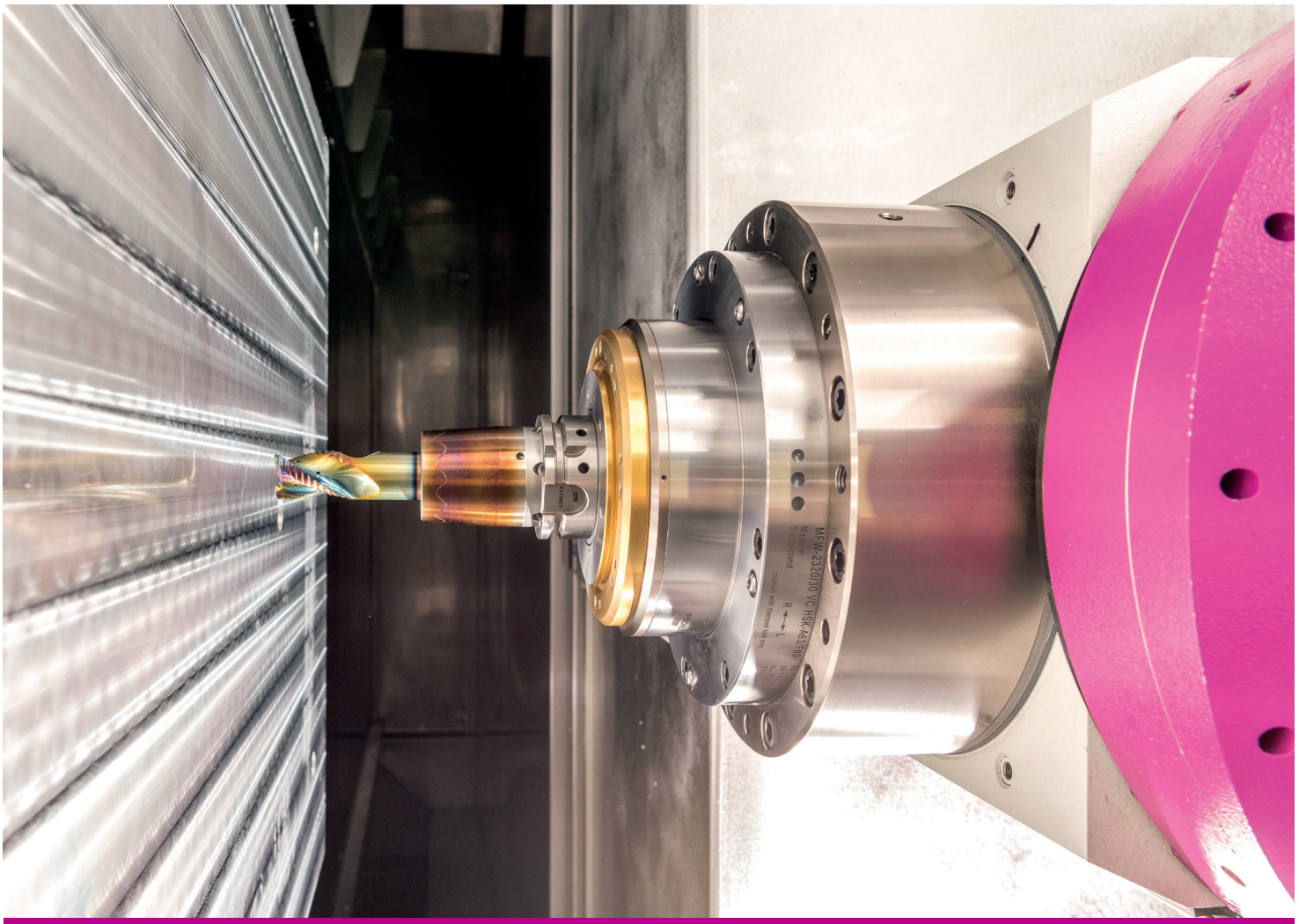
Metal Cutting | Composites

fives

High-Performance Solutions



Pioneering Solutions Designed to Maximize Productivity

Cincinnati

Giddings & Lewis

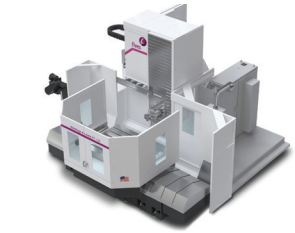
Liné Machines

Forest-Liné

Lund Engineering

High-Performance Solutions

Horizontal Boring Mills - Table-Type



Giddings & Lewis T-Bed
RT 130 / 155 T-bed
1250 x 1400 mm table
10,000 kg capacity

