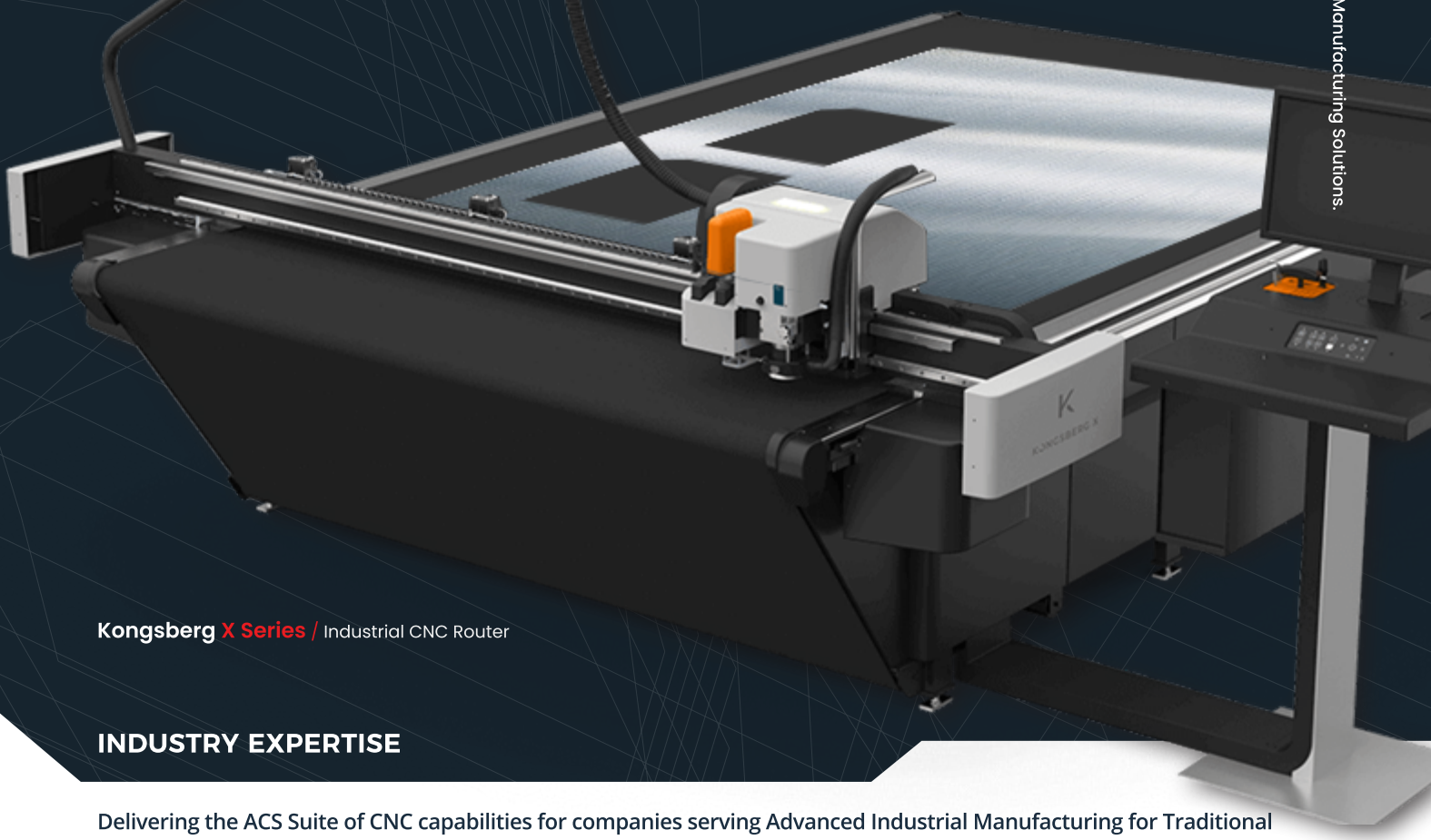
ADVANCED MANUFACTURING SOLUTIONS
A Hybrid Technology Company

KONGSBERG
Precision Cutting Systems

ACS Kongsberg CNC Precision Cutting Solutions. Technology for Advanced Industrial Manufacturing.

The Most Versatile, Automated Cutting Solutions for Composite & Textile Fabrication and Manufacturing.



