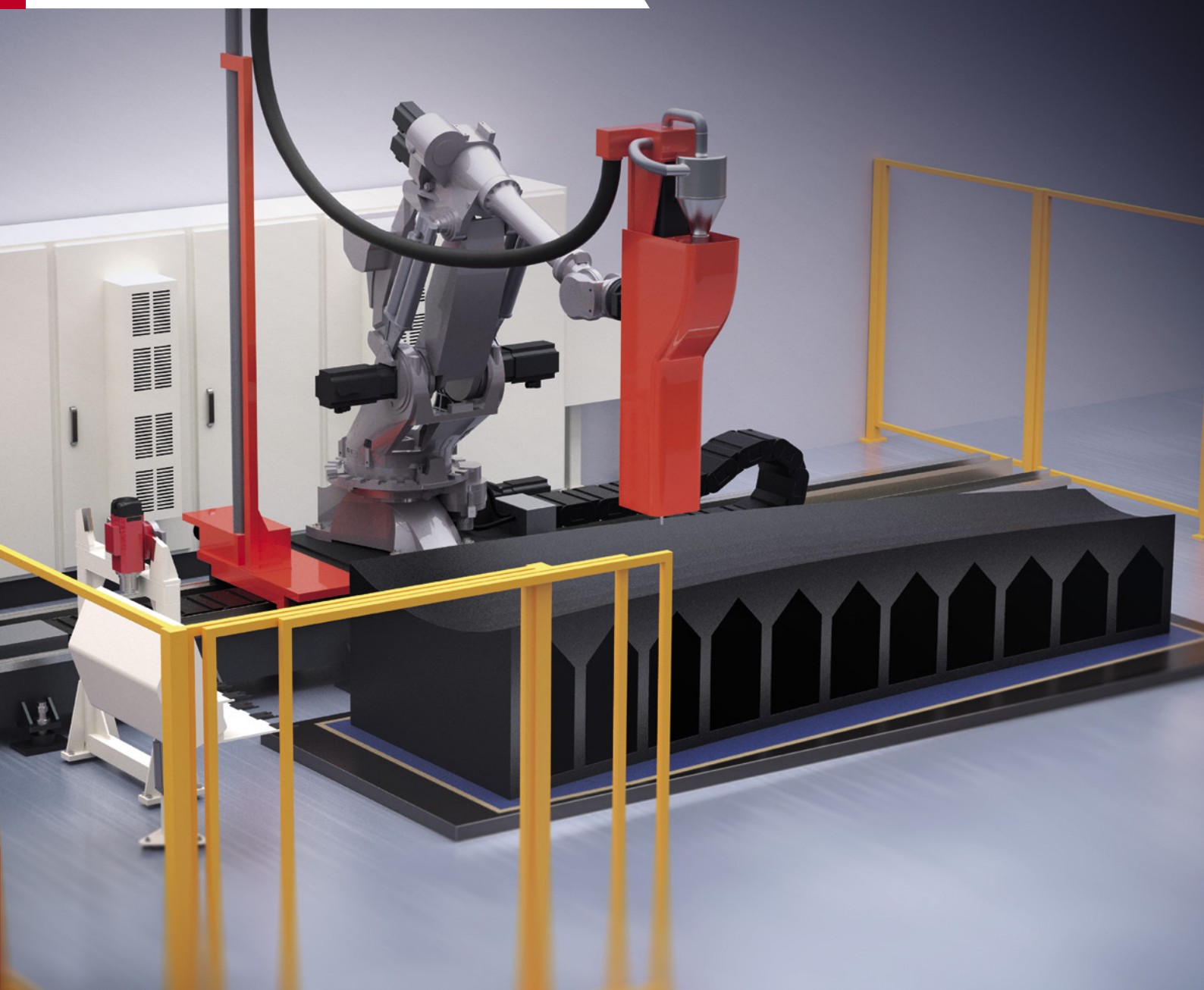




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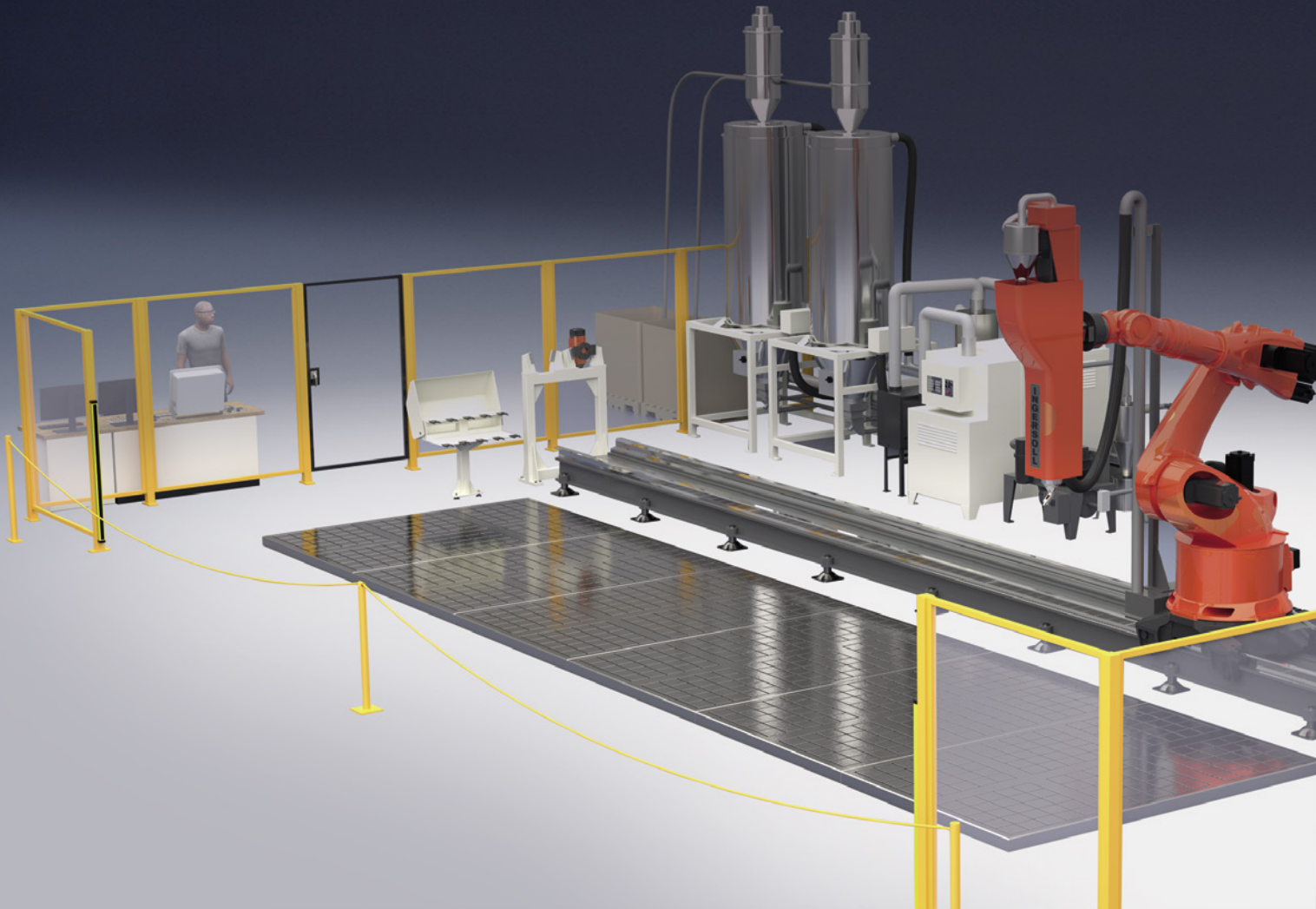
Machine Tools

MASTERPRINT® ROBOTIC INDUSTRIAL ROBOTIC THERMOPLASTIC 3D PRINTER



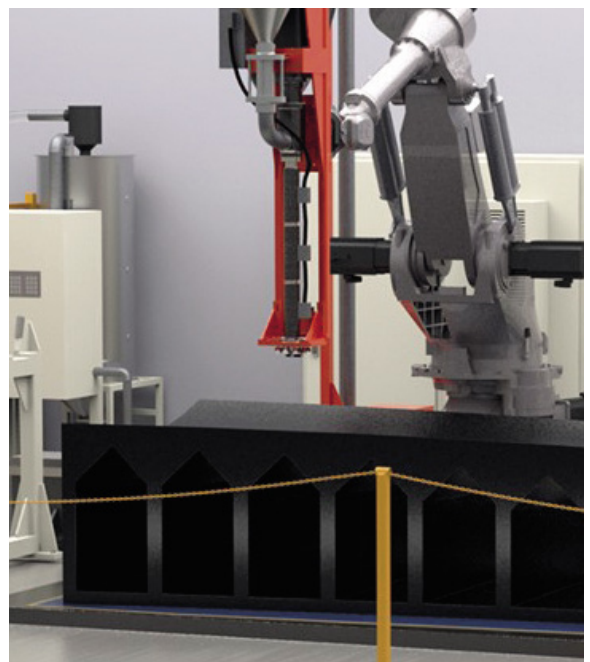
MASTERPRINT® ROBOTIC

THE VERSATILITY OF INDUSTRIAL ROBOTS APPLIED TO MASTERPRINT®



MasterPrint® Robotic is Ingersoll Machine Tools' robotic version of its MasterPrint® technology for additive manufacturing and milling of complex-geometry on durable, large, thermoplastic components for space, aerospace automotive and naval.