Giddings & Lewis Performance T-Bed
RTP 130 / 155 T-bed
1600 x 1800 to 2000 x 2000 mm
25,000 or 40,000 kg capacity
Pallet & attachment changing opt

Giddings & Lewis PT Series
PT 1500 / 1800 Plain table
1500 x 3000 to 1800 x 4200 mm
25,000 to 40,000 kg capacity

Giddings & Lewis RT Series
RT 1250 / 1600 / 2000 Rotary table
1250 x 1600 to 2000 x 2500 mm
15,000 to 40,000 kg capacity

HBM - Table-Type

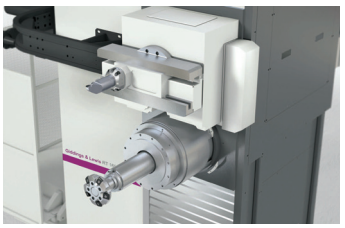
Giddings & Lewis MC Series
MC 1250 / 1600 Pallet shuttle
1250 x 1250 to 1600 x 2500 mm
15,000 to 25,000 kg capacity

Horizontal Boring Mills - Floor-Type

Giddings & Lewis FT Series
FT 3500 Floor-type
X / Y travels 4 to 24 / 2 to 3.6 m

Giddings & Lewis FTR Series
FTR 3500 / 5000
Floor-type with collinear ram
X / Y travels 4 to 24 / 2 to 5 m

ICH



Integrated Contouring Head
Available on Cincinnati and Giddings & Lewis horizontal machining centers and boring mills

Vertical Turning Centers

Giddings & Lewis V Series
V 800 / V 1000
Fixed-rail VTC
Max swing - mm 1050 / 1250

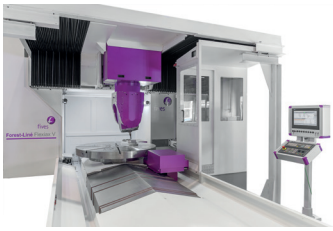
Giddings & Lewis V Series
V 1250 / 1600 / 2000 / 2500
Adjustable-rail VTC
Max swing - mm
1650 / 2000 / 2400 / 2900

Giddings & Lewis VTC Series
VTC 1000 / 1250
Fixed-rail VTC
Max swing - mm 1200 / 1300

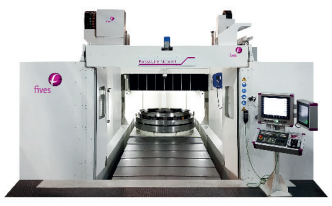
Giddings & Lewis VTC Series
VTC 1250 / 1600/ 2000 / 2500
3000 / 3500 / 5000 Adjustable-rail
Max swing - mm 1700 / 2000 /
2400 / 2700 / 3400 / 3700 / 6000

Mill/Turn Machining Centers

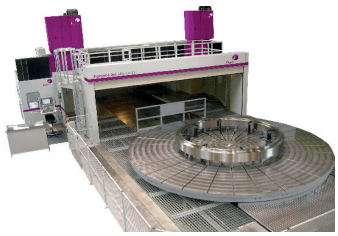
Forest-Liné Flexiax H
5-axis mill/turn horizontal machining center
Rotary table Ø 1.4 m
X 2 m / Y 1.6 m / Z 1.6 m



Forest-Liné Flexiax V
5-axis mill/turn vertical machining center
Rotary table Ø 1.6 m
X 1.95 m / Y 2 m / Z 1 m



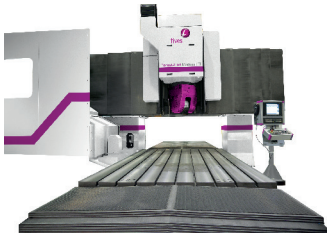
Forest-Liné Modumill MT
5-axis mill/turn vertical machining center - rotary table Ø 2.5 m
X 3.65 m / Y 2.6 m / Z 1 m (mill)
~ 1.1 m (turn), single or double ram



Large Rotary Plate
Rotary table up to Ø 8 m
Milling mode or mill/turn mode integration under any Liné Machines & Forest-Liné Gantries

