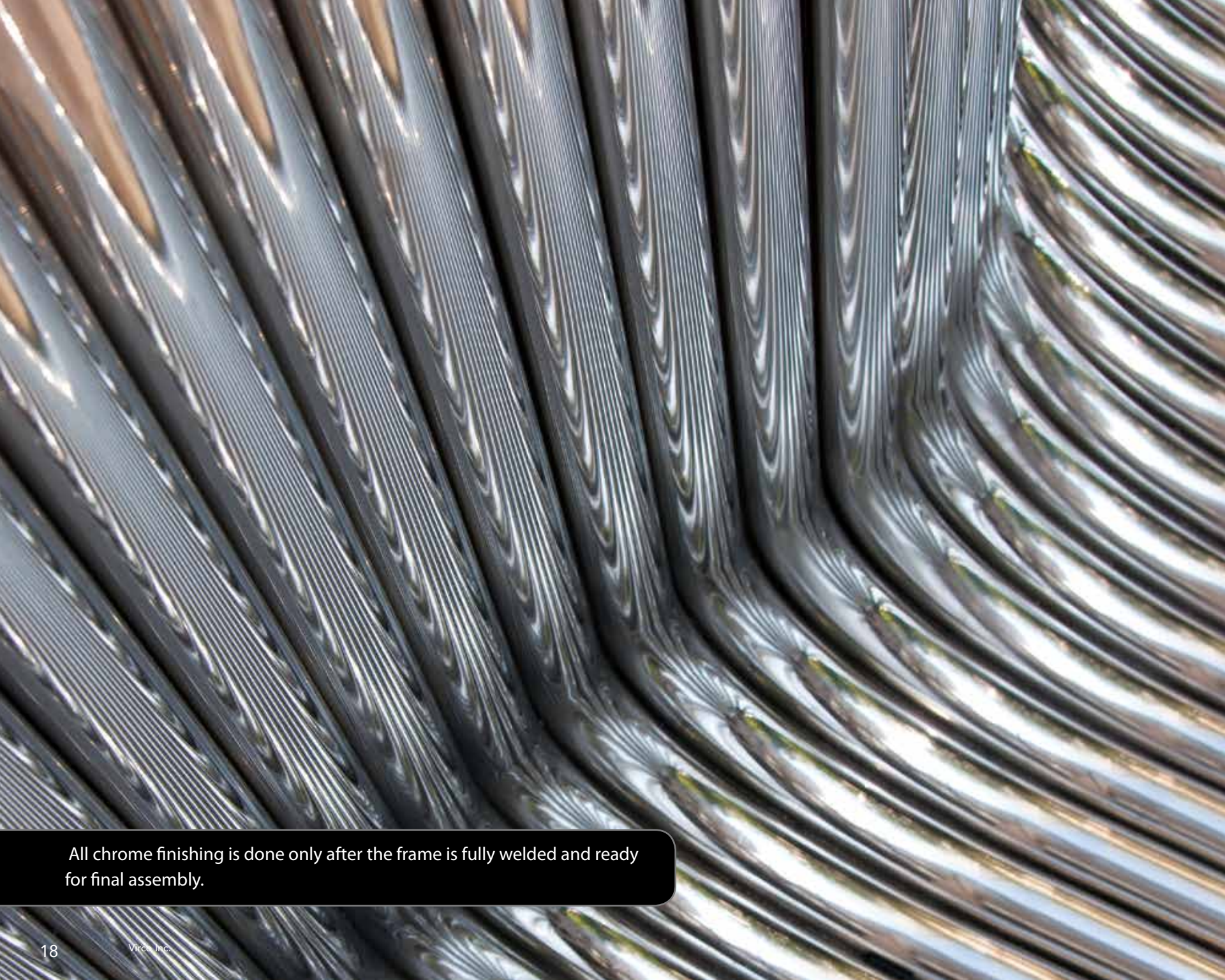
Steel-frame Virco products that require a painted finish are processed through our Torrance and Conway powder coat lines. First introduced on a large scale in the automotive industry, powder coat painting is now widely used in most industries as a more cost-effective and environmentally friendly alternative to older wet-paint applications.

