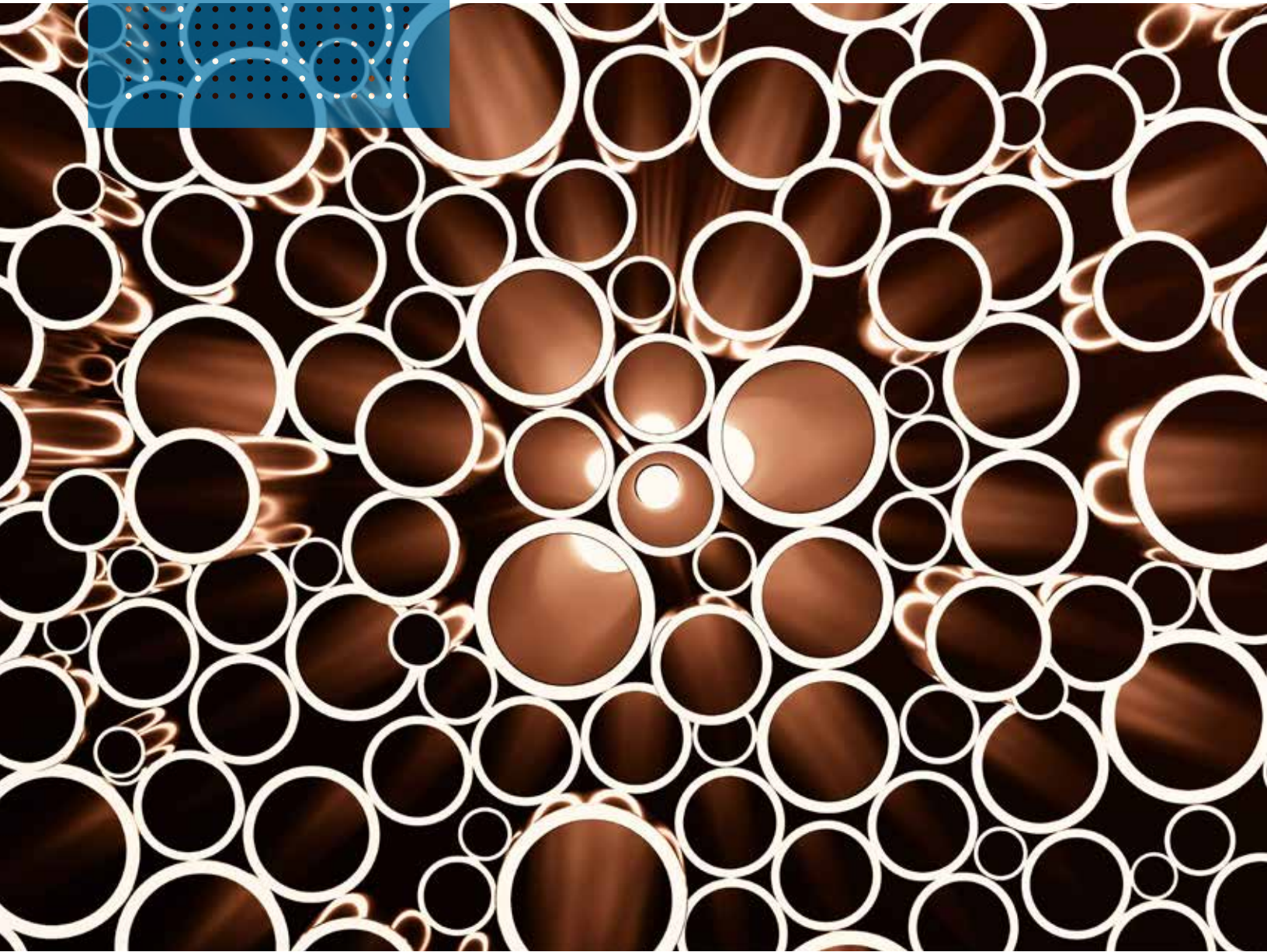


*Tube laser  
cutting  
machines*

# TL SERIES

FLEXIBLE, EFFICIENT TUBE CUTTING



# WHY TUBE LASER CUTTING?

LVD makes tube manufacturing more efficient and cost-effective with laser cutting technology. Using a single, flexible tool, a variety of tube shapes can be processed – with high cut quality and accuracy that simplifies or eliminates secondary processes.