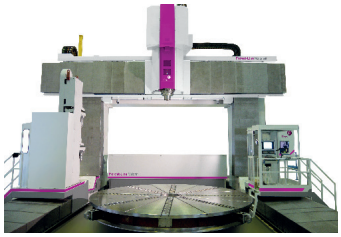
High-Performance Solutions

Gantry & Portal Mills

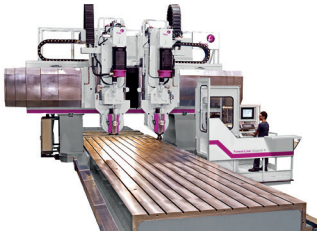


Forest-Liné Modumill Ti
5-axis machining center with constant overhang
X 4.5 or 6.5 m / Y 2.5 or 3.5 m / Z 1 m
100 kW, 1,000 Nm, 10,000 rpm

Forest-Liné Modumill IE
Universal - 3 to 5 axis - Moving table or moving gantry (opt W-axis)
X / Y / Z travels to 40 x 6 x 2.5 m
Head change, up to 70 kW, 2,500 Nm

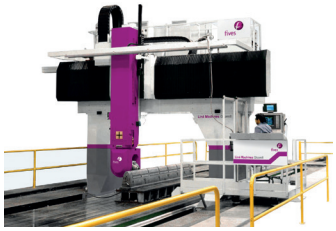


Forest-Liné Majormill IE
Universal 3 to 5 axis - Moving table or moving gantry (opt W-axis)
X / Y / Z travels to 40 x 6 x 2.5 m
Head change, up to 100 kW, 5,000 Nm



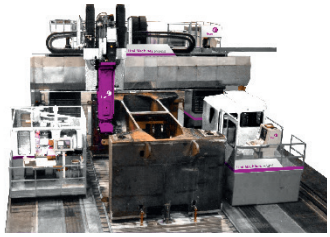
Liné Machines Gicamill R
Dedicated 4-axis bed-table type machine for rail industry
Single or twin head configuration

Liné Machines Vertamill
Universal fixed portal with moving table, table to 6 x 3 m
Head change up to 70 kW, 2,500 Nm



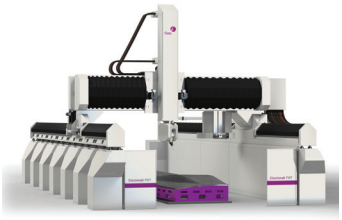
Liné Machines Gicamill
Universal moving gantry, bed-table type, table width to 3 m
Head change up to 70 kW, 2,500 Nm

Liné Machines Macbormill
Universal double-column moving gantry, width up to 10 m
Head change up to 100 kW, 5,000 Nm



Liné Machines Promill
Universal double-column gantry with moving beam W-axis
Width up to 8 m, Z + W-axis up to 6 m
Head change up to 100 kW, 5,000 Nm

Profilers - Vertical-Spindle



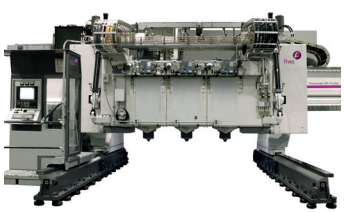
Cincinnati PMT
X/Y/Z travels to 40 x 6 x 2 m
Spindle up to 42 KW, 30,000 rpm
Feed up to 60 m/min,
High rail or low rail configurations

Forest-Liné V-Star
X / Y / Z travels to 40 x 5 x 1.5 m
Spindle up to 100 kW, 30,000 rpm
Feed rates up to 60 m/min
Single or twin head configuration

Forest-Liné Minumac
X / Y / Z travels to 40 x 6 x 2.5 m
Spindle up to 150 kW, 30,000 rpm
Feed rates up to 60 m/min
Single or multiple head configurations

Liné Machines Powermill V
X / Y / Z travels to 40 x 10 x 3.4 m
Spindle up to 150 kW, 30,000 rpm
Feed rates up to 75 m/min
Single or multiple head configuration

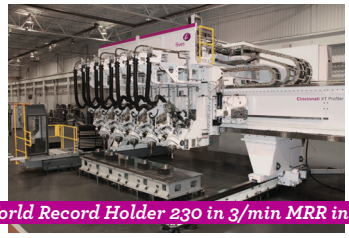
Profilers - Multi-Spindle



Cincinnati WR Proiler
X/Y/Z travels up to 100 X 4 X .7 m
Spindle up to 52 KW, 7,000 RPM
3, 4, 5 spindle versions for Al to Ti