In Torrance, Virco's two powder coat paint lines each extend more than 2100 linear feet and can be operated at speeds of up to 40 feet per minute; in Conway, our lines are 4600 feet long and move at up to 90 feet per minute. Powder paint is applied electrostatically in a spray booth to components suspended from each line; components are pre-treated to give them a positive electrical charge which attracts and holds the powder to their surface. To recycle powder from our booths, Virco has six reclaim modules for our most popular colors.

After passing through a spray booth which thoroughly disperses the powder paint – our booths have up to 22 automatic guns for this purpose – components move through an oven with temperatures that reach 400° where paint is melted on for an attractive, long-lasting finish.

Because Virco can quickly change colors on our lines – the changeover can take as little as 45 seconds – we can easily paint multiple colors each day. And thanks to solid relationships with our paint vendors, we can custom match paint colors at your request.

*Folding table legs move through a spray booth where powder coat paint is electrostatically applied. They will then enter an oven where the paint is melted on; after cooling, the legs are removed from the line and are ready for assembly.*



All chrome finishing is done only after the frame is fully welded and ready for final assembly.

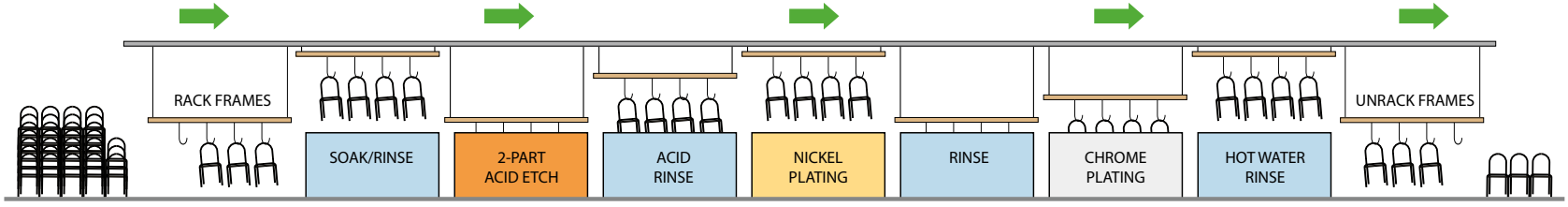
# ADVANCES IN CHROME PLATING

Since many Virco customers – particularly K-12 schools – prefer steel-frame furniture with a chrome finish, Virco has an in-house chrome plating department at our Conway Plant 1 facility. To insure consistent, high-quality production, we've partnered for several years with a company that specializes in chrome plating to oversee the operations of this department.

We utilize an multi-step plating process that starts with a thorough soak to remove superficial dirt and grime, preparatory acid and electrocleaner baths and rinses, and a bright nickel undercoat. These steps are followed by several rinse cycles, and only then are steel frames immersed in a chroming tank. After a series of final steps that include four more rinses, chromed frames are set aside to dry before the attachment of a Virco chair shell, an independent seat and back, or other components.

In keeping with Virco's commitment to sustainable business practices, our trivalent chrome plating is more environmentally friendly than older chroming methods used in other operations.

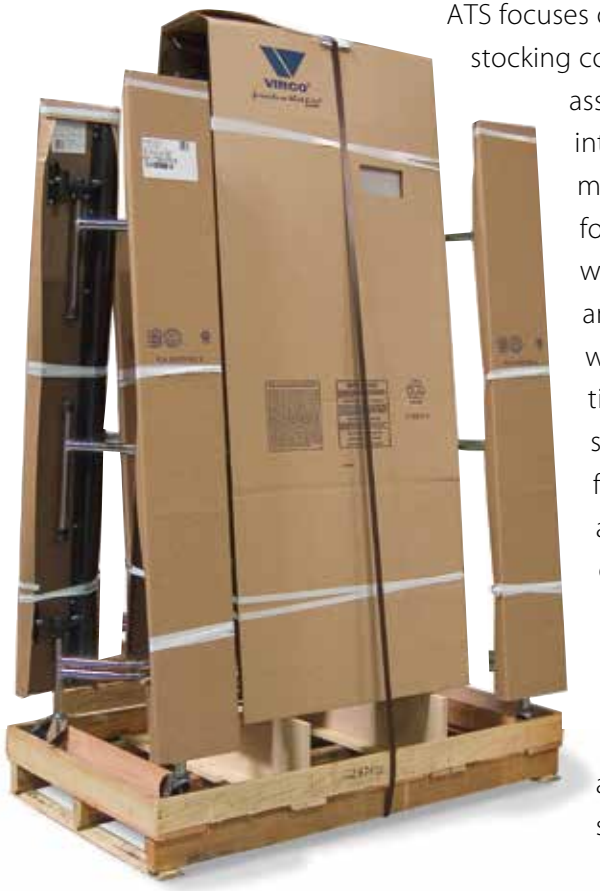
It's also important to note that our chrome plating department has a self-contained water treatment/filtration system. After filtration, the water used in the Conway chroming process is suitable for discharge into Conway's community wastewater system. And along with our Green approach to chroming, Virco's durable, eye-catching chrome finish meets or beats anything else on the market!