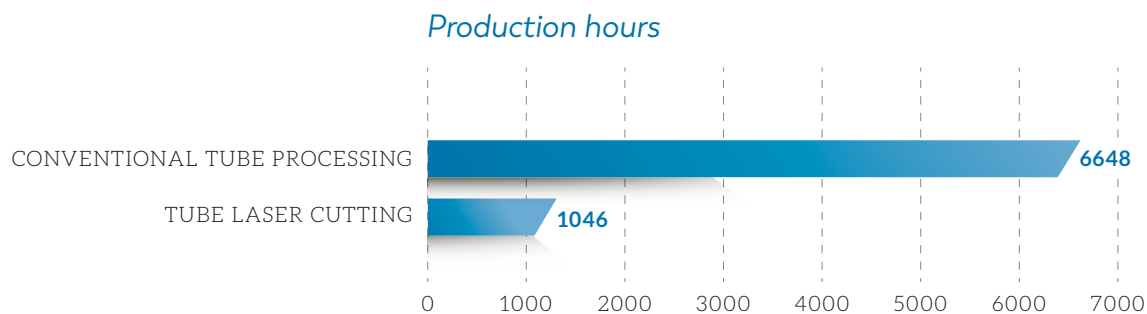
## REDUCED PRODUCTION TIME

Tube laser cutting offers a cost-effective solution to conventional tube processing methods such as sawing, drilling and milling, and even to flat-sheet laser systems equipped with a rotary axis. Limited part handling, high cut quality and tight tolerances reduce the time and cost of subsequent welding and assembly operations.

## TYPICAL PERFORMANCE RESULTS

A shorter, simpler manufacturing process with fewer steps lowers the cost per part.

In this example, a large manufacturer processing tubular components dramatically reduced the time and cost of prototyping, manufacturing and handling using tube laser cutting.



### SAVINGS

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84% reduction in production time

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Prototyping lead time cut by 70% or more

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70% reduction in part handling

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Improved part fit-up facilitates robotic welding

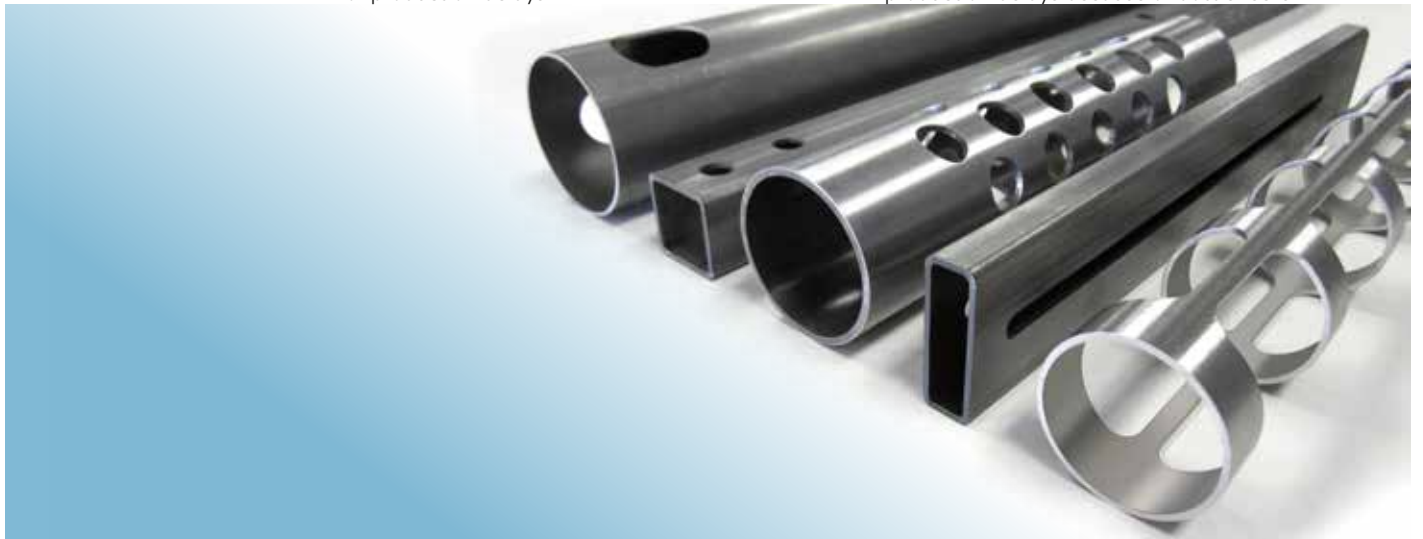
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## KNOW YOUR COSTS