Cincinnati HP Profiler
X/Y/Z travels up to 100 X 4 X .7m
Spindles up to 75 KW, 30,000 RPM
3, 4, and 5 spindle versions for Al

Cincinnati XP Profiler
X/Y/Z travels up to 100 X 4 X .7m
1,2,& 3 Spindles up to 97 KW,
Feed rate of 1,200 i.p.m.
5 axis A/B Aluminum

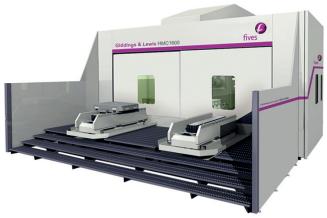


Cincinnati XT Profiler
X/Y/Z travels up to 100 X 4 X .7m
3,500 – 7,000 RPM, +/- 30° A/B
2, 3, 4, and 5, 2,500 Nm Spindles
3 and 5 axis configurations

High-Performance Solutions

Horizontal Machining Centers

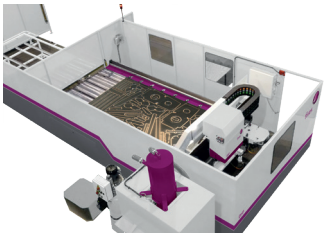
Cincinnati HMC 800
X/Y/Z travels up to 1.4 x 1.3 x 1.2 m
6,000 RPM, 5-axis full contouring,
X, Y, Z axis dual ballscrew drive
4 axis w/ICH and 5 axis



Giddings & Lewis HMC Series
HMC 1250 / 1600
Max workpiece swing
2400 / 3000 mm
Choice of 8 headstocks

Vertical Machining Centers

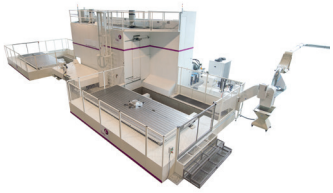
Forest-Liné MGP 150 / 300
High-speed bar machining center
Extrusions up to 150 x 150 mm or
220 x 260 mm
Patented push/pull feature



Forest-Liné DHP 1500 / 3700
Stack router
Up to 10 mm stack for aluminium
Automatic load, optimized nesting
software

Profilers - Horizontal-Spindle

Forest-Liné Aerostar
Pallets 4 x 2 m. Z-axis up to 750mm
Travel speed up to 80 m/min,
5 m/s2, up to 150 kW, 30,000 rpm
Stand-alone, twin machines or cell

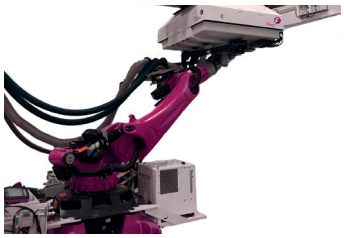


Liné Machines Powermill H
Pallets up to 20 x 2.5 m
Z-axis up to 1 m, constant overhang
Travel speed up to 60 m/min,
5 m/s2, up to 150 kW, 30,000 rpm

Forest-Liné Aeromill
Pallets up to 20 / 14 x 2.4 / 3.4 m
Z-axis up to 650 mm
Travel speed up to 60 m/min, 5 m/s2
Up to 150 kW, 30,000 rpm

Forest-Liné Powermill Ti
Pallets 4 x 2 m or 6 x 2.2 m
Z-axis up to 1 m, constant overhang
Travel speed up to 40 m/min, 3 m/s2
Up to 100 kW, 1,000 Nm, 10,000 rpm

Milling & Drilling



Forest-Liné P2M
Compact 3 or 5-axis milling machine,
stand-alone or robot-mounted
X 435 mm / Y 320 mm / Z 20 mm or
X 660 mm / Y 600 mm / Z 40 mm

eADU® Elec
enhanced Automatic Drilling Unit
Electrical motor and process -
Mechanical feed
500, 800 and 1600 Watt versions

Cincinnati AutoDrill
Trim & drill machine on a boring
mill platform
Barrel up to 8 m diameter
Single or dual spindle

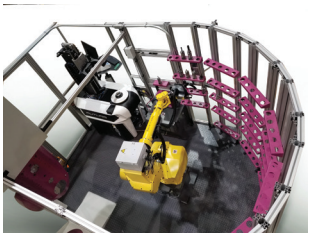
Cincinnati WingDrill
Trim & drill machine on
a boring mill platform
Panel up to 4 m width