Kongsberg X Series / Industrial CNC Router

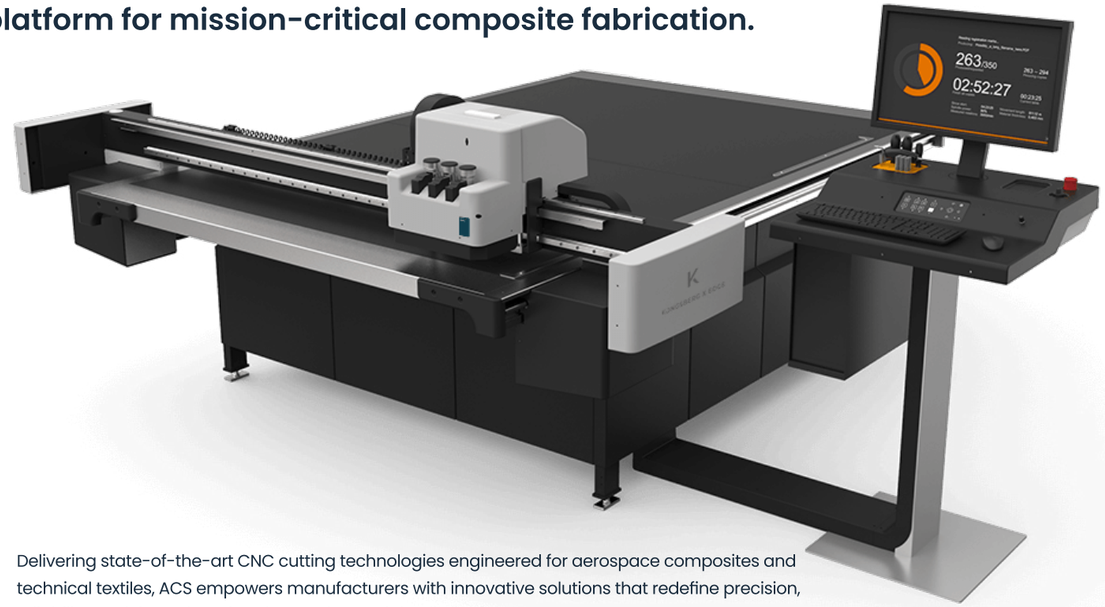
INDUSTRY EXPERTISE

Delivering the ACS Suite of CNC capabilities for companies serving Advanced Industrial Manufacturing for Traditional Manufacturing and Fabrication sectors, Aerospace, Defense & Automotive markets, Semiconductor, Oil & Gas, Signs & Graphics, Commercial Marine, RV, Composites and Industrial Tooling, Jigs & Fixtures.

A Trusted Partner Serving Customers in the Pacific Northwest (US) and Western Canada.

Advanced CNC Solutions for Aerospace Composites.

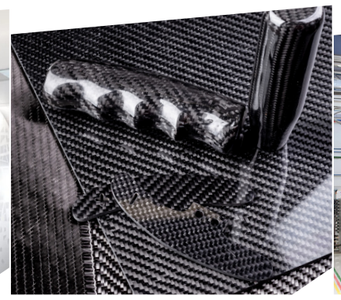
From layup kits to structural cores—experience the next level of precision, productivity, and versatility with the ultimate platform for mission-critical composite fabrication.



Delivering state-of-the-art CNC cutting technologies engineered for aerospace composites and technical textiles, ACS empowers manufacturers with innovative solutions that redefine precision, reliability, and throughput in advanced materials processing.

Our flexible, high-performance cutting systems are purpose-built to meet the demands of aerospace production, enabling tighter tolerances, repeatable accuracy, and optimized workflows across carbon fiber, honeycomb core, prepregs, foams, and high-performance laminates. Designed to support mission-critical manufacturing, ACS solutions enhance your fabrication capabilities while reducing changeover time, material waste, and downstream inefficiencies.