*Virco's environmentally friendly chroming operations deliver consistent, high-quality results.*

# FINAL ASSEMBLY

In preparation for our busy summer delivery season, Virco builds inventories in Torrance and Conway using our Assemble-to-Ship – or ATS – production model.




ATS focuses on making and stocking components and sub-assemblies that are interchangeable among multiple product lines; for you, that means a wider range of furniture and equipment models with faster lead-times and a greater selection of color and finish choices. ATS also provides cost-control advantages by reducing our level of year-round labor, since we "flex" employees from fabrication to assembly during peak summer delivery months. Our 38 corporate-wide assembly lines – and staging areas that can hold up to 10 hours of work – give us the resources to quickly prepare and ship customer orders.

*Although most furniture models are cartoned for shipment, large products like mobile tables have special packaging that includes wooden shipping crates.*

Virco's ATS model works because we don't have extended overseas production lines that prolong lead-times and minimize color and finish options. Our large U.S. facilities and ATS production model give you more – and more colorful – product choices, and we give them to you faster!

*Inventories of molded seat/back shells are produced in advance of final assembly.*

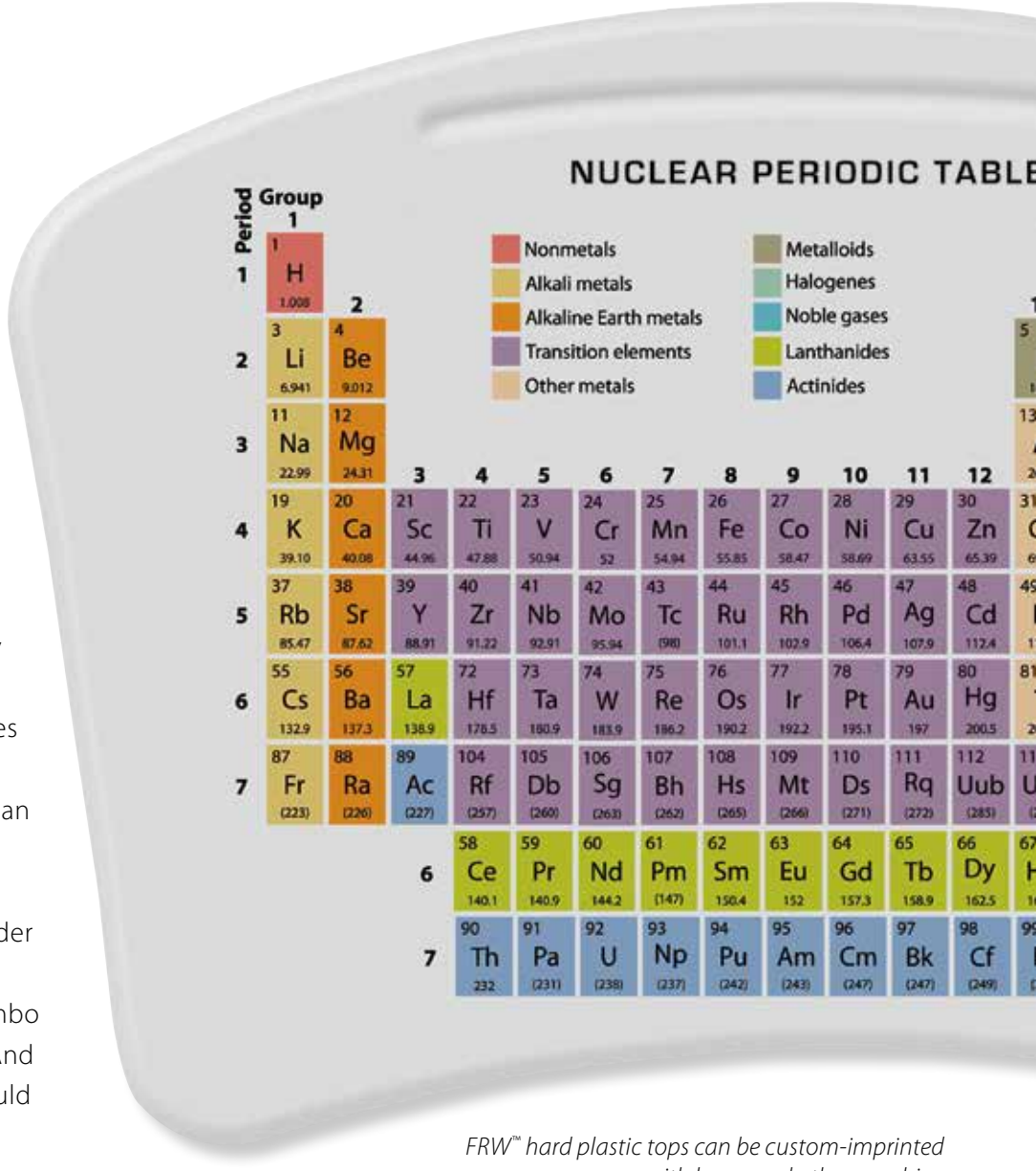
Every year, Virco responds to customer requests with new or custom products. In 2010, ZUMA® ZBOOM desks were designed and manufactured to meet the specific requirements of a Virco customer.