Tooling & Automation

Flexible Manufacturing Cell / Pallet Systems
Various automation for vertical or
horizontal machining. Customized for
loads, takt time and factory layouts

Liné Machines Flexitool
Programmable universal holding
fixture - Single or 2 axis (Y/Z)
Flat or butterfly configuration
Robotic fixture alternatives

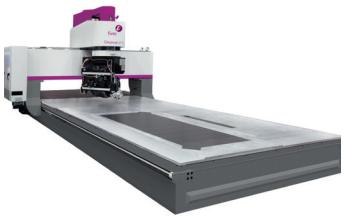
Liné Machines Robotics
Multi-process robotic cells
Trim and drill, polishing, cleaning,
laser cutting and inspection



Liné Machines RoboTC
Robotic tool changer for new
machines or retrofits
Single or multi-spindle machines
Up to 400 tools

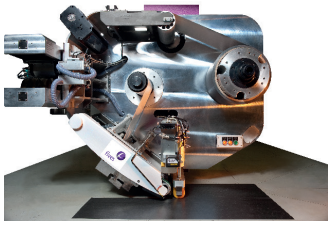
High-Performance Solutions

Tape Layer and Fiber Placement Systems



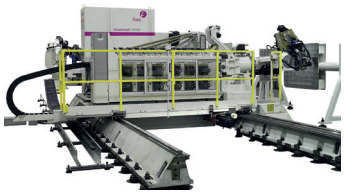
Cincinnati CHARGER SFTL
Bed width 1.6 - 3.2 m
various lengths, 300 mm tape
High productivity of
composite blankets

Cincinnati CHARGER ATL
Bed width 3 - 8 m, various
lengths, tape 75, 150, 300 mm
Ideal for wing skins, vertical
and horizontal stabilizers

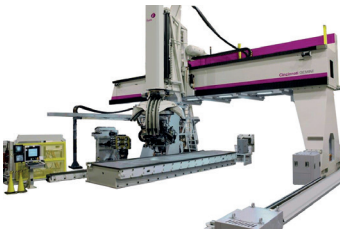


Forest-Liné ATLAS One
For parts to 4 m wide
Continuous 6-axis head
Two ultra-sonic cutters, lap
and gap in-process inspection

Forest-Liné ATLAS (Dual)
Exclusive dual-phase tape
laying technology with offline
precutting system
100% traceability



Cincinnati VIPER® AFP
Two widths 3.2, 6.4, 12.7 mm
8 - 32 tows, fixed or
rotational tooling, ideal for
highly-contoured structures

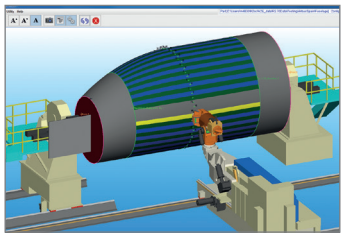


Cincinnati GEMINI
Vertical gantry with docking
heads for AFP and ATL on a single
platform, high-performance
laydown for large part range

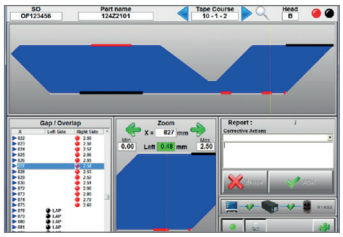
Lund SLALOM
38 mm, 1 - 27 Multi-Lane ATL
Wide path on various part types
Add speeds to 2.5 m/s
Cut speeds to 5.0 m/s

Forest-Liné ACCESS
Offline pre-cutting machine
Dual phase process
Carbon prepeg tape: 150mm

Software



ACES - Advanced Composites Environment Suite
Programming & simulation tools
for tape laying & fiber placement
Reports & analysis available



Lap & Gap Monitoring
In-Process inspection of the lap and
gap values
IPI control at the operator panel
Mapping of IPI results

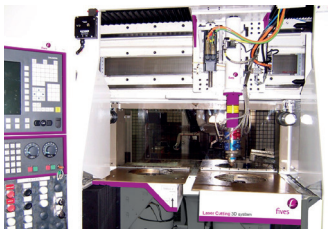
Connected Machines
Diagnostic Communication System
(DCS)- remote diagnostics and
service
Real time - cloud computing

Advanced Monitoring and Surveillance Software
Spindle & axis monitoring,
Thermal compensation
Adaptive control