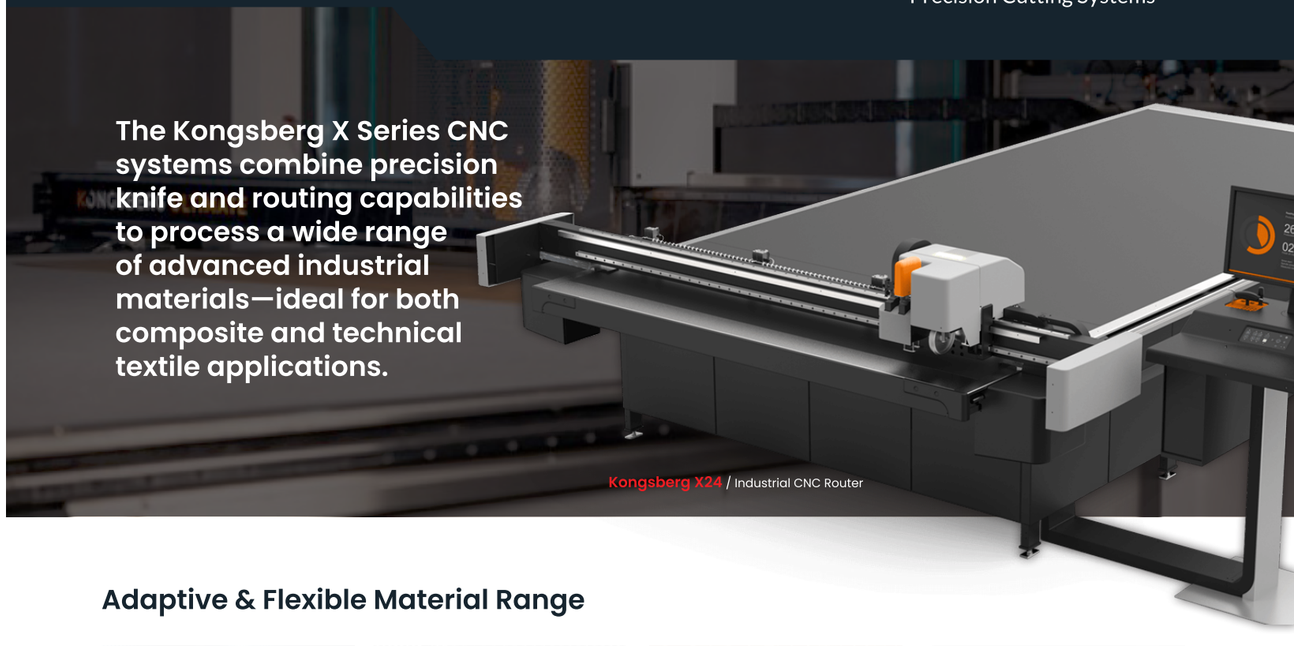





ACS. One Partner for Sales & Service in the Pacific Northwest (US) & Western Canada.

Industrial Materials

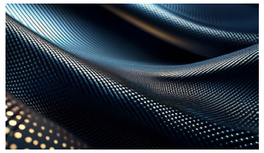
KONGSBERG
Precision Cutting Systems



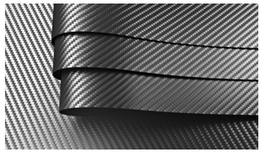
The Kongsberg X Series CNC systems combine precision knife and routing capabilities to process a wide range of advanced industrial materials—ideal for both composite and technical textile applications.

Kongsberg X24 / Industrial CNC Router

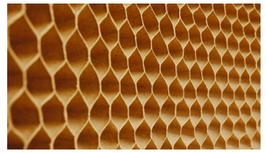
Adaptive & Flexible Material Range



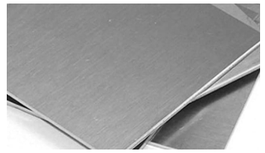
Carbon Fiber
A strong, lightweight material made from thin, crystalline filaments of carbon atoms. It is known for its exceptional strength-to-weight ratio, high stiffness, corrosion resistance, and thermal stability, making it ideal for use in aerospace, automotive, sports equipment, and high-performance manufacturing. Superior strengt & consistency.



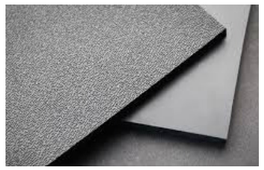
Prepreg
Pre-impregnated composite fiber is a reinforcing fabric—such as carbon fiber, fiberglass, or aramid—that has been pre-impregnated with a resin system, usually epoxy, which is partially cured (called B-stage). used in Aerosace and aviation components, Automotive, Sporting goods, Industrial and marine solutions.



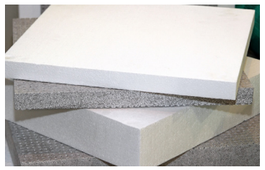
Honeycomb
Honeycomb composite materialsare lightweight, high-strength structures made by sandwiching a honeycomb-shaped core between two thin, stiff face sheets, typically made of materials like carbon fiber, thermo-plastics, fiberglass, or aluminum. Used in Aerospace, Automitive industires, Commercial Marine and Defense applications.



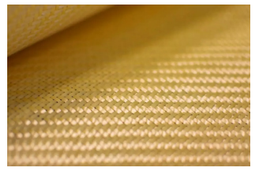
Aluminum
Aluminum is a lightweight, silvery-white metal with the chemical symbol Al and atomic number 13. It is the most abundant metal in Earth's crust and is known for its low density, high corrosion resistance, and excellent conductivity. Used in Transportation (aircraft, cars, trains, and bicycles), Construction, Electrical components and Consumer Goods.



ABS
ABS, a common thermoplastic polymer known for strength, toughness, and impact resistance. It's a lightweight and durable material frequently used in manufacturing, especially for 3D printing, consumer goods, automotive parts, and electronic housings. ABS combines the rigidity of acrylonitrile and styrene. deal for structural & aesthetic components



Structural Foams
Structural foam is a lightweight, rigid plastic material made by injecting a foaming agent into a thermoplastic resin (such as polyethylene, polypropylene, or ABS) during the molding process. This creates a solid outer skin with a cellular (foamed) core, resulting in a strong but lightweight part. Used in Automotive parts, Equipment housings and Furniture.



Aramid Fiber
Aramid fiber is a class of strong, synthetic fibers known for their exceptional strength, heat resistance, and lightweight properties. The name "aramid" comes from aromatic polyamide, which refers to its chemical structure made of aromatic rings and amide bonds. USed in Aerospace, Automotive components, Ballistic protection and more.

Glass Fibers
Glass fiber, also known as fiberglass, is a material made from extremely fine strands of glass that are woven or bundled into various forms and used as reinforcement in composite materials. Glass fiber embedded in a resin matrix (like polyester, epoxy, or vinyl ester) to form composite materials that are strong, durable, resistant environmental degradation.