Compare the cost of tube laser cutting with conventional machining (cutting, sawing and drilling):

COST	TUBE LASER	CONVENTIONAL MACHINING
Tooling	None	High
Handling – moving parts from machine to machine	None – all features produced in one cycle	High – queuing, coordination
Scrap	Low – parts are accurate with good edge quality - ready for the next operation	Medium to high – dull tools, multiple handling, and tool forces can create costly scrap
Material	Low – very little material wasted due to short clamping requirements and small kerf size	Can be high due to added material requirements with certain machining operations
Production	Flexible process results in low probability of production delays	Multiple processes result in higher chance of production delays because of bottlenecks



# DESIGN & PRODUCTION VERSATILITY

Today's products increasingly incorporate tubular frames because of the structural integrity they offer.

The efficiency and flexibility of tube laser cutting opens the door to a world of application possibilities – providing more versatility in engineering design and shortening the time to market for new products.

- Laser cut tabs and slots for more creative designs that are easier to assemble, and reduce or eliminate the need for weld fixturing
- Produce multiple parts from the same setup with quick change over
- Cut simple joints to complex profiles with precision and ease
- Efficiently handle high-volume applications
- Produce a variety of tube shapes in a range of materials, including copper and brass





*You can find tubular structures in transportation equipment, sports and recreation, furniture, farm machinery, cranes, and in structural construction.*



# TL SERIES

LVD tube laser cutting machines offer the flexibility to meet your requirements.

- *Process tubes with a rectangular, round or oval cross-section, as well as angle iron or C channels*
- *Cut thin- or thick-walled tubes*
- *Handle complex contours and cutouts: bends with positive stops, locking tabs, relief cuts*
- *Handle prototypes and short-run batches to high volumes and kit production*

## TL 2450-FL

Meets a range of tube cutting needs with its all-around capacity. Processes rounds from .375" to 5" (10 to 127 mm) in diameter; rectangular tubes up to 4" x 2" (101 x 50 mm) with a maximum in feed of 24 feet (7.31 m).

## TL 2665-FL

A top productivity, feature-rich machine handles any tube cutting application. It processes rounds from 0.75" to 6.5" (19 to 165 mm) in diameter; rectangular tubes up to 6" x 2" (152 x 50 mm) and tube lengths to 26 feet (8 m). Automatic setup and run keeps non-productive time to a minimum.



## Key advantages

- More value for the investment – cost-effective tube and pipe cutting
- Fiber laser offers fast processing, excellent edge quality across a range of materials, including copper, brass and aluminum
- Easy to operate for any level of user
- Equipped with a magazine loader as standard
- Embedded software simplifies design, cutting and nesting of parts and is standard
- Automation options maximize throughput
- Optional plug-in for SolidWorks®



