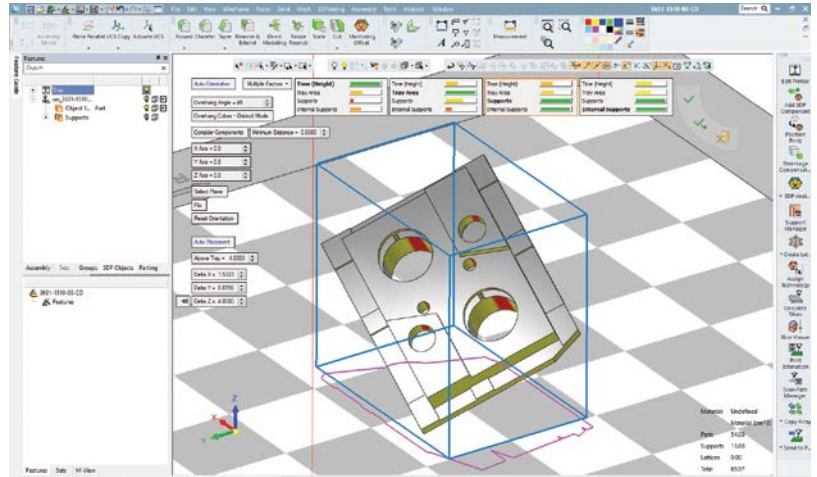


Sharon Tuvia (1982) Ltd. Increases Its Competitive Edge with 3DXpert™ Software

3DXpert integrated software for metal additive manufacturing streamlines 3D printing workflow and cuts design to manufacturing time as much as 75%



3DXpert allowed Sharon Tuvia to go from three software packages to one integrated solution.

Sharon Tuvia (1982) Ltd. specializes in the manufacturing of mechanical assemblies, parts and components for the aeronautical and electro-optical industries. Combining traditional (subtractive) and additive manufacturing technologies, Sharon Tuvia is known for producing very complex, highly accurate products. The company's ability to meet quality management system requirements for aviation, space and defense organizations has earned it an AS-9100D certification.

Keeping a company with over 50 years of experience on the cutting edge of technology is no small challenge. Since it was founded by its namesake Sharon Tuvia, the company has been looking for new technologies that can keep the business ahead of the competition. Tuvia's sons, Ronen and Yair, serve as Co-CEOs, and lead the company with a shared entrepreneurial and innovative spirit that has prompted them to adopt additive manufacturing as their next generation manufacturing technology.

As one of the first to recognize the promise of this advanced manufacturing method, Sharon Tuvia is now considered one of the leaders in additive manufacturing in the Middle East.

Additive Manufacturing: A Strategic Advantage

Ten years ago, Sharon Tuvia made a strategic decision to invest in Additive Manufacturing (AM) and purchased its first metal (aluminum) printer by EOS. Today, close to 30% of its business is based on AM, a figure the company expects to grow significantly over the coming years.

While the company doesn't foresee AM as an outright replacement to conventional manufacturing methods, it looks for the best ways to combine these techniques and take advantage of the unique benefits that each brings to the table.

CHALLENGE:

Streamline the metal 3D printing workflow to shorten lead time and introduce a lower Total Cost of Operation (TCO).

SOLUTION:

3DXpert™ all-in-one integrated software for metal Additive Manufacturing (AM) to prepare and optimize CAD models for 3D printing.

RESULTS:

- **Lower TCO:** Eliminated the use of multiple software packages by standardizing with a single integrated software solution.
- **Higher productivity:** Shortened delivery cycles by removing the need to switch software tools throughout file preparation and optimization for AM.
- **Increased agility and responsiveness:** Ability to quickly apply modifications to the model through history-based CAD functions allows company to address changing requirements while keeping delivery dates.
- **Enhanced part features:** Exploiting new additive manufacturing design capabilities such as volume and surface lattice structures reduces weight and improves heat dissipation.
- **Consistent design integrity:** Removed the risk of errors inherent to data conversion in order to preserve accurate CAD geometry.

“One of the common mistakes people make with respect to AM is trying to produce the same parts using the new technology. Instead, we look for things that can be done with AM that could not be done before, or ways in which AM provides a unique competitive edge.” says Yair Sharon.

Advantages Across Multiple Use Cases

Additive manufacturing is applied by Sharon Tuvia to gain specific advantages across several key use cases, including prototypes, low volume parts and complex geometries designed to enhance part properties.

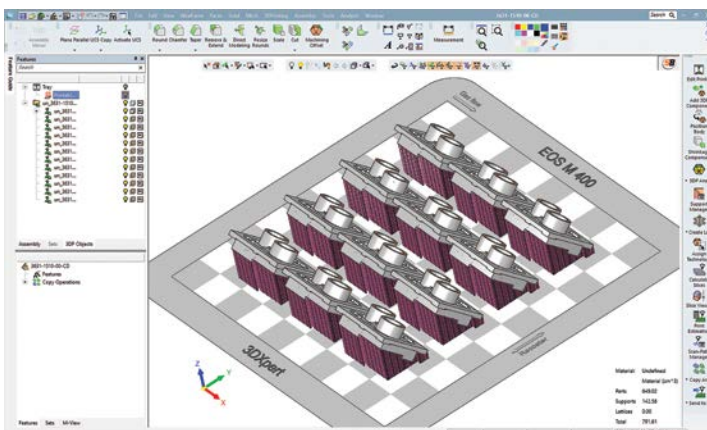
Prototype parts: Even when final mass production will use conventional techniques, AM enables a fully functional prototype to be ready in a very short timeframe, allowing Sharon Tuvia customers to shorten time to market and move faster than the competition.