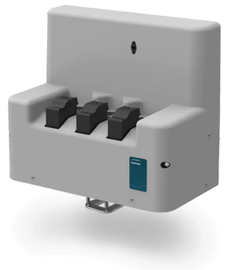
www.acs-iws.com www.acs-iws.ca www.acscolabpartners.com

Kongsberg X Toolheads

MultiCUT-HS/HP

The MultiCUT-HS (High Speed) spindle is ideal for aerospace composite environments requiring flexibility across a wide range of materials with minimal setup time. Its automated tool-switching capability allows seamless transitions between light-duty operations—such as kiss-cutting films or protective layers—and precision milling of engineered composite panels, all without manual intervention. The system delivers consistently clean edge quality on prepregs, foams, and technical laminates, supporting high-mix/low-volume aerospace workflows where material diversity and surface integrity are critical.

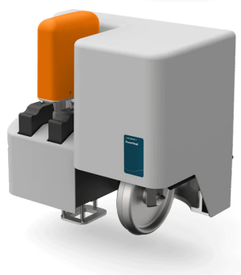
MultiCUT-HP (High Power) designed for the most demanding aerospace applications, the MultiCUT-HP features a powerful liquid-cooled spindle engineered for extended duty cycles and aggressive material removal. It excels at high-precision milling of thick composite stackups, honeycomb core panels with phenolic skins, and even aluminum substructures. This toolhead is the go-to solution for fabricators requiring long, uninterrupted cutting runs, high feed rates, and tight tolerances—delivering production-grade throughput on advanced aerospace-grade substrates.



FlexiHead

The FlexiHEAD is purpose-built for precision cutting of flexible, thin-gauge aerospace materials used throughout composite layup, curing, and finishing workflows. Its high-accuracy design handles a wide range of specialty materials—such as release films, breather fabrics, peel plies, masking films, and technical textiles—with exacting control and clean edge quality.

Featuring three configurable tool stations, the FlexiHEAD accommodates a full library of specialized knife and scoring inserts, making it a versatile solution for aerospace environments managing varied layup kits and custom cut-pack requirements. Its fast tool change capability and high throughput enable efficient, high-yield cutting of delicate, fibrous, or layered media critical to pre- and post-cure composite fabrication.



PowerHead

Engineered for high-strength composite applications, the PowerHEAD delivers exceptional performance on dense and structured aerospace materials—such as phenolic-coated honeycomb cores, rigid fiberboard, and paper-based tooling or transport packaging. Its robust design applies up to 50 kg (110 lbs) of programmable downforce and features large 150 mm (6") diameter crease wheels, making it ideal for scoring and folding industrial-grade materials without delaminating liners or fracturing fragile skins.

The integrated knife adapter supports precise V-notch cutting, enabling clean, accurate folds and mitered joints on thick core substrates used in aerospace part protection, temporary assembly fixtures, or customized packaging solutions for fragile composite components. The PowerHEAD is a workhorse for facilities that require structural integrity, dimensional accuracy, and repeatable creasing on complex, multi-layered composite media.

FoamHead

The FoamHEAD is optimized for processing thick, low-density aerospace materials commonly used in composite tooling, packaging, and lightweight structural applications. Featuring a powerful reciprocating knife, it cleanly cuts foam cores, technical foams, and aerospace-grade honeycomb boards up to 86 mm (3⅜") thick—including rigid urethane, PVC, and PET foams often used in sandwich panel construction.

Equipped with three blade adapter options, the FoamHEAD enables precise control of blade depth, ensuring clean edges and minimal material deformation across varying thicknesses. Advanced Z-axis control makes it easy to program accurate partial-depth cuts, ideal for creating contoured layup tooling, multi-layer fixtures, or engineered inserts for composite molds.

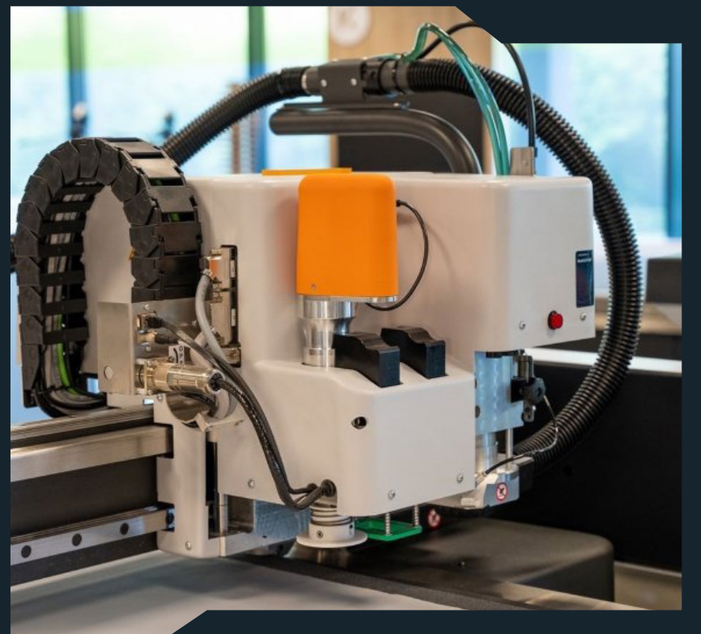
This toolhead is a go-to solution for aerospace manufacturers seeking high-speed, precision cutting of core materials with tight tolerances and repeatable performance.