# CUSTOM MANUFACTURING

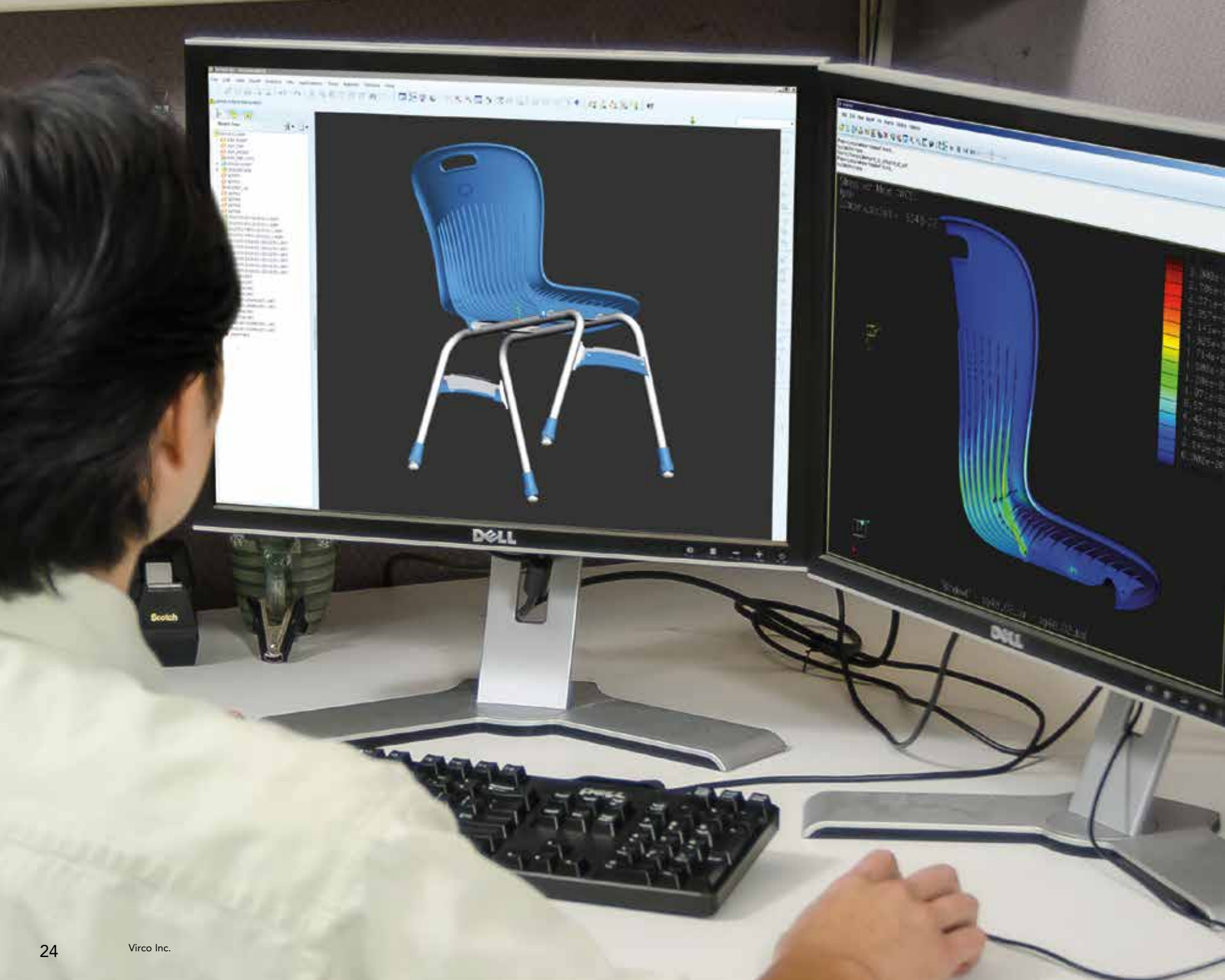
To complement the thousands of standard product configurations shown in our Equipment for Educators™ price list, Virco's modern domestic factories let us offer you an array of custom options. With more than six decades of service to the K-12 community, we've repeatedly worked with educators on built-to-order furniture solutions for schools. These have included everything from pairing traditional student-desk pedestal legs with collaborative learning desk tops to developing special technology support tables and accessories.

At Virco, our New Product Engineering experts are ready to assist you by providing customized products that correspond to your functional needs. And when it comes to filling your order, our well-equipped staging and assembly areas – and experienced American workers – can process any custom Virco-made furniture combination.

As we've already mentioned in these pages, you can order injection-molded Virco seating with custom-color chair shells. Likewise, work surfaces for desks, tables and combo units can be enhanced with custom-imprinted logos. And that's only the beginning; your Virco representative would be glad to discuss product customization with you!




*FRW™ hard plastic tops can be custom-imprinted with logos and other graphics.*


DELL
DELL
Scotch

# PRODUCT DEVELOPMENT

At Virco, product development is grounded in "value-added design".

