



# THE TECHNOLOGY OF GOING FAST



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A dragster is itself a piece of technology; however, when you look at all the different technologies used to create them, it becomes obvious that CO<sub>2</sub> racing is loaded with technology know-how!

From hand drawing and hand tools to CAD and CNC, this activity has a variety of approaches that can be taken. While many students are familiar with hand tools or even power tools, there are some other options they might not realize are available.

The following are some technology subjects that can be explored through CO<sub>2</sub> cars. If you're looking for a more structured curriculum to help you get the most out of dragsters, check out our updated Science of Speed 2 curriculum.



## CAD

A great way to draw a dragster is to use computer-aided design, or CAD. There are many software options for CAD available, and any of them will help your students make dragsters that are noticeably more symmetrical than a traditionally drawn car. CAD software also enables the user to digitally test a car before it is ever built and even makes CNC milling an option for an even more precise car.

With CAD software, students can draw a 2-D design and make it into a digital 3-D model. Another great benefit is that the user can change the car design without having to redraw it from scratch every time. Using these programs can also help students understand the Cartesian coordinate system, as everything drawn in CAD can be expressed with this system.



## CNC

If a dragster was drawn in a CAD program, then there is the option to build the car not by hand but by computer numerical control (CNC) milling.

If this kind of equipment is available in your school or community (and you might be surprised that some companies are willing to let schools use their equipment from time to time), you can build a precise and symmetrical dragster with ease. Milling is the process of using rotary cutters to remove material from a piece (such as a dragster body blank). CNC milling is done by a computer-programmed mill to remove the material as specified by a computer-drawn design. It is almost the opposite process as 3-D printing. Most mills use the three-axis system (Cartesian coordinates).

## 3-D PRINTING

3-D printing, also called rapid prototyping, creates three-dimensional objects by laying down successive layers of material. In a world where more and more schools have 3-D printers, it is no surprise that some schools are now 3-D printing dragsters.

While ABS and other materials used might not be traditional for dragsters, they do have a more predictable and consistent mass than a body blank made of wood. As with CNC milling, the dragster must first be designed in a CAD program and be digitally connected to a 3-D printer to print out the design.

However, when using 3-D printing, extra precautions should be taken because normal body blanks have predrilled cartridge holes to ensure proper depth for a safe launch.



**For a detailed curriculum about building dragsters and learning related STEM concepts, check out Pitsco's The Science of Speed 2 curriculum units.**