Laser Welding, Cutting & Additive Manufacturing

Automated Laser Multi-Process Line
High-power welding laser, global line
including fully-automated related
operations - for automotive
powertrain mass production

Standard Modules
Standalone or integrated into the
laser welding line: Laser welding
module - Press fitting module -
Inspection module



Laser Cutting Systems (2D or 3D)
Dedicated solution for mass
production and complex shapes -
Typical cutting thickness for steel up
to 15 mm, laser power from 1 to 10 kW

5-axis Laser-Based System
For additive manufacturing
3 axes (X, Y, Z) + 2 axes (B, C)
Adaptable work zone volume
up to 1,200 x 800 x 800 mm

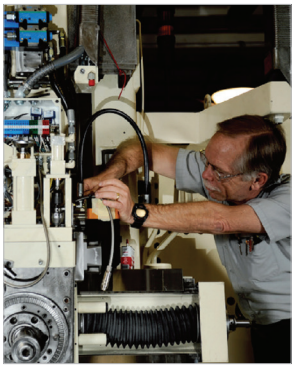
High-Performance Solutions

Fives Machine Tool Services & Solutions

Machine Tool Services & Solutions, part of Fives Machining Systems, Inc., is one of the world's largest and leading providers of aftermarket services, offering a full range of preventive maintenance, rebuild, remanufacture, retrofit and repair services, as well as onsite support for all types and brands of machine tools.

We service machine tools of all sizes, from single spindle horizontal and vertical machining centers to large, complex multi-axis gantry mills and boring mills. The work is done by the most talented machine tool service specialists, controls engineers, alignment/calibration experts and scraping specialists in the industry.

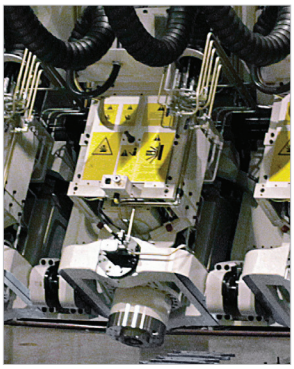
With over 175 service and support peronnel strategically located thoughout North America, we proudly provide timely, reliable and experienced technicians around the clock.



PREVENTIVE MAINTENANCE & HEALTH CHECK

From preventive maintenance to complete machine tool condition monitoring, we can customize a maintenance program for your operation. Maintenance agreements include:

- Machine health checks
- Tailored preventive maintenance
- Predictive maintenance
- Site maintenance & management
- OEE reporting
- Critical spare parts database



REPAIR & EXCHANGE

We have a repair and rebuild facility dedicated to serving the needs of your equipment. Since we do the work, we warranty as new.

If you need a unit or assembly in a hurry, our exchange program gets you up and running quickly at a fraction of buying new. We'll replace your repairable unit with the same model from stock.

MACHINE RELOCATION

Let us provide the technicians, supervision, and turnkey services to help you meet critical production schedules while relocating your machine.

We will assess your manufacturing needs and locate the most appropriate equipment through our established network of suppliers.

CONTROL RETROFIT

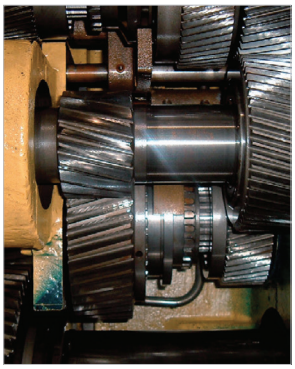
Our application engineers can provide various retrofit options including software design, integration and installation of new control packages to replace your existing aged control system. We offer a selection of CNC controls for both analog and digital systems and a variety of retrofit kits to help you achieve optimal uptime while reducing cost and installation time.

MACHINE CERTIFICATION

Requalify your machine to its original factory specifications with our turnkey certification. This service can be purchased separately or with any preventive maintenance plan.

Benefits:

- Utilizes the latest technology and precision tooling
- Reduce your cost per part
- Improve part quality and consistency
- Increase machine availability



MECHANICAL REBUILDS

We can restore existing machinery to its original mechanical, geometric and positioning condition. Our rebuild program retains the existing CNC/PLC control and electrics, while rebuilding and optimizing the following mechanical features:

- Rebuild mechanical components
- Replace existing bearings & seals
- Grind & requalify bed ways
- Recondition ball screws
- Refurbish hydraulic & lubrication systems

REMANUFACTURE

Our remanufacturing services offer an economical option to replace or purchase new machinery. Our program includes complete rewiring of the machine and the integration of a new modern CNC/PLC control system.

