AUTODESK®
ALIAS® SURFACE

Create Class A Surfaces

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Today's successful automotive manufacturers and OEMs must design innovative, alluring vehicles—and bring them to market faster than their competitors.

To drive consumer interest, they need to develop interiors and exteriors that are perfectly smooth, pleasing to the eye, and pleasant to the touch. At the same time, their geometries must be in line with requirements from engineering, manufacturing, and legal requirements.

Leading automotive companies rely on Autodesk® Alias® Surface for technical surfacing tools to create these high quality, accurate, and precise surfaces.

When automotive companies use Autodesk's superior technology in a streamlined workflow that speeds development time and reduces rework, they can:

- Create Class A surfaces that meet the exacting standards of internal and external clients, and do it faster
- Share a single digital model from conceptual design to manufacturing, with the Autodesk solution for Digital Prototyping
- Feel confident that the technical surfacing tools they invest in are backed by a financially stable, highly innovative company with a proven track record; Autodesk has been creating design software for more than 25 years.

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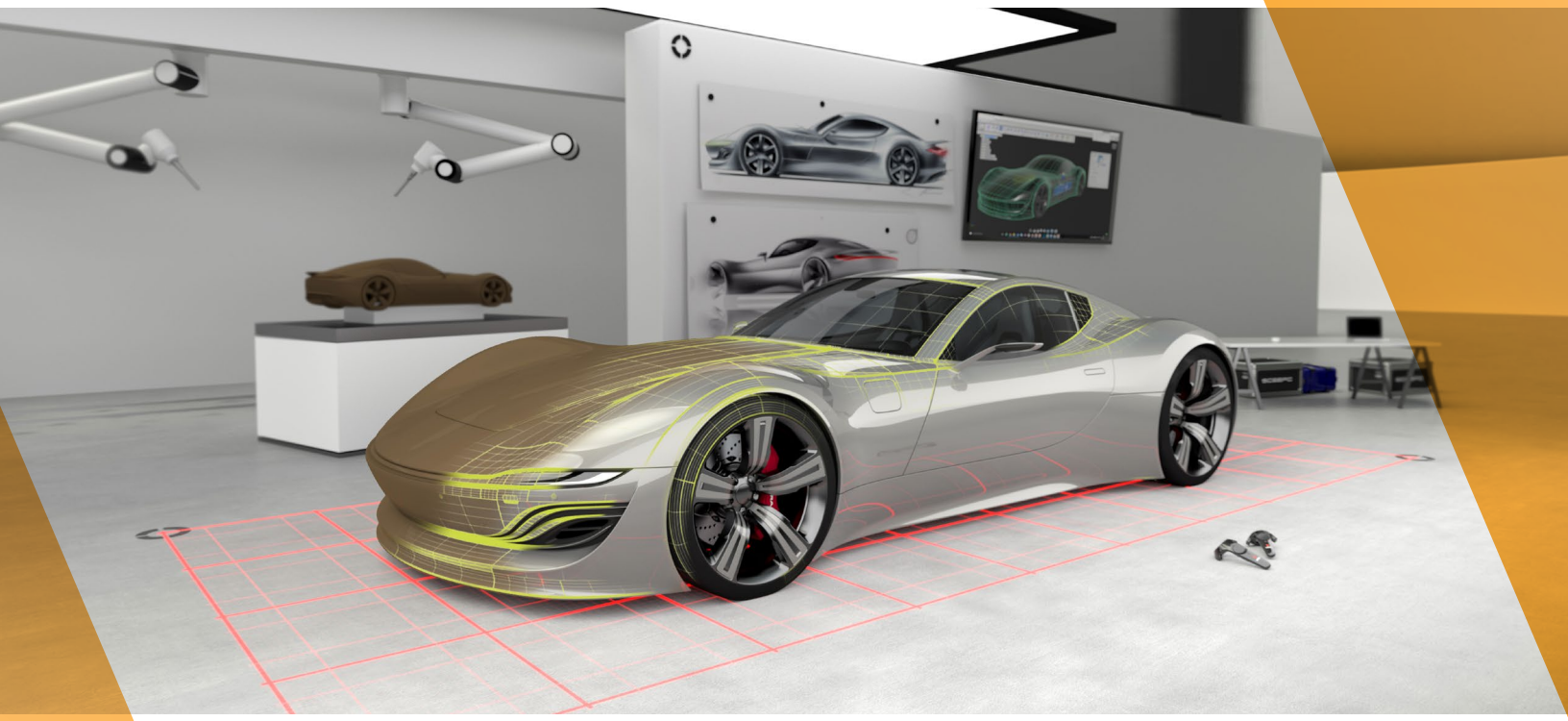
Create Class A Surfaces Using Superior Technology