*Magazine-style front-loader is standard*

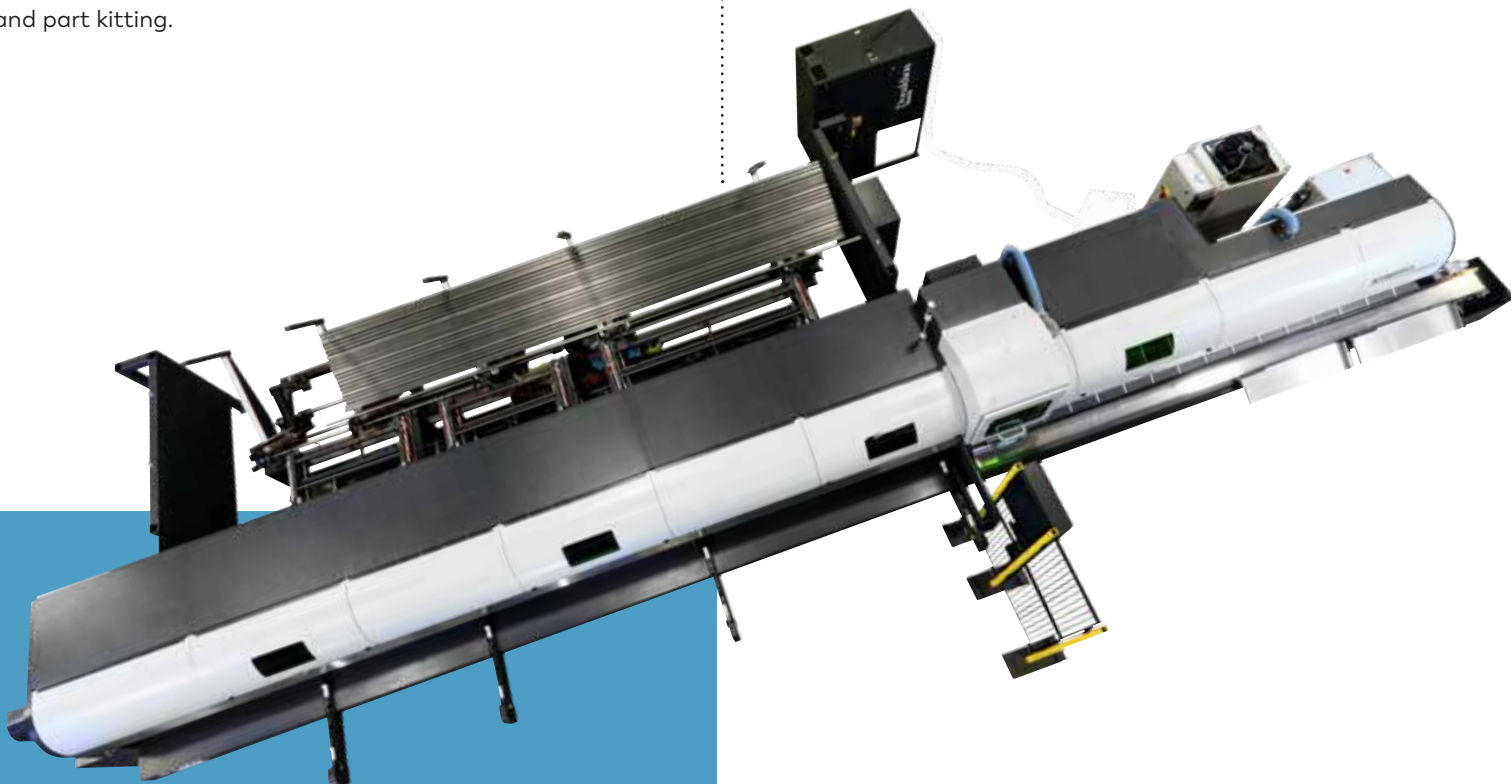


TL 2665-FL

# HIGH VOLUME & HIGH DIVERSITY

The TL 2665-FL can be equipped with an optional bundle feeder to support the 7-position magazine loader, a standard feature. Together, the two systems provide the flexibility to satisfy high-volume production and high-diversity needs. Use the bundle feeder for large batches and long part runs; process parts on the magazine loader while the bundle feeder is being loaded or unloaded or quickly move from one job to the next for short runs or small batches, and part kitting.