Our new designs are integrated operationally, visually and functionally. We focus not on designing one chair, but on developing whole families of complementary products that build together in the factory and work together in the classroom. We believe this integrated approach adds value by creating smarter, better, more efficient products instead of simply cutting corners and making (or buying) uninspired 'me-too' products.

All Virco products developed through this "integrated approach" to design have an appealing combination of comfort, style, and durability. They're "complementary" in the sense of offering a selection of features and benefits at different price points to accommodate a range of budgets. And because they're built in our domestic factories, Virco products give you better lead times, more color choices, and the superior craftsmanship of our experienced American work force.

As a U.S. manufacturer with substantial capacity and modern, efficient facilities, we've worked hard to create a strong culture of good design. Our popular ZUMA®, ZUMAfrd™ Sage™, Metaphor®, Telos®, Lunada®, Parameter® and TEXT® lines – all of which have been developed within the past decade – as well as the newly released Civitas™ line, demonstrate Virco's commitment to provide innovative new products for key markets.

With the success of these products, we've become the acknowledged design leader in classroom furniture. Virco has a proven track record of continuous new product development that includes designing entire product lines that provide complete integrated solutions, as well as single-purpose designs intended to meet specific customer needs. Our ongoing product development program will continue to bring more value-added furniture solutions to our customers.