With its robotic positioner, MasterPrint® Robotic offers a **reduced footprint** and requires **lighter foundations**, lessening the risks and the investment for your organization, while **preserving the core features and benefits** of MasterPrint® 3X and 5X.



MasterPrint® Robotic can **print, overprint and reinforce hollow structures** at any fixed angle between 0° and 90°.

MasterPrint® Robotic can then finish these structures by automatically dropping off its extruder module and picking up its high-speed milling spindle.

MasterPrint® Robotic is also offered as a Hybrid machine with the addition of **modules for composite manufacturing** (fiber placement, tape laying, trimming, inspection, ...)



BENEFITS



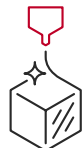
Capacity

3D print parts of large and extra-large volume



Feasibility

3D print parts of complex, contoured geometries



Quality

Match the mechanical and thermal properties for the same parts obtained with subtractive processes (rigidity, resistance, thermal expansion, vacuum tightness ...)



Productivity

Reduce the manufacturing time (from months to weeks)



High ROI/ Low TCO

Low Technology Acquisition Costs and low Operating Costs

MASTERPRINT® ROBOTIC FEATURES AND BENEFITS

01

Robotic Positioner

BENEFIT

- 3D print parts of large volume (**Capacity**)
- Reduce the manufacturing time (from months to weeks) (**Productivity**)
- Low Technology Acquisition Costs
- Low Operating Costs
- Low Maintenance Cost (**High ROI/ Low TCO**)

02

Sinumerik One (the latest generation of powerful reliable and widespread, industrial CNCs)

BENEFIT

- Productivity to 3D print part of complex, contoured geometries
- High ROI/ Low TCO
 - Low Operating Costs
 - Low Maintenance Cost

05 06

Material Delivery System and Milling Spindle

BENEFIT

- Reduce the manufacturing time (from months to weeks) (**Productivity**)
- Option to add subtractive and composites processes as complements of the additive one
- Possibility to select only the process(es) needed and to implement them when they become necessary
- Option to add multiple work-zones to enable running processes in parallel (**Versatility**)
- Low Technology Acquisition Costs
- High ROI/ Low TCO
 - Low Operating Costs
 - Low Maintenance Cost