ACS. One Partner for Sales & Service in the Pacific Northwest (US) & Western Canada.

Tools That Define Success

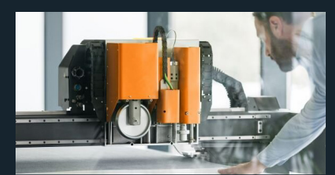
KONGSBERG
Precision Cutting Systems

Bits & Blades



Psaligraphy Tool for the Finest Details

The Psaligraphy knife tool easily cuts an intricate detail in paper and folding carton, at a unprecedented quality level. Make products like greeting cards, invitation cards, promotional items and folding carton samples with high precision, burr-free cuts.



CorruSpeed Tool for the Best Quality

The CorruSpeed knife tool is a high impact tool for corrugated materials. It cuts without oscillating and delivers amazing quality at full machine speed. Corr-uspeed handles material thickness up to BC.

www.acs-iws.com www.acs-iws.ca www.acscolabpartners.com

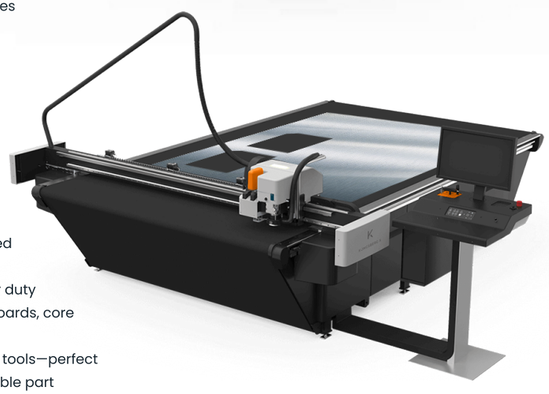
ACS / Kongsberg CNC Application Technologies

Kongsberg X Short Run

Ideal for short-run production, prototyping, and composite kit preparation in aerospace environments.

- Supports precise cutting across a broad range of aerospace materials—including carbon prepregs, breather fabrics, release films, peel plies, and foam cores.
- Minimizes manual intervention with fast tool loading, automatic tool recognition, and Z-axis calibration—reducing setup time and improving repeatability.
- Compatible with felt or PVC cutting underlays, ideal for protecting material surfaces and achieving clean edges on technical textiles and multi-layer layup kits.

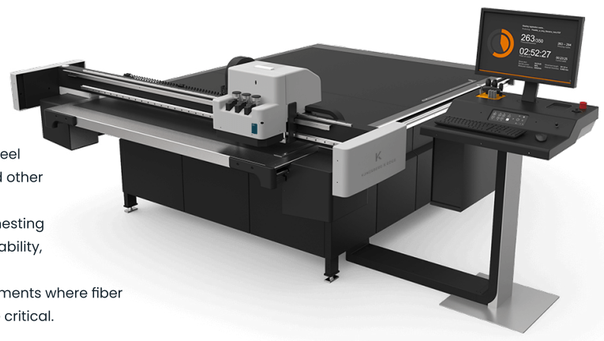
Kongsberg X Production



Engineered precision for cutting high-performance materials such as prepregs, technical fabrics, and honeycomb cores.

- Optional conveyor system supports automatic & semi-automated handling of rolled textiles and stacked sheet goods for efficient layup kit preparation.
- Multiple milling configurations available to match your duty cycle and material removal needs—ideal for tooling boards, core materials, and composite stack-ups.
- Delivers pinpoint accuracy with advanced registration tools—perfect for templated layups, multi-layer cutting, and repeatable part geometries.

Kongsberg X Flexo



Purpose-built for high-precision processing of composite textiles and technical materials used in aerospace manufacturing.

- Designed for accurate cutting of breather fabrics, peel plies, release films, vacuum bagging materials, and other flexible composite textiles.
- Seamlessly integrates with digital design files and nesting software to ensure consistent part geometry, traceability, and repeatability.
- Supports cleanroom and prepreg handling environments where fiber alignment, edge quality, and minimal distortion are critical.

ACS. One Partner for Sales & Service in the Pacific Northwest (US) & Western Canada.

Industrial Materials

KONGSBERG
Precision Cutting Systems

The Kongsberg X Series combines precision and adaptability to meet the unique challenges of aerospace composite fabrication—offering unmatched performance when cutting thin, flexible materials that demand accuracy and care.

Kongsberg Flexo / Industrial CNC Router

Adaptive & Flexible Material Range

PVC Film

PVC film (Polyvinyl Chloride film) is a thin, flexible plastic sheet made from polyvinyl chloride resin, commonly used across industries for packaging, printing, signage, construction, and medical applications.Typesa re Rigid PVC, Flexible PVC, Clear, Colored and Opaque Film. THsi product is durable, flexible, heat sealable and usually water resistant.

