High-Performance Solutions

Pioneering Solutions Designed to Maximize Productivity

Cincinnati Liné Machines
Forest-Liné
Giddings & Lewis
Lund Engineering

For more information, contact Hillary Machinery at (877)902-3751 or https://www.hillaryinc.com
About us
Cincinnati - Forest-Liné - Giddings & Lewis - Liné Machines - Lund Engineering

Fives, an industrial engineering Group, designs and supplies machines, process equipment and production lines for the world’s largest industrial groups in various sectors.

Within Fives, the Metal Cutting | Composites activity is based upon renowned legacy brands such as Cincinnati, Forest-Liné, Giddings & Lewis, Liné Machines and Lund Engineering.

Metal Cutting | Composites dedicated teams - approximately 1,200 people in over 15 countries throughout the world - design, build and support tailor-made machine tools and composite systems for global customers including market-leading manufacturers in aerospace, defense, energy, industrial equipment and transportation.

With manufacturing and support operations strategically located worldwide, Fives and its Metal Cutting | Composites offer, deliver comprehensive lines of equipment and technologies including automated assembly lines, drilling, turning, milling, laser welding and cutting applications, composite processing and software with the associated services - maintenance, spare parts, retrofits, rebuilding and remanufacturing.

— High-precision machine tools, high-speed machining centers and complete manufacturing solutions
— High-performance composite processing systems
— High-power laser welding systems
— Pioneering additive manufacturing solutions
— Global support and network

From design, manufacture, installation, commissioning and customer technical support throughout the machine’s lifecycle, Fives drives projects, as a true partner helping customers maximize operational performance. Fives’ global presence, its unrivalled expertise, backed by decades of experience successfully completing projects is considered a real added-value.

Industry Application Expertise

Aerospace
Aircraft - Helicopter - Space
Defense

Energy
Oil & Gas - Wind - Solar
Hydro - Nuclear

Industrial Equipment
Construction - Job shop - Mold & Die - Mining - Agriculture

Transportation
Rail - Automotive - Truck
Shipbuilding
Continuous access to professional support maximizes machine availability over the long term, ensuring consistently high-production quality and low running costs. Regular servicing by the manufacturer increases your machines’ service life. Global Services is a reliable partner that can support you with a wide range of custom solutions and service packages, ensuring that your manufacturing business continues to be a resounding success.

Fives’ mission is to be the primary services provider, for production optimization, to aerospace and industrial manufacturers, for the full range of machine tools in their facilities. The Global Services teams also deliver aftermarket machine solutions worldwide and provide a full range of predictive maintenance, rebuild, modernization, retrofit and repair services, as well as on-site support for all types and brands of machine tools.

**Spare Parts**
Manufactured with optimal reliability and precision, spare parts are perfectly tailored to your machine and produced to the highest-quality standards:
- Over 3,000 items in stock in Europe
- International teams
- 24-hour delivery service
- Support OEM and other brands

**Technical Support**
 Experienced team provides technical support to customers over the phone and via email. Fives’ global network offers support 7 days a week or schedule on-site intervention in a timely manner:
- Repairs
- Expertise
- Predictive and remote maintenance
- Technical support

**Rebuilding - Remanufacturing**
Qualified experts handle all types of conventional or CNC machine tools. At your service to ensure top-level performance and long-term results:
- Design offices
  - Mechanical
  - Hydraulic
  - Electrical
- New technologies integration
- Ensure compliance

**Relocation**
Providing turnkey transfer solutions for your production tools anywhere in the world, ensuring safety, prompt response and compliance with lead time and budget control:
- Studies
- Scheduling
- Disassembly
- Transfer
- Reassembly
- Optimization
- Restarting

**Expertise - Machine Certification**
Expert assessment of all levels of equipment. Includes a detailed report of the machine components conditions along with a proposal for corrective solutions and, depending on the machine, manufacturer certification:
- Mechanical, hydraulic and electrical inspection
- Metrological and geometric inspection
- Detailed report on the machine status
- Proposal for corrective solutions
- Manufacturer certification

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Horizontal Boring Mills - Floor-Type

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

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

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

H.B.M. - Table-Type

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

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

Giddings & Lewis U/UW Series
Available on
HMC, RT, RTP and MC Series

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
Adjustable-rail VTC
Max swing - mm
1700 / 2000 / 2400 / 2700

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) – 11 m
(turn) Single or double ram configuration

Large Rotary Plate
Rotary table up to Ø 8 m
Millling mode or mill/turn mode integration under any Liné Machines & Forest-Liné Gantry's

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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 PAT**
- X / Y / Z travels to 40 x 6 x 2 m
- Spindle up to 42 kW, 30,000 rpm

**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 configuration

**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**
- 3, 4 and 5 spindle versions
- Spindle center distance up to 2.03 m

**Cincinnati HP**
- 3, 4 and 5 spindle versions
- Spindle center distance up to 2.54 m

**Cincinnati XP**
- Up to 3 spindles - Independent A/B axis movement
- Spindle center distance up to 2.54 m

**Cincinnati XT**
- 3, 4 and 5 spindle versions - Independent A/B axis movement
- Spindle center distance up to 2.03 m

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## Horizontal Machining Centers

### Cincinnati HMC 800
- HMC 800
- Max workpiece swing 1000 mm
- 5-axis tilt spindle

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

### Forest-Liné DHP 1500 / 3700
- High-speed bar machining center
- Extrusions up to 150 x 150 mm or 220 x 260 mm
- Patented push/pull feature
- Stack router
- Up to 10 mm stack for aluminium
- Automatic load, optimized nesting software

## Vertical Machining Centers

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

### Forest-Liné MGP 150 / 300
- 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 750 mm
- Travel speed up to 80 m/min, 5 m/s²
- Up to 150 kW, 30,000 rpm
- Stand-alone, twin machines or in 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 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
- Direct drive spindle
- 100 kW, 1,000 Nm, 10,000 rpm

## Portable 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 solution
- Customized to 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

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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
For wide path on high-contour parts, add speeds to 0.76 m/s
Cut speeds to 1.52 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
Real Time - Cloud Computing
Remote Maintenance Assistance - Global Services connect

Advanced Monitoring and Surveillance Software
Spindle & axis monitoring, Thermal compensation, Health checks

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 shape - 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

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