In a traditional automotive industry workflow, a conceptual designer sculpts a car design using a mixture of clay modeling and digital modeling and builds surfaces from there. After several iterations, the designer hands off the design to a surfacing engineer. Designers use the support of milling machines to produce clay models and to reduce the effort of hand craftsmanship in the process of clay modeling. The engineer needs precise surfaces, called Class A surfaces. However, engineers typically receive surfaces from designers that cannot be used, because their quality is not high enough. As a result, the engineer must rebuild the entire design using a 3D CAD software application, is unable to take advantage of any surfacing work completed by the designer, and risks losing the intent of the original design.



Autodesk enables a more advanced workflow that helps automotive companies reduce rework and produce design iterations faster. Designers own their designs further into the development process, creating production-quality, reusable NURBS surfaces that can be used by the engineering team. The ability to create Bezier surfaces can help the engineering team improve surface quality up to Class-A standards. Using Autodesk Alias Surface software, designers can develop and include precise surfaces in the design from the beginning, so the engineering team doesn't need to start from scratch. Designers thus can ensure their design intent stays intact during the engineering phase. In addition, Autodesk offers software like PowerMill and PowerInspect to support special needs for clay milling.

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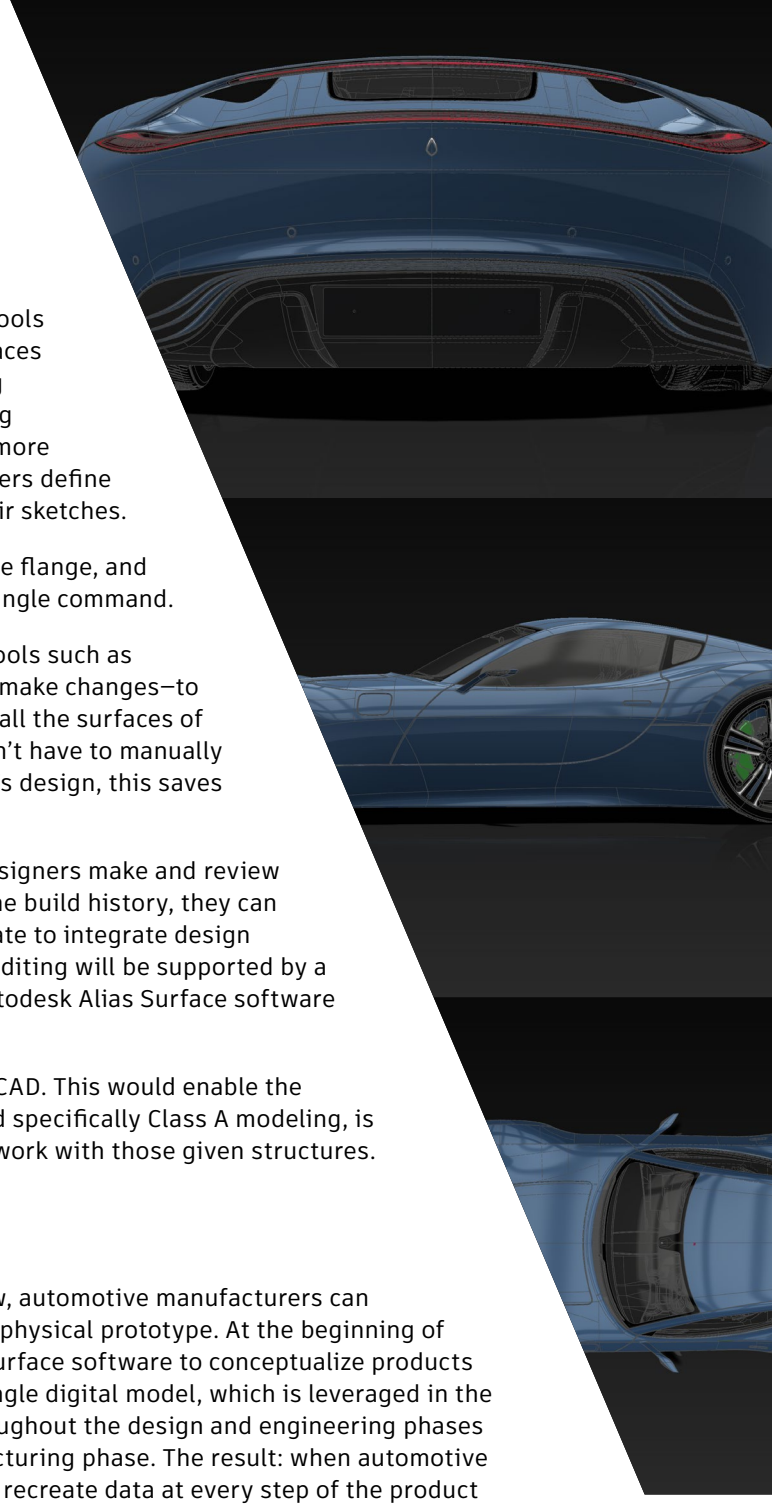