*Flexibility to  
satisfy high-volume  
production and  
high-diversity*

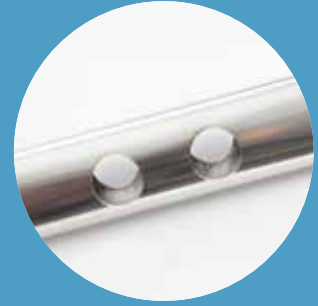




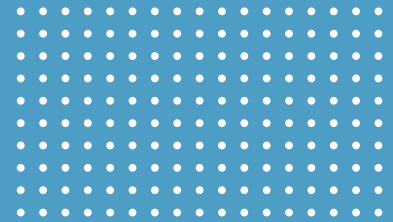
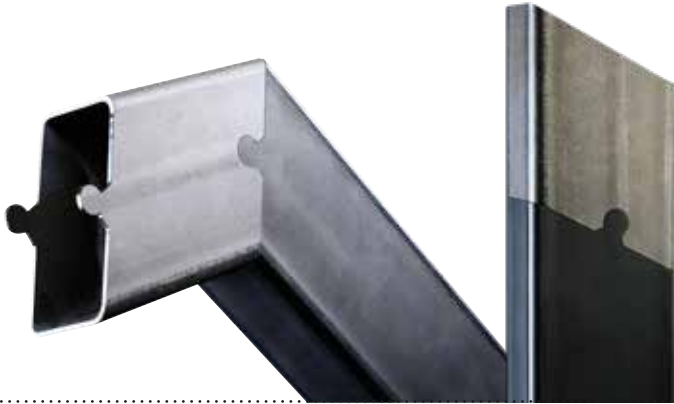
# Application solutions

From basic tube cutting to creating interlocking joints and custom-made notches, with a TL Series machine it's all possible.

- Process tubes with a rectangular, round or oval cross-section with precise accuracy and clean finishes



- Produce angles and tabs that perfectly self-align, reducing assembly time
- Include V-sections, tabs, notches and slots – the complexity of joining angles on tubes is made simple



- Create complex fitted parts easily and quickly to form a rigid assembly



# DESIGNED TO PERFORM

TL Series machines are engineered to be simple and reliable. Machine features ensure accurate cutting, minimal change over and high versatility for top performance and productivity.



## EFFICIENT FIBER LASER SOURCE

The Fanuc fiber laser source delivers exceptional performance with the reliability that users have come to expect from this industry leader. The laser source delivers consistent power for thousands of hours, has long service intervals and minimal maintenance costs.



## HIGH UPTIME CUTTING HEAD

The simple, compact construction of the cutting head reduces downtime. Two points of crash protection – vertical and rotational – are built in. The laser cutting head has an automatic stand-off distance system to maintain a fixed distance between the nozzle and the material surface.

## PRECISION DRIVE SYSTEM

A precision rack and pinion drive system eliminates backlash and provides accurate positioning for the full cutting length while processing at high speeds.



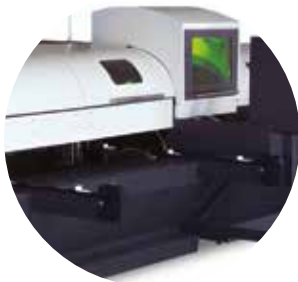
## OUTFEED RISER

A supporting outfeed riser allows cut products to be easily and gently ejected onto the collection area or conveyor.



## INDUSTRIAL PC-BASED CONTROL

The Fanuc control supports high-speed processing with a suite of intelligent laser control functions to help optimize cut quality. The easy-to-use controller features an integrated touchscreen panel.

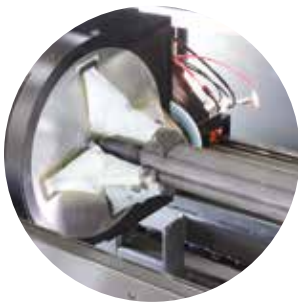
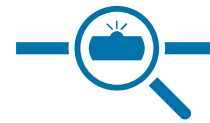


## MAGAZINE-STYLE FRONT LOADER

A magazine-style front loader allows quick and easy movement to the next tube size –no re-banding or manual removal of tubes is required. The loader risers come up, clamp the tube to prevent rotation and pick the tube off the magazine loader. This maintains seam orientation on the completed parts. The magazine loader is reversible – unload the tubes from the system and move on to the next job in a matter of minutes.