“By using additive manufacturing for the prototype, we can ensure that a mold is created only for the final, approved and tested part, eliminating costly and time-consuming mold modifications,” says Ronen Sharon.

Low-volume parts: For a low-volume series of parts or customized parts, AM provides the quickest and most cost-effective solution.

Complex geometries for enhanced part properties: Better heat dissipation, airflow, cooling channels or lighter weight are just a few examples of enhanced part properties that can only be achieved with complex geometries and AM. Even when the parts could be manufactured by conventional techniques, their complex geometry makes AM a more cost-effective option.

3D Printing Experts Meet 3DXpert



Sharon Tuvia uses metal AM across several key use cases, from prototypes and low volume parts to complex geometries designed to enhance part properties.

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Today close to 30% of Sharon Tuvia's business is based on metal additive manufacturing.

As pioneers in the field, Sharon Tuvia's leadership quickly realized the benefits of additive manufacturing and is consistently on the lookout for new ways to make it even more efficient and effective. One of the issues it was looking to improve was the cumbersome preparation and optimization process for AM, which required numerous iterations involving multiple software solutions.

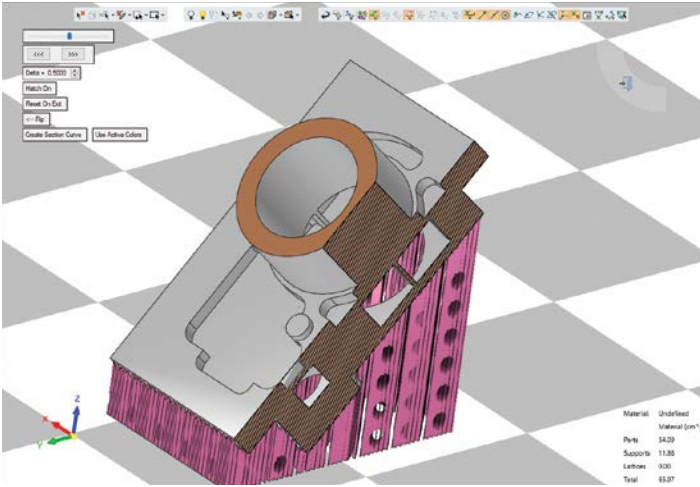
“With 3DXpert, we moved from using three different software solutions to a single integrated software, shortening the design to manufacturing process by up to 75%,” says Ronen Sharon. “We didn't just shift from using multiple software solutions into one, but we completely changed and streamlined our entire workflow.”

Shortening the preparation and optimization process and getting the most output from the printer are critical to the company's business results: “Whether it's having a printer sitting idle waiting for the design process to finalize or printing a non-optimized structure that takes longer to complete — any inefficiencies can have a direct impact on our productivity and profitability,” adds Ronen.

Change Made Easy

Making changes to the model at various stages of the process is a common requirement that Sharon Tuvia has to address. “As experienced CAD users in the traditional manufacturing environment, history-based features and the ability to easily make changes on the fly seem obvious to us. However, in design for additive manufacturing, 3DXpert's capabilities are unique,” says Yair Sharon.

With 3DXpert, Sharon Tuvia is able to:



Removing inefficiency with 3DXpert has increased Sharon Tuvia's productivity and profitability.

- Avoid the need to convert from a solid model to a mesh model, which ensures that the best accuracy is maintained and inherent conversion errors are eliminated.
- Use a hybrid (solid and mesh) CAD toolset to address any required modifications without using another CAD software.
- Take advantage of history-based features to easily incorporate changes at any stage of the preparation and optimization process without starting over from scratch.

"With 3DXpert, we can apply the changes without losing all the work we've done. This capability makes it possible for us to meet strict deadlines and eliminate cost overruns," says Yair.

Optimizing Part Structure

One of the breakthrough advantages offered by AM is the ability to use lattice structures to lower the weight of the part and deliver better performance while maintaining the part's shape. Similarly, specific surface textures can be applied to the outer face of the part.

Using 3DXpert lattice structures, Sharon Tuvia can achieve a larger surface area while minimizing volume to enhance

heat performance. "3DXpert provides extremely powerful and fast tools for creating, editing and viewing lattice structures, eliminating the need for a specialized software package," says Ronen Sharon.

Optimizing Printing Strategies

3DXpert's patent-pending 3D Zoning technique allows users to optimize printing time and quality by setting different print strategies for different zones without dividing the part into multiple objects. In addition, 3DXpert's advanced slicing capabilities enable a smooth transition and smart merging between different areas.

"We simply define a virtual volume using a 3D object as you would do in any CAD system. We can then assign different print strategies to areas requiring good surface finish while other areas that don't require the same level of finish can be printed quicker. Overall, controlling print strategies with 3D Zoning provides the best possible printing quality at minimum cost and at a fraction of a time it took us before," says Yair Sharon.

From Part Design to Build Design

According to Yair Sharon, it is important for designers to adjust their mindset and think about how to design the build rather than just the part. "Without understanding the impact of orientation, supports and lattice structures on printing time and cost, you will have a hard time optimizing your design," he says.

Sharon Tuvia says its decision to use 3DXpert is based on the expertise packaged within 3D Systems' solutions: "3DXpert is a true all-in-one solution that incorporates the expertise 3D Systems has gained in all aspects of the 3D printing process into a single AM software solution," says Ronen Sharon.

For more information and a free demo of 3DXpert please refer to: <https://www.3dsystems.com/software/3dxdpert>



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