# TESTING

As a service to our customers and to assure superior levels of quality control, Virco tests and evaluates our products according to rigorous standards. Virco's product evaluation program includes applicable performance testing for strength, durability and stability as established by the Business and Institutional Furniture Manufacturer's Association and accepted by the American National Standards Institute.

ANSI
American National Standards Institute

BIFMA








Virco's Conway warehousing facility has 19,000 four-foot pallet locations in specialized storage racks; Conway's frame storage area can hold over 4,000 of these blue racks!

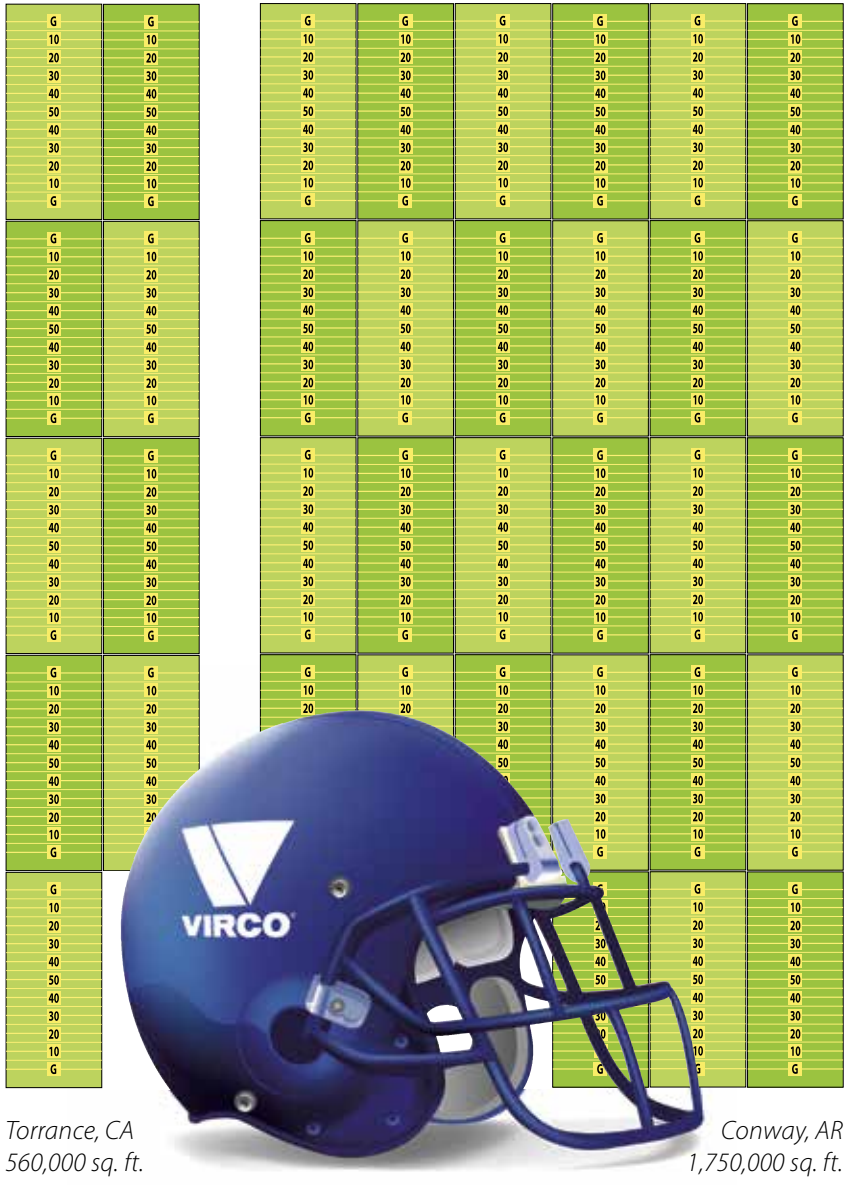
# THE BIGGEST . . . AND BEST EQUIPPED!

As the leading maker and supplier of furniture and equipment for K-12 schools, Virco has more than 2,000,000 square feet dedicated to manufacturing, assembly, warehousing and distribution. That's nearly 35 football fields of operational space focused on providing thousands of Virco products with superior lead-times to customers throughout the U.S.A. and around the world.