## BOW DETECTION

A side-sensing laser automatically detects and compensates for any bows or bulges over the length of the tube. (TL 2665-FL model)



## TWIST COMPENSATION

Automatic twist compensation system adapts for material deformations.

## VERSATILE PROCESSING

TL machines can load tubes up to 26 feet long in mild steel, stainless steel and aluminum, as well as non-ferrous metals such as copper and brass.



## CHUCK & STEADY REST ROTARY AXIS

A self-centering chuck automatically adjusts to different tube geometries. The servo-controlled infeed system has four or six risers to lift the tube from the magazine to the chuck. Each riser features a tube centering device which centers the tube with the steady rest and chuck. Risers are servo-controlled and follow the contour of the tube to fully handle, turn and support the tube to be cut.

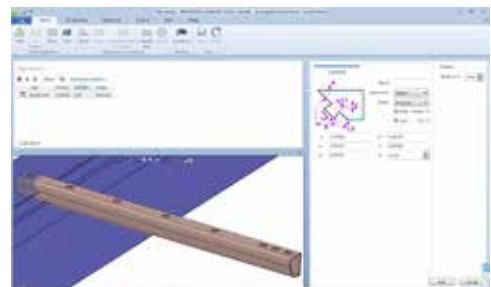
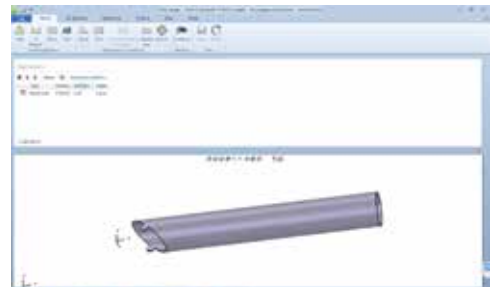
# POWERFUL SOFTWARE

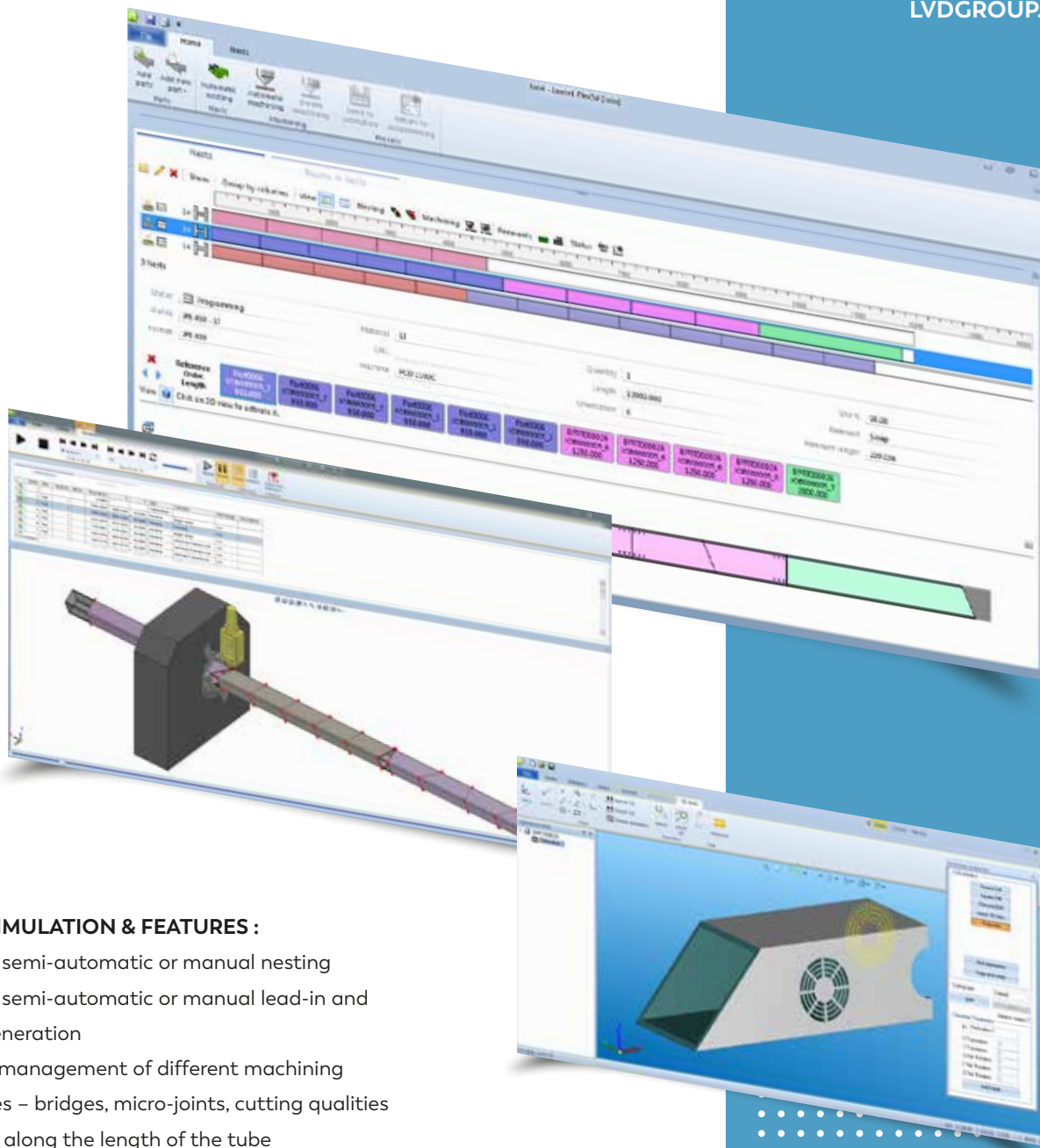
Lantek Flex3d programming software is a powerful tool for the design, cutting and nesting of structural tubing, pipes and structural profiles.

