



## King Doublebass hits all the right notes with T-Splines

*>T-Splines reduces time to create concepts and production models for custom bass designs.*



**Company:**

**Industry:**

**Headquarters:**

**Website:**

King Doublebass

Designers and manufacturers of custom upright bass instruments and guitars

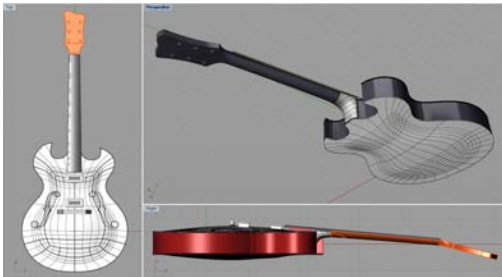
Santa Ana, CA

[www.kingdoublebass.com](http://www.kingdoublebass.com)



"T-Splines has allowed me to create and design my musical instruments much easier and faster. I can now create several variations on my design in an hour. This same process used to take days before I started using T-Splines"

**Jason Burns, President**



### The challenge

Jason Burns is no stranger to high profile design projects. His company King Doublebass has designed instruments for many world famous artists including Neil Diamond, Green Day, Nine Inch Nails, Rob Zombie, Korn, Stray Cats, Cypress Hill, Dwight Yokum, Pretenders and Snoop Dogg. The company manufactures about 400 upright basses per year and has started building guitars about 15 months ago.

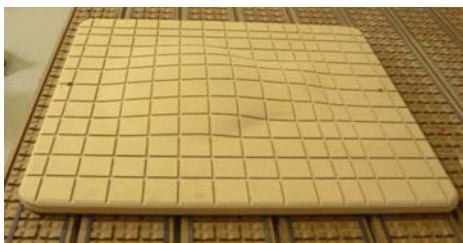
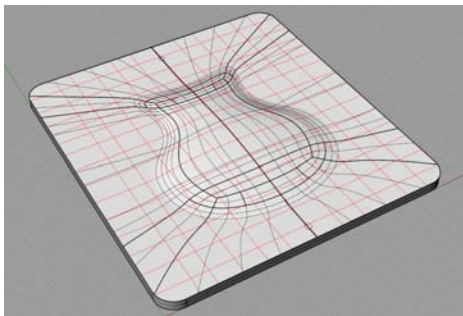
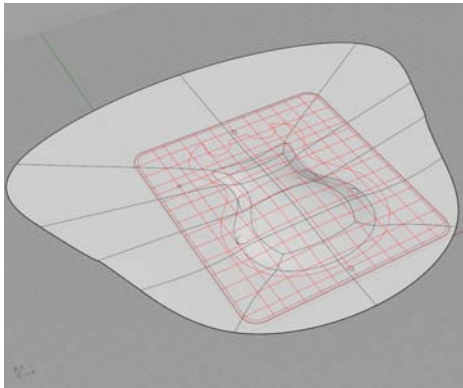
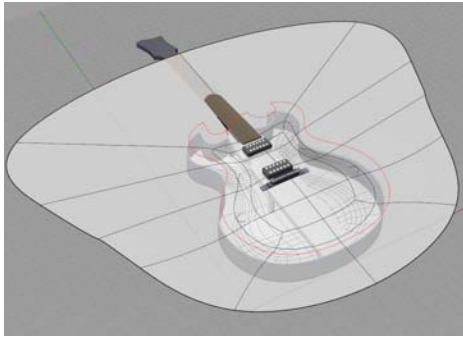
About a year ago Jason started using Rhino to design his instruments. It greatly accelerated his design process and reduced the time it took to bring a guitar into production.

But it still took him days to get the design of the guitar to the right shape. Often he would need to start a CAD model over to make a change to the design or when he found gaps or creases in the surface model.

For the best acoustics, the design for a guitar has to match precisely to a set of curves and specific parameters, yet maintain a smooth, flowing and aesthetic shape.

On this hollow body design (pictured at left) that has a contoured top, the contour has to match the neck angle. As Jason changed his design and the desired string tension of the instrument, it became more and more difficult to manipulate a traditional





NURBS surface model. Once he had a final design, it was often difficult to identify and remove any surface creases or undesired waviness that would affect the CAM software and could ruin the mold created on the CNC router.

Two months ago, Jason started using T-Splines together with Rhino as part of his design process. Very quickly he was able to reduce his surface modeling time from days to hours and create smooth, organic instrument bodies that could be manufactured without problems.

## The solution

Jason started the design process by laying out a series of curves for the shape of the body and then used the T-Splines skin command to create a surface. This surface could then be manipulated with ease while maintaining all the necessary constraints of the design.

Many of the new features available in T-Splines 2.0 have helped to further ease the workflow for Jason. The symmetry feature allowed him to view the complete design throughout his modifications, and the new manipulators and edge extrude tools provided incredible flexibility.

With T-Splines, Jason was able to create multiple versions of a guitar in an hour – a process that used to take days for a single design.

Once the design was complete, the model was translated to NURBS and then exported to the VisualMILL CAM package. The images at left show some of the resulting mold shapes machined on the CNC router. The 100% seamless compatibility of T-Splines with NURBS made the translation error and effort free for Jason.

## Future direction

T-Splines has become an invaluable tool in the design process for King Doublebass. Instead of having to manipulate and tweak difficult to edit surfaces, Jason can now create multiple design variations with confidence.

“It is now far easier and faster for me to translate the designs in my head into a CAD model.”

The finished CAD models can then be converted without error to CAM packages for manufacturing production molds and tooling.

## Learn more

To learn more about T-Splines and how it could help accelerate and improve your design process, please visit [www.tsplines.com](http://www.tsplines.com)

To learn more about Rhino, please visit [www.rhino3d.com](http://www.rhino3d.com)