## CAPABILITIES

Along with the extensive capabilities already highlighted in these pages – from steel-fabrication, wood-working, injection-molding, and compression-molding, to powder-coating, chrome-plating, assembly and customization – our Torrance factory has vacuum-forming technology that we use to make strong, lightweight Core-a-Gator® folding tables.

Virco's advanced vacuum-forming systems turn out precision-shaped ABS plastic components for patented Core-a-Gator table tops. After components are formed, Virco's proprietary process for maintaining quality and integrity continues in the Core-a-Gator assembly area, where finished tops are produced by expert American workers. Customers who tour Virco's Torrance facilities are always impressed with our fascinating Core-a-Gator operations.




*Torrance, CA*
*560,000 sq. ft.*

*Conway, AR*
*1,750,000 sq. ft.*

Virco's ZUMAfrd™ line – introduced in 2005 – exemplifies our commitment to sustainable products by featuring seats, backs and work surfaces made from Fortified Recycled Wood™ hard plastic, which can include post-consumer recycled material obtained through our Take-Back program.

# CORPORATE STEWARDSHIP

## GOING GREEN & MORE

An important advantage of manufacturing at our company-operated facilities in the U.S. is that Virco can control a wide range of recycling and resource recovery processes. For us, recycling is a key aspect of Virco's commitment to sustainable business practices through our Corporate Stewardship Initiative.

Virco started recycling in 1989 with three material categories: scrap metal, office paper and hydraulic oil; now we have more than 40 categories and we've processed over 340,000,000 pounds of recyclables. Along with our in-house efforts, we've established a "Cash for Cardboard" program that's enabled 35 schools near our Conway facility to earn over $100,000 through recycling. We're proud that the U.S. Environmental Protection Agency recognized our recycling leadership by choosing Virco as a charter member of their WasteWise Hall of Fame in 2003.

We've gone on to introduce a Take-Back program which helps schools recycle their out-of-service furniture, rather than sending it to a landfill.

Take-Back also gives Virco the ability to reprocess unwanted furniture components into post-consumer recycled material that can be used to make our Fortified Recycled Wood™ hard plastic.

In addition to recycling, Corporate Stewardship involves engaging in dynamic projects with the National Association of Elementary School Principals (NAESP), the National Association of Secondary School Principals (NASSP) and the Association of School Business Officials International (ASBO) to support our customers and communities. We also make sure that applicable Virco products comply with the United States Consumer Product Safety Improvement Act (CPSIA), and with California Air Resources Board (CARB) regulation #93120.2, which affects emissions of formaldehyde from many products.

*If you'd like to learn more about our commitment to sustainable business practices, go to www.virco.com and click on the Corporate Stewardship link.*


30
31
32
VIRCO

# THOUSANDS OF PRODUCTS

# U.S. FACTORIES

At the beginning of this brochure, we invited you to take a closer look at Virco by visiting one of U.S. factories. Here's where we're located:

**Torrance, California**
Headquarters/Factory/Corporate Offices
2027 Harpers Way, Torrance, CA 90501
Tel: 310-533-0474

**Conway, Arkansas**
Factory/Branch Office
Highway 65, South Conway, Arkansas 72032
Tel: 501-329-2901
Fax: 501-450-1144

Your local Virco representative would be happy to schedule your Virco plant tour, or call us at 800-448-4726 for assistance. We look forward to seeing you!


*Virco can ship products to most locations within the 48 contiguous states; we're also happy to arrange for the delivery of overseas orders.*

*Whenever possible, Virco re-uses or recycles packaging materials that are removed after completing Full Service Delivery orders.*

# Bring production home?

# Virco never left!

VIRCO®

2027 Harpers Way, Torrance, CA 90501
Highway 65 South, Conway, AR 72032
P: 800-448-4726
I: www.virco.com



PROUDLY BUILT BY AMERICAN WORKERS

As a company committed to environmental excellence, Virco's industry-leading recycling and resource recovery endeavors have earned numerous honors from local, state and national organizations.

Printed in the U.S.A. 7/17

REF#12131