Garment Fabrics

Garment fabrics are textile materials specifically designed and manufactured for making clothing. They vary widely in texture, weight, fiber content, and construction, and are selected based on the intended use, comfort, appearance, and performance of the final garment.TYpical are Natural fabrics, Synthetic and blended fiber.

Rip-Stop

Rip-stop material is a woven fabric designed with a special reinforcing technique that makes it highly resistant to tearing and ripping. Materials are commonly made from Nylon, Polyester, Cotton and Silk. Common uses are Outdoor gear: Tents, hammocks, backpacks, sleeping bags. Protective clothing: Military uniforms, firefighting suits, Sports gear: Parachutes, sails, and utility products.

Balloon Material

Balloon material refers to the type of material used to manufacture balloons, which varies based on the balloon's intended use—decorative, medical, meteorological, or scientific.Applicatiosn used are Milar, Polyurethane, PVC and laytex.

Awning Materials

Awning material refers to the fabric or material used to create awnings—protective coverings typically installed over windows, doors, patios, or storefronts to provide shade, weather protection, and aesthetic appeal. Materials are Acrylic Fabric, Vinyl, Polyester, and Canvas.

Felt Materials

Felt material is a dense, non-woven fabric made by matting, condensing, and pressing fibers together. It can be made from natural fibers such as wool, or synthetic fibers like acrylic, polyester, or rayon. Common applications, Gaskets, padding, seals in Automotive products, machinery, acoustic panels, insulation, consumer goods.

Flexible fabric CNC cutting is essential for modern, high-efficiency manufacturing, enabling precise and scalable production of textile-based components and products.

Benefits of Flexible materials in manufacturing:

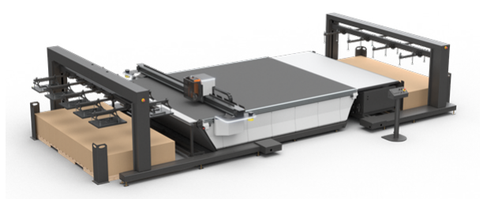
- Reduced material waste
- Consistent part quality
- Faster production cycles
- Seamless integration with digital design and production workflows

www.acs-iws.com www.acs-iws.ca www.acscolabpartners.com

Technical Specifications

	X20	X22	X24	X44	X46	X48	
Work area, all tools	1680 x 1270 *66 x 50*	1680 x 2190 *66 x 86*	1680 x 3200 *66 x 126*	2210 x 3200 *87 x 126*	2210 x 4800 *87 x 189*	2210 x 6550 *87 x 258*	mm *in.*
Max. material size, without conveyor feed	1740 x 1750 *68 x 69*	1740 x 2570 *68 x 101*	1740 x 3575 *68 x 140*	2270 x 3575 *89 x 140*	2270 x 5250 *89 x 206*	2270 x 6930 *89 x 273*	mm *in.*
Max. material width, with conveyor feed	1680 *66*			2210 *87*		n/a	mm *in.*
Overall dimensions, with front panel	2780 x 2450 *109½ x 96½*	2780 x 3040 *109½ x 119½*	2780 x 4050 *109½ x 159½*	3300 x 4050 *130½ x 159½*	n/a	n/a	mm *in.*
Overall dimensions, with RWS [1 2]	3600 x 2160 *141¾ x 85*	3600 x 2950 *141¾ x 116*	3600 x 3960 *141¾ x 156*	4070 x 3960 *160¼ x 156*	4070 x 5640 *160¼ x 222*	4070 x 7320 *160¼ x 288¼*	mm *in.*
Weight	720 *1590*	830 *1830*	1085 *2395*	1250 *2755*	1730 *3820*	2215 *4885*	kg *lbs*
Position accuracy [3]	± 200 *± .0078*		± 250 *± .0098*	± 300 *± .012*	± 350 *± .014*	± 400 *± .016*	µm *in.*
Repeatability	± 50 *± .0019*			± 60 *± .0023*			µm *in.*
Max. speed	50 m/min - 833 mm/sec - 33 IPS						
Max. speed (Edge)	30 m/min - 500 mm/sec - 20 IPS						
Max. acceleration [4]	5.6 m/s^2 - 0.56 G			5.4 m/s^2 - 0.54 G			
Max. acceleration (Edge)	3 m/s^2 - 0.3 G						
Vertical tool force	Standard tool stations: 220 N PowerHead crease station: 500 N						
Vacuum sections	2		4				
Standard traverse clearance [5]	50 mm *(2 in.)* or 95 mm *(3¾ in.)*, depends on the selected application kit and/or model size						
Optional traverse clearance [5]	95 mm *(3¾ in.)* is available as an option for models featuring a 50 mm *(2 in.)* clearance						

Measured with revolving workstation in its standard position
(2) Conveyor feed option will add marginally to the length dimension
(3) Applies across total work area, with standard traverse clearance
(4) May be reduced with certain tool- and configuration combinations
(5) Measured without cutting underlay. Max. cutting thickness is tool-dependent



Service Expertise

Partnership & Service

ACS offers a comprehensive service solution, combining our curated cutting-edge manufacturing technologies, expertise in application solutions and consulting, specialized onsite installation and training (including software), and seamless end-to-end customer support for long-term technology maintenance, diagnosing and repair.