Lantek Flex3d makes programming easy and intuitive to effortlessly add notches, tabs and features to imported parts or draw parts from scratch. By nesting single or multiple parts, kitting or combining different jobs, Flex3d reduces material waste and generates optimized programs. Lantek is a strong LVD partner, providing leading-edge software expertise.

## PART DESIGN & 3D IMPORT:

- Import 3D tube drawings using SAT, STEP format direct from the CAD system
- Easy parametric creation of tubes
- Flexible manipulation and editing of the design
- Design or import a 2D geometry to create any type of cutout or trim
- Simulation in 3D of the exact part and the entire cutting process
- Define features, V-sections, clipping systems, tabs and notches
- Produce various/special tube ends and intersections
- Visual verification of intersections and operations of intersections
- Various options for copying elements and operations (linear, circular, by grid)





#### NESTING, SIMULATION & FEATURES :

- Automatic, semi-automatic or manual nesting
- Automatic, semi-automatic or manual lead-in and lead-out generation
- Integrated management of different machining technologies – bridges, micro-joints, cutting qualities
- Operations along the length of the tube
- Configurable machine parameters specified in material thickness dependent tables
- Calculated contour cuts – performed automatically or manually
- Profile & remnant management
- Warehousing and re-utilization

#### OPTIONAL PLUG-IN FOR SOLIDWORKS®

Add-in for SolidWorks® offers an easy solution to adding joineries in assemblies.

# AUTOMATION OPTIONS



## BUNDLE FEEDER

An automatic tube-feeding system allows a full bundle of tubes to be processed automatically without interruption. The bundle feeder holds up to 4000 lbs. (1800 kg) of raw tube stock and can be loaded using a fork truck from the rear of the machine. This option complements the magazine feed feature so that both high-production and high-diversity needs are met in a single machine.



## CUSTOMIZED OUTFEED

Various outfeed automation devices, including conveyors and parts sorters, simplify parts offloading.

LVD's outfeed conveyor moves cut parts off the conveyor and down a ramp into a user-supplied container. The system can be programmed to allow multiple parts to be run per stick and offloaded into the correct container. LVD's outfeed conveyor is able to count parts as they are offloaded.

## SCRAP CONVEYOR AND DROP CHUTE

Scrap management improves production efficiency. The scrap conveyor moves scrap into a bin at the back of the machine. A drop chute feature ensures scrap and finished parts are kept separate.



