

Leading Industrial Water Jet Manufacturer Uses TransMagic for Their Most Complex 3D CAD Data Translation and Repair Needs



OMAX A-Jet with Rotary Axis enables 6 axis cutting.



OMAX A-jet provides 5 axis cutting capabilities.

OMAX, manufacturer of abrasive water jets for machine shops, fabricators and manufacturing companies, discusses how they use TransMagic to solve 3D CAD data problems.

Abrasive waterjet cutting is impressive. These sophisticated machines can cut a large range of materials with ease and accuracy, from extremely hard metals to volatile substances, using only water and an abrasive. With the wide range of materials they can cut, industrial waterjets are often used with complex geometries. This is a story of how OMAX and TransMagic worked together to solve complex 3D CAD data problems.

Who is OMAX?

OMAX, based in Seattle, WA has been a pioneer in cutting materials with water. In 1993, they introduced the first PC controller for abrasive waterjet machining and the JetMachining® Center specifically designed for machine shops. They are still leading the way with new patents, models, and recognition. For example, they recently became ISO 9001 certified and received the Seattle Business Magazine's Manufacturer of the Year Award.

Serving diverse industries including aerospace, automotive, transportation, energy, agriculture and architecture, an OMAX waterjet is an unstoppable cutting machine. The OMAX waterjet shoots a high-pressure stream of water and abrasive at over Mach 1 to cut almost any material. "OMAX is a machine tool provider whose customers are typically machine shops, repair shops, fabricators, manufacturers, and the military. Our waterjets are used in a wide variety of businesses and for cutting some very exotic materials," said Mark Rodgers, OMAX Software Support Specialist.

"Customers buy our waterjet machines to do amazing things. TransMagic helps with the complex solid models which helps make better parts."
 Mark Rodgers, Software Support Specialist for OMAX Corporation

OMAX is a hardware and software company," said Rogers. "The machine is just one side of our solution, our Intelli-Max software that controls the cutting process is just as important."

About OMAX Waterjets

Waterjet uses vary from fine finish cutting to roughing out material for traditional cutting with hard tooling. The customer uses of OMAX waterjets to cut extremely broad materials are very broad; from hard to cut metals like titanium, 6061 aircraft aluminum, tungsten, carbide, brilliant copper, hardened steel to zircon (primary ingredient in fireworks, which will even burn in space), to organic materials like stone and seashells.

OMAX waterjets are Computer Numerically Controlled (CNC). CNC is the programming language that tells the machine exactly how to cut, commonly known as tool paths. CNC programming for cutting flat material is straightforward; the complexity comes with 3D. The more complex the 3D model - created with a mechanical CAD program like CATIA, Creo, Inventor, NX, Pro/E, SOLIDWORKS, and others - the more difficult the CNC programming gets. As the OMAX Software Support Specialist, Rogers has been involved with many complex and unique projects that have been performed with the OMAX waterjet.

When Problems Exist in the 3D Data Model

OMAX's CNC software is Intelli-MAX. It is very powerful, yet easy-to-use. For 3D files Intelli-MAX gets its data from Intelli-CAM. A valid solid model is required for Intelli-CAM to function properly. Sometimes, a customer will have a problem with their own 3D geometry created from any number of 3D CAD programs. For example, a common problem is a non-manifold condition.

TransMagic can detect even the slightest problem with 3D geometry and alert the user. For many cases, TransMagic can perform the repair with the press of a button. For more complex situations, the software will guide the user through the repair

process. In both cases, neither a CAD license or having CAD experience is required. After verifying and possibly repairing the 3D geometry, it is ready for transfer to the OMAX Intelli-MAX software using the STEP file format. TransMagic can translate over 40 different formats, so OMAX waterjet customers using TransMagic can accept basically any CAD data format as input, verify the model integrity and fix it if needed (without using a CAD system), and lastly generate the model in the STEP format. This saves time and money while streamlining the process.

"TransMagic is my 'go-to tool' when I receive geometry that has problems (as previously mentioned, Mark works with some complicated drawings which are more rare than common). "Customers buy our waterjet cutter to do amazing things. Without a valid 3D model, nothing can happen", Mark Rogers, Software Support Specialist for OMAX, said.

Rogers described the challenges that come with any complex project. "The thing all of these complex cutting operations have in common is 3D geometry. Our Intelli-MAX software is comprehensive, but it requires valid geometry. With TransMagic, I can confirm the 3D model is valid and I can fix it quickly and easily if needed."

Customer Example: Cutting Carbon Fiber Turbine Blades

An OMAX customer needed to cut carbon fiber turbine blades. Waterjet cutting is an excellent choice for cutting carbon fiber. "The geometry was a mess, it took me three months to fix it before we could bring it into Intelli-MAX," said Rogers. That was before

TransMagic – that same project could now be done in days. "Having a valid 3D model as input to Intelli-MAX is critical. Translating, diagnosing and fixing problems can become a bottleneck for our customers – TransMagic addresses all of these quickly and with the highest quality" Rogers said.

Solving Problems

"There are two faces of my job. Sometimes we will perform jobs for our customers; these tend to be the complex and difficult ones. Other times, I am brought in more as a consultant to one of our customers. Now when facing a tough problem from a customer," Rogers confidentially says "with TransMagic, we can do that!"

About OMAX

Based near Seattle, OMAX Corporation is the leading manufacturer of advanced abrasive waterjet systems. Owner of the OMAX, MAXIEM, GlobalMAX and ProtoMAX brands, the company designs and manufactures complete waterjet systems that feature intuitive software, efficient pump technology, and a wide range of accessories. The ISO 9001:2015 certified company designs, manufactures, assembles and tests components as a complete system to ensure optimum performance. The company also has the most comprehensive service and support network in the waterjet industry to keep its customers ahead of the manufacturing curve. For more information, visit OMAX.com or connect with the company on Facebook, Twitter, LinkedIn and YouTube.

About TransMagic

TransMagic is a toolkit for better utilization of 3D CAD data. Whether you are in design, estimating or manufacturing, TransMagic will make your life easier when working with 3D data - including translation, validation, repair, mockup, viewing, collaboration, visualization, and MBD.

Browse through OMAX customer stories at <https://www.omax.com/news/customer-successes>.