ACS provides opportunites to enage directly with our service tech, Dustin Reynolds. Dustin has a deep knowledge and expertise for all CNC routing applications and technologies. He keeps all of our customers up and running, from installation and training to software updates and he advises on workflow management as you grow your company and expand using advanced CNC applications.

ACS. One Partner for Sales & Service in the Pacific Northwest (US) & Western Canada.

www.acs-iws.com www.acs-iws.ca www.acscolabpartners.com

ACS. Industrial Cutting Solutions that Fit Your Business & Your Long-Term Manufacturing Needs.

ACS. One Partner for Sales & Service in the Pacific Northwest (US) & Western Canada.

ACS Kongsberg Industrial CNC Router Series

Define Your Requirements

Understanding your needs and requirements for your technology applications and materials help us understand where we can advise you and collaborate to create the perfect technology fit for you to serve you, and your customer's to grow your opportunity footprint in critical-industry markets.

Evaluation / Materials Worksheet

Markets / Sectors

- ☐ Aerospace
- ☐ Defense
- ☐ Automotive
- ☐ Semiconductor
- ☐ Oil & Gas
- ☐ Commercial Marine
- ☐ Recrreational Vehicles (RV)
- ☐ Composites & Textiles
- ☐ Industrial Tooling, Jigs & Fixtures
- ☐ Retail Experience Design
- ☐ Visual Branding
- ☐ Large Format Graphics
- ☐ Upholstery
- ☐ Clicking (Footwear)

Materials

- ☐ Aluminum & ACM
- ☐ Aramid Fiber
- ☐ Fiber Glass
- ☐ Prepreg
- ☐ Honeycomb
- ☐ Steel
- ☐ ABS board
- ☐ Flexographic Plates
- ☐ Foam / Foam core board
- ☐ Plexi & Acrylics
- ☐ Textiles, Mesh
- ☐ Insulates
- ☐ Vinyl
- ☐ Carbon Fiber
- ☐ PVC
- ☐ Leather
- ☐ Rubber
- ☐ Plastics

Max Material Width

- ☐ 800 mm (31.5 in)
- ☐ 1680mm (66.1 in)
- ☐ 2210 mm (87.0 in)
- ☐ 3200 mm (126.0 in)
- ☐ Exceeds 3200 mm

Max Material Length

- ☐ 1100 mm (43.3 in)
- ☐ 1270 mm (50.0 in)
- ☐ 1430 mm (56.3 in)
- ☐ 2190 mm (86.2 in)
- ☐ 3200 mm (126.0 in)
- ☐ 4800 mm (189.0 in)
- ☐ 6550 mm (257.9 in)
- ☐ Exceeds 6550 mm

Material Depth

General Fabrics

- ☐ Lightweight fabric: 0.1 – 0.3 mm
- ☐ Medium-weight fabric: 0.3 – 0.6 mm
- ☐ Heavy Fabric: 0.6 – 1.0+ mm
- ☐ Leather: 0.8 – 2.5 mm
- ☐ Foam-backed or Laminate: 2.0 – 5.0+ mm

Technical Textiles (0.5 – 2.0+) mm:

- ☐ Carbon Fiber Fabrics: 0.2 – 0.5 mm
- ☐ Fiberglass: 0.1 – 0.6 mm
- ☐ Aramid & Hybrid Fabrics *
- ☐ Prepreg *

Rigid Sheet & Honeycomb Materials:

- ☐ Thin / Lightweight: < 1.0 mm (0.040 in)
- ☐ Lightweight to Medium: 1.0 mm (0.040 in) – 2.0 mm (0.080 in)
- ☐ Standard / Common: 3.175 mm (0.125 in) – 12.5 mm (0.50 in)
- ☐ Thick to Heavy: 12.5 mm (0.50 in) – 20.0 mm (0.75 in)

*** Aramid & Hybrid Fabrics**
The standard thickness of aramid and hybrid fabrics varies depending on the specific product and weave, but generally ranges from 0.11 mm to 0.39 mm (0.0043" to 0.0154"). For example, some plain weave aramid fabrics are around 0.27 mm (0.0106"), while some twill weave fabrics can be thicker, such as 0.39 mm (0.0154"). Hybrid fabrics, like those combining carbon and aramid fibers, may have thicknesses in the range of 0.11 mm to 0.28 mm.

*** Prepreg**
The standard thickness for prepreg material used in PCB manufacturing typically ranges from 0.002" to 0.024" (0.05mm to 0.6mm). More specific standard thicknesses include 0.002", 0.004", 0.006", 0.008", 0.010", and 0.012". Thinner prepreg sheets down to 0.0005" (0.0127mm) are also available for high-layer count boards.