Advanced Technical Surfacing Tools

Autodesk Alias Surface provides several technical surfacing tools to support this advanced workflow.

Alias Surface supports direct modeling, a method for manipulating shape surfaces. Because the direct modeling tools in Alias Surface are so precise, designers can fine-tune surfaces via vertices and hulls. However, unlike other direct modeling applications, Alias Surface also includes procedural modeling functionality, which can be used to finish sculpturing tasks more quickly. For example, curve-based surfacing tools let designers define shapes in accordance with the feature lines they draw in their sketches.

To reduce manual work, Alias Surface offers fillet flange, tube flange, and ball corner tools that combine multistep procedures into a single command.

Alias Surface also enables global shape definition through tools such as transform rig and lattice rig. These tools allow designers to make changes—to the length of the overhangs on a car, for instance—and have all the surfaces of the model update automatically. Because the designer doesn't have to manually adjust the hundreds of surfaces typically involved in the car's design, this saves an enormous amount of time.

In addition, the history functionality in Alias Surface lets designers make and review changes throughout the design process. If designers save the build history, they can edit any original data, and the model will automatically update to integrate design changes, saving time and minimizing potential errors. This editing will be supported by a replace workflow made possible with the 2021 release of Autodesk Alias Surface software in the new History Viewer.

Another basic need is to be able to import Assemblies from CAD. This would enable the Alias-user to work with a given CAD structure. Modeling, and specifically Class A modeling, is embedded into a landscape of CAD and PDM; the user must work with those given structures. Autodesk® Alias® Surface software enables that.

The Digital Model Delivers Benefits

By relying on Autodesk software in a digital design workflow, automotive manufacturers can visualize, optimize, and manage designs before producing a physical prototype. At the beginning of the digital design workflow, designers use Autodesk Alias Surface software to conceptualize products and create Class A surfaces. This data is integrated into a single digital model, which is leveraged in the engineering phase. The surfaces created and perfected throughout the design and engineering phases are then used to develop the tooling needed for the manufacturing phase. The result: when automotive companies use a digital design workflow, they don't need to recreate data at every step of the product development process. This saves time and resources—and helps get vehicles to market faster.

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Innovation, Stability, and Strength

When automotive companies invest in new tools, they want the security of knowing that their technology partner will be able to meet their needs not just for today, but also in the future.

Founded in 1982, Autodesk has a proven record of strength, growth, and innovation. A world leader in design innovation technologies, Autodesk is committed to building and supporting the new design tools that automotive designers and engineers need. No competitor matches the breadth and depth of Autodesk's product portfolio—or its global community and ecosystem. And when companies invest in Autodesk technical surfacing tools, they partner with a financially stable company. Autodesk has annual revenues of more than $2 billion USD, cash and equivalents of more than $800 million, and an operating margin that exceeds 25 percent.

With its advanced visualization, simulation, and analysis tools, Autodesk helps companies take advantage of today's global trends and prepare for tomorrow's demands.

For More Information

To find out more about what makes Autodesk a leader in technical surfacing tools, visit www.autodesk.com/alias.

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