

Create Class A Surfaces with Autodesk® Alias® Surface



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. 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 so 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

Create Class A Surfaces Using Superior Technology

In a traditional automotive industry workflow, a conceptual designer sculpts a car design out of clay, scans the design, and builds surfaces from there. After several iterations, the designer hands off the design to an engineer. The engineer needs precise surfaces, called Class A surfaces, which are used for tooling. However, engineers typically receive surfaces from designers that cannot be used, because they are not high enough in quality. As a result, the engineer must rebuild the entire design using a 3D CAD software application, unable to take advantage of any surfacing work completed by the designer.



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 develop and include precise surfaces in the design from the beginning, so the engineering team doesn't need to start from scratch. In addition, designers retain ownership of the design with their intent staying intact during the engineering phase.

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 to 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 multi-step 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 in the model update automatically. Because the designer doesn't have to manually adjust the hundreds of surfaces typically involved in the car 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.

Digital Prototyping Delivers Benefits

By relying on Autodesk software in a digital prototyping workflow, automotive manufacturers can visualize, optimize, and manage designs before producing a physical prototype. At the beginning of the digital prototyping 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 prototyping 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.



Customer Spotlight: Technicon Masters the Most Demanding Surfacing Tasks in Automotive Design.

Technicon Design is one company that has adopted Autodesk technical surfacing tools to save time and stay competitive. Working on the front lines of automobile development for thirty years, Technicon's client list is an automotive who's who which includes BMW, Ford, GM, Porsche, Renault, and others. The company's highly skilled creative staff provides design services such as surfacing, visualization, and design development.

With Autodesk® Alias® Surface software, Technicon's designers produce Class A surfaces of near-perfect quality, move from NURBS to Bezier geometry using a single software application, translate their inspirations into 3D concept models, save time, and reduce design changes. Alias Surface software gives Technicon designers all the tools they need to achieve their tasks—resulting in a highly streamlined workflow. “Using an iterative process, we quickly advance from relatively simple NURBS surfaces with an extensive support structure to a Class A Bezier structure without support lines,” says Werner Strathaus, director of Technicon Design in Russelsheim, Germany.

Using Alias Surface helps Technicon complete work from start to finish using an all-digital workflow—and then pass on its 3D concept models to its clients' engineering teams to incorporate into digital prototypes. And because Alias Surface software enables Technicon to gather, handle, and display various data, the company can incorporate engineering, design, and manufacturing considerations early in the design cycle. “A welcome result of this early integration is an overall shortening of the process,” says Strathaus.

There's another advantage for Technicon and its clients in producing digital concept models. “With Alias Surface, we can assess feasibility issues much earlier than with a physical model,” explains Strathaus. “This supports simultaneous engineering, reduces late design changes, and saves everyone a lot of money.”

Looking forward, Technicon anticipates that Autodesk Alias Surface will continue elevating the quality and simplifying processes for its designs. “We'll continue to provide high-quality surfaces earlier in the development phase,” concludes Strathaus. “Thanks to Alias Surface, our surfaces are set up in a Class A structure, so we'll be able to modify designs easier.”



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 offers 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 automotive designers and engineers need. No competitor matches the breadth and depth of Autodesk's product portfolio—or 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/aliassurface.