ADVANCED MANUFACTURING SOLUTIONS
A Hybrid Technology Company

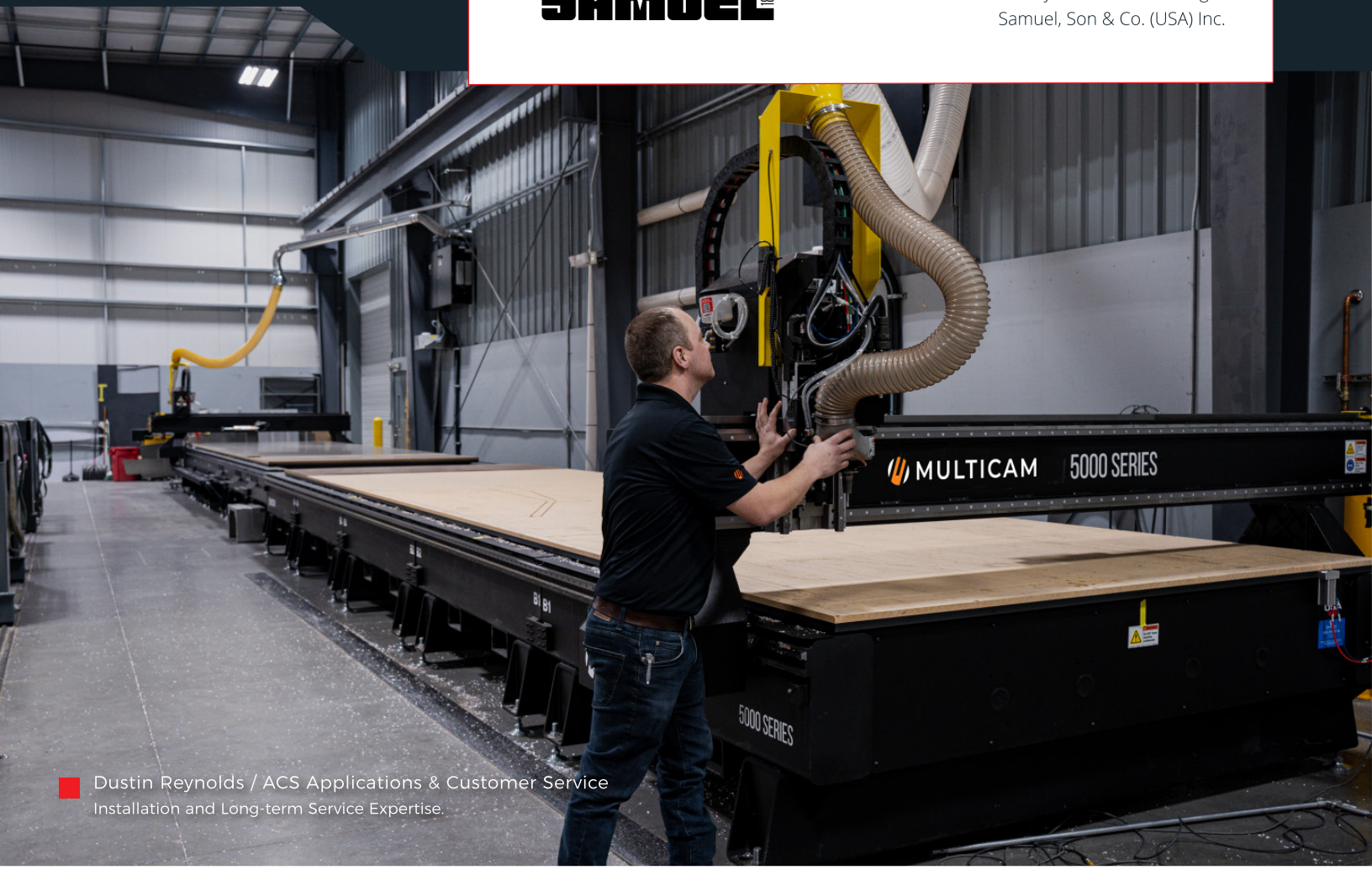
ACS Applications Specialists

ACS is a team of collaborating application specialists, providing curated Advanced Industrial Manufacturing Solutions with integrated consulting and long-term services and support. The technologies and services that ACS offers to established manufacturers in the Pacific Northwest and Western Canada. We provide the highest level of expertise, application knowledge and ongoing onsite regional service and partnership, focused on helping build growth for our customers through advanced industrial manufacturing technology applications.

> "As each of you very well know, any piece of equipment is only as good as the company that stands behind it. Your exceptional service and equipment knowledge provides Samuel with the solutions we need!"

SAMUEL 1865

- Mike Van Dyke / General Manager
Samuel, Son & Co. (USA) Inc.



Dustin Reynolds / ACS Applications & Customer Service
Installation and Long-term Service Expertise.

1135 Pacific Place. Unit #117 Ferndale, Washington 98248

Let's Connect. www.acs-iws.com www.acs-iws.ca www.acscolabpartners.com