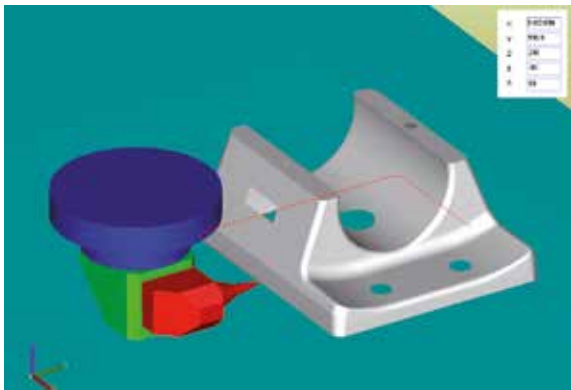## Introduction

Lantek Flex3d 5x is a special application from the **Lantek Flex3d** family of products for the automatic programming of five-axis machines using laser and water-jet technologies. **Flex3d 5x** is the result of over 15 years of working experience in close collaboration with both manufacturers and users of this type of machine.

Lantek Flex3d 5x is compatible with the most widespread 3D design systems. It allows the import of parts from every International standard format and defines the desired technology for the subsequent cut generation. Designed to operate on PC based systems, **Lantek Flex3d 5x** interface is similar to the other products in the **Lantek** family. As a result, the software requires a short learning period and it is very easy to use. The user simply has to follow the instructions provided by the software itself.

Technical features

- Solids and surfaces supported formats: SAT, IGES, VDA, STEP, Parasolid, CATIA, SolidWorks, Solid Edge, Inventor, NX and ProE (Creo Elements)
- May share a common database for machines and materials with **Lantek Expert**
- Automatic detection of the part cutting contour and thickness
- Multiple options to place the part on the machine table
- Different cutting qualities can be set by contour or by portion within the same contour
- Multiple possibilities to change head position in each point
- Lead-ins, lead-outs and micro-joints/tabs

- Rapid movements automatically or manually adjusted
- Simulation of complete working environment: part, table, fixtures, head, etc.
- Collision check and automatic avoidance of collisions
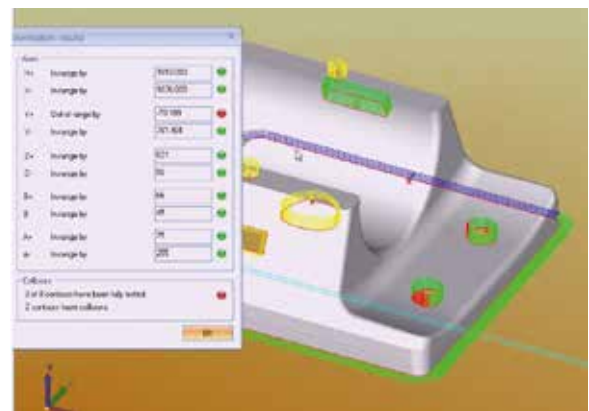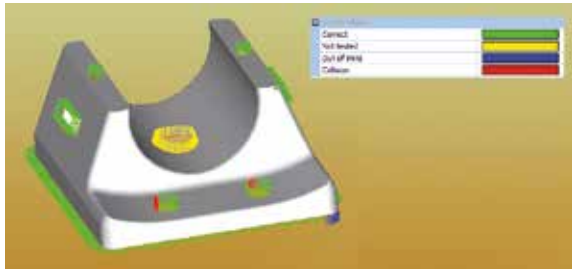

Automatic fixtures calculation

Lantek Flex3d 5x automatically generates the fixtures necessary for positioning the part correctly on the machine table.

Taking as a base the desired position and height of the part above the cutting table, the system provides a user-modifiable holding grid, where the user can decide how many fixtures will hold the part in place and their locations.

When the appropriate holding grid has been designed, **Lantek Flex3d 5x** generates the solids necessary for positioning the part on the table. Automatic fixture

calculation takes cutting contours into account, so that the calculated fixtures do not interfere with either the cutting head or any of the holes to be cut. This saves valuable machine time, normally associated with program verification in the machine.

These fixtures can be revised in 3D mode. The design or the position of the fixtures can be modified and recalculated at any stage of the process.
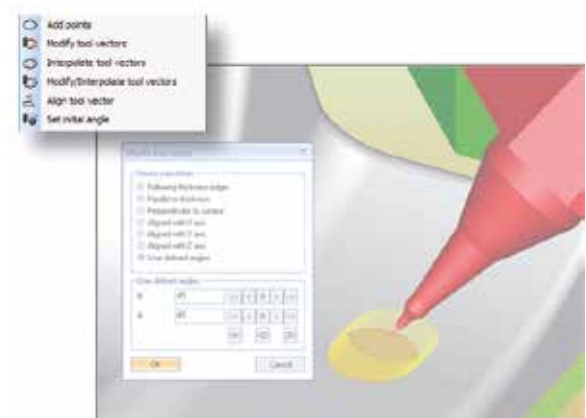
When the correct fixtures are in place, the user can automatically transfer the 2D geometry to **Lantek Expert Cut** or **Lantek Expert Punch** for the parts to be cut on any available machine.

Machining

Lantek Flex3d 5x automatically detects all the part cutting contours, allowing automatic or semi-automatic machining of these contours. The qualities to be applied to each contour can also be selected by user. The automatic machining sequences and model intelligence is generated irrespective of where the 3D CAD design data originated. As a result, **Flex3d 5x** enables manufacturing of products directly from design data, eliminating the potential errors.

After machining, the system allows entire work environment simulation. The software and post-processors include a three dimensional model of the appropriate machine and cutting head. **Lantek Flex3d 5x** automatically detects any possible collisions of the head with any other elements involved in the cutting operation, offering multiple possibilities for correcting them. The physical limits of the axis are also considered during the whole process.

Lantek Flex3d 5x permits full cutting direction change. Any cutting vector can be modified, erased or inserted at any point of the contour so it prevents unwanted movements and positions.