## SEAM DETECTION

The location of the seam on a tube can be critical for bending and other secondary applications. To make sure that each tube always has the correct orientation, the TL Series offers an automated seam detection option using two cameras that eliminate false seam readings.



## DUST COLLECTOR

The Donaldson Dust Collector provides higher efficiency for cleaner air, and lower pressure drop for greater energy savings. With fewer filter change-outs than comparable models, it reduces filter disposal costs. The system is easy to setup and requires low maintenance.

## DATA REPORTING

LVD tube lasers can export production data into a standard spreadsheet that can be interfaced with most standard MRP systems.

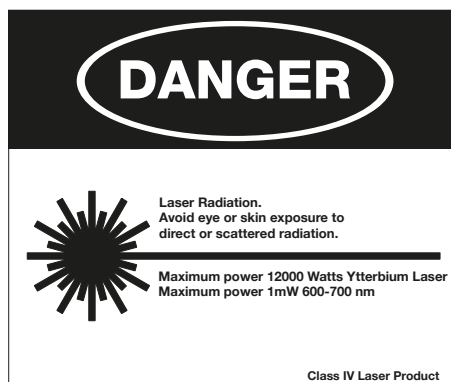
*Automation  
options take  
tube laser cutting  
productivity  
to a higher level.*



# SPECIFICATIONS

	TL 2450-FL	TL 2665-FL
Feed stages	Y-axis: 6" - 1200 ipm (152 mm - 30 m/min) B-axis: 24 ft - 5000 ipm (7315 mm - 127 m/min) Z-axis: 4" - 1200 ipm (101 mm - 30 m/min)	X-axis: 6" - 1200 ipm (152 mm - 30 m/min) Y-axis: 6" - 1200 ipm (152 mm - 30 m/min) B-axis: 26 ft - 5000 ipm (7924 mm - 127 m/min) Z-axis: 4" - 1200 ipm (101 mm - 30 m/min)
Accuracy	Cut to length - minimum +/- 0.004", up to +/-0.002" per foot (+/- 0.1 mm or +/- 0.05 mm per 300 mm) Small features: +/- .001" (0.025 mm) Automatic twist compensating system	Cut to length - minimum +/- 0.004", up to +/-0.002" per foot (+/- 0.1 mm or +/- 0.05 mm per 300 mm) Small features: +/- .001" (0.025 mm) Automatic twist & bow compensating system
Rack & pinion	Roller pinion and rack	Split pinion linear rack system
Rotary speed	150 rotations/min	120 rotations/min
Linear speed	5000 ipm (127 m/min)	5000 ipm (127 m/min)
Stand-Off Distance	Automatic	Automatic
Front tube loader	7-position magazine loader reversible 6 servo-controlled infeed risers	7-position magazine loader reversible 4 servo-controlled infeed risers
Tube length measurement	Leading edge detection	Leading edge detection
Finished parts	CNC controlled supports	CNC controlled supports
Crash protection	Breakaway ring	Non-destructive protection for X-, Y- or Z-axis crashes and breakaway ring
<b>Laser specifications</b>		
Type	Fanuc fiber laser	Fanuc fiber laser
Laser power	1 kW	2 kW
<b>Tube specifications</b>		
Material	Steel, stainless steel, aluminum, copper, brass	Steel, stainless steel, aluminum, copper, brass
Tube type	Round, rectangle, square, ob-round	Round, rectangle, square, ob-round
Outside diameter/ Diagonal	Round: 0.375" to 5" (10 to 127 mm) Square: max. 3.5" x 3.5" (89 x 89 mm) Rectangular: max. 4" x 2" (101 x 50 mm)	Round: 0.75" to 6.5" (19 x 165 mm) Square: max. 5" x 5" (127 x 127 mm) Rectangular: max. 6" x 2" (152 x 50 mm)
Max. raw material length	24 feet (7.31 m)	26 feet (8 m)
Max. part length	9.11 ft (3 m)	15.9 ft (4.8 m)
Max. tube weight	7 lbs/ft (10.4 kg/m)	22 lbs/ft (32.7 kg/m)

Specifications subject to change without prior notice.



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