- Redesign/remanufacture inferior mechanical components
- Replace existing bearings & seals
- Regrind & requalify bed ways
- Rewire machine devices

GLOBAL PARTS SUPPORT

We have a world-class call center with 24/7 operation and highly qualified part specialists. We can evaluate your machine type and service records, and then design a package to fit your needs. We also offer a Complete Care program to evaluate your historical parts usage, place parts in your crib (VOI), and manage your crib on site. Contact us 24/7 at 1-800-934-0735, or order online at fivesmsi.com.

Locations

Metal Cutting | Composites Plants

NORTH AMERICA

mcc-americas@fivesgroup.com

Fives Machining Systems, Inc.

Fives Cincinnati
Hebron, KY - U.S.

Fives Giddings & Lewis, LLC
Fond du Lac, WI - U.S.

Fives Lund LLC
Seattle, WA - U.S.

Fives Liné Machines, Inc.
Granby, QC - CANADA

EUROPE

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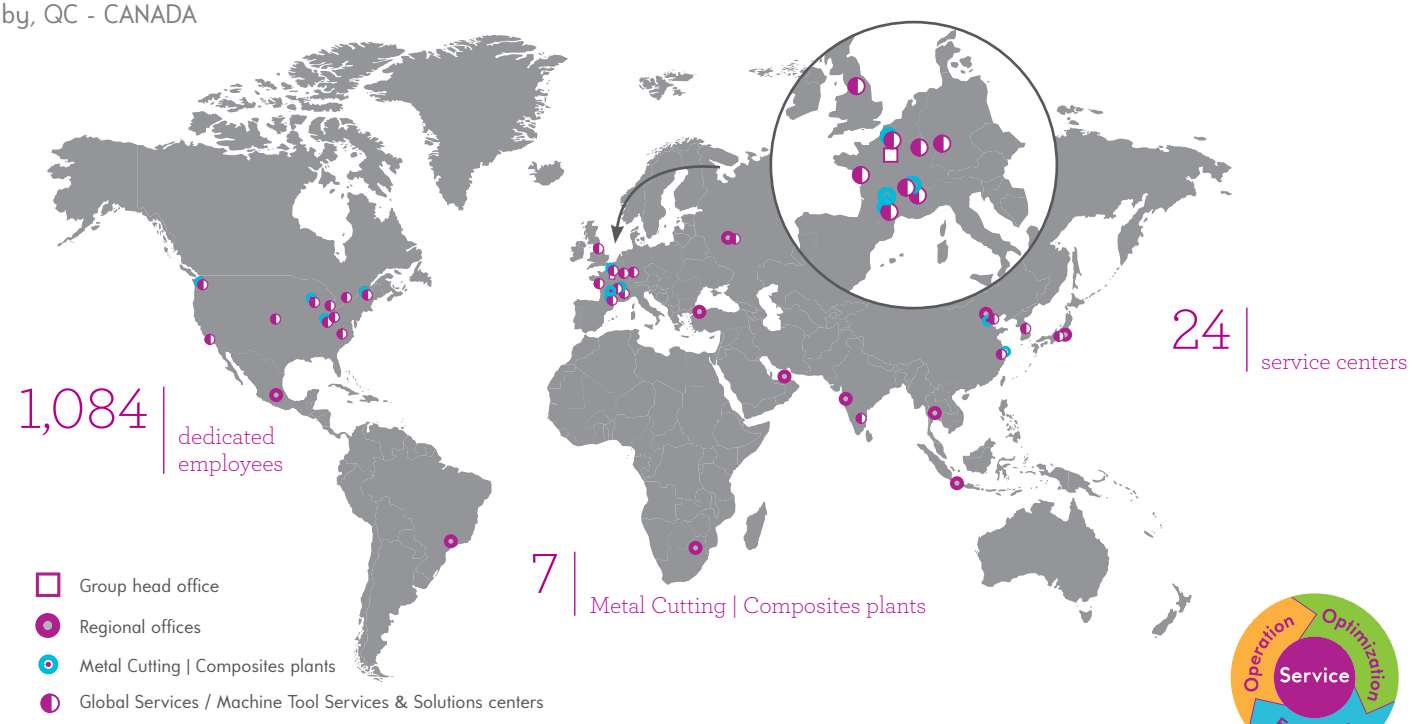

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