07

Vacuum Table



03

Operator console and CMTnet

BENEFIT

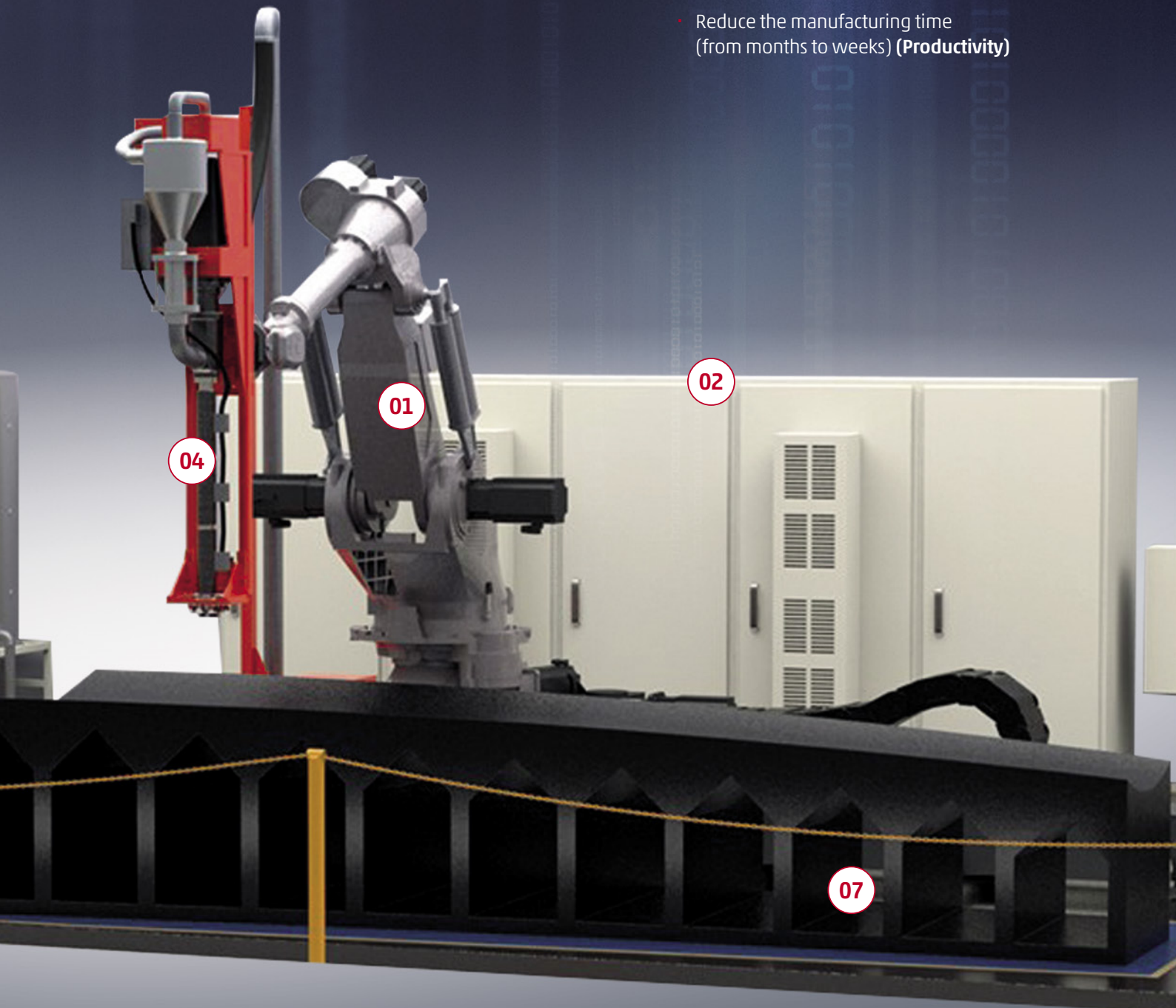
- Productivity to reduce the manufacturing time (from months to weeks) (**Productivity**)
- High ROI/ Low TCO
 - Low Operating Costs
 - Low Maintenance Cost

04

Manually Adjustable Nozzle

BENEFIT

- 3D print part of complex contoured geometries (**Feasibility**)
- Match mechanical and thermal properties for the same parts obtained with subtractive processes (rigidity, resistance, thermal expansion, vacuum tightness ...) (**Quality**)
- Reduce the manufacturing time (from months to weeks) (**Productivity**)



MASTERPRINT® ROBOTIC VERSIONS

MasterPrint® Robotic comes in two versions with 20 lbs./hr. and 150 lbs./hr. flow rate extruders paired with equal capacity Material Delivery Systems.

- MasterPrint® ROBOTIC 20
- MasterPrint® ROBOTIC 150



MASTERPRINT® ROBOTIC 20

20 lbs./hr.

Extruder

Throughput	20 lbs./hr. nominal (when using ABS 20%CF)
Barrel/Screw Size	19mm Diameter, L/D = 24 (~456mm Length)
Heat Zones	Multi zone barrel heating to 500°C
Manual Indexing Nozzle	0° - 90°

Material Delivery System

Material Ready Hopper	100 lbs. capacity raw material
Dryer and Handling System	20 lbs./hr. capacity prepared material
Capable of Delivering	20 lbs./hr. prepared material



MASTERPRINT® ROBOTIC 150

150 lbs./hr.

Extruder

Throughput	150 lbs./hr. nominal (when using ABS 20%CF)
Barrel/Screw Size	30mm Diameter, L/D = 24 (~720mm Length)
Heat Zones	(4) barrel zones, (1) nozzle band (multiple for angled nozzles) heating to 500°C (PEI, PPSU, PESU capable)
Manual Indexing Nozzle	0° - 90°

Material Delivery System

Material Ready Hopper	600 lbs. capacity raw material
Dryer and Handling System	150 lbs./hr. capacity prepared material
Capable of Delivering	150 lbs./hr. prepared material

AUXILIARY EQUIPMENT

All machine models can be equipped with:

- Milling module
- Vacuum table



Milling module

APPLICATION SECTORS

AIRCRAFT MANUFACTURERS



BOAT MANUFACTURERS



AUTOMOTIVE



DEFENSE CONTRACTORS



Other sectors:

BOAT MANUFACTURERS

MOLD MANUFACTURERS

UNIVERSITIES
AND RESEARCH CENTERS

Ingersoll Machine Tools Inc.
707 Fulton Avenue
Rockford - IL 61103
USA
Tel. +1 815 987 6000
info@ingersoll.com



Machine Tools

www.ingersoll.com