Friction Stir Link Inc. is a small system integrator developing a new welding method – to differentiate its offer to manufacturers in the American automobile industry. With deep roots in the robot world, the Wisconsin ‘job-shop’ sees ABB’s off line programming software as vital to bringing their investment to fruition.

Friction Stir Link are trying to commercialize a new process called friction stir welding. Apart from being clean, it’s ideal for aluminium and alloys that can’t otherwise be welded. The process was invented in Cambridge, UK, (1991) and as the name implies, it uses friction to create a weld – without melting the material. The application possibilities are numerous, not least in the automobile industry where aluminium is becoming increasingly popular.

Today, the company is unique in offering friction stir welding in the U.S.

Golden pioneer
The company’s CEO, John Hinrichs, remembers working with the first five-axis robots in 1978 and was on the team that won the Golden Robot Award in Japan, in 1989. John explains how difficult it is to break through with new technology in the current economic climate: “We’re like farmers who’ve sown new seed. There are plenty of blossoming plants, some are beginning to bear fruit. We have many samples of friction stir welding, we even carry some on our key-rings. What customers want to see next, is if it’s possible to apply the process to their products. That’s where RobotStudio plays a vital role. It’s useful if they already have a 3D representation of their product, so we can import it in to RobotStudio. Then we can do a reach study, cycle analysis, and see the product clamping or how the product is going to work. Showing we can control the process brings the technology back down to earth.”
Christopher B. Smith, “Practitioner”  
Responsible for simulations and solutions at Friction Stir Link, Chris is a smart young, engineer. Chris has been using RobotStudio for nine months now, both as a marketing tool and as an engineering-analysis tool. He explains that the friction stir welding process is based on the combination of a revolving tool and significant pressure – in this case provided by an IRB 7600.

Chris tells us: “When it comes to developing fixtures for friction stir welding, the high loads of the process provide different challenges to gas metal arc welding. It’s almost impossible to visualize how a robot is going to be oriented, because there are so many possibilities. So, unless you have a tremendous amount of experience actually jogging and driving the robot, there’s no way of knowing where the robot is going to be and what it’s going to hit – without RobotStudio.”

Selling the pig in the poke  
Chris explains that when pitching an unknown process like theirs, risk-reduction is a major hurdle: “RobotStudio is most important in the beginning of a relationship. It makes the customer feel better about it because they can visualize what they’re buying. 2D line drawings are difficult to understand for a lot of people, but the RobotStudio simulation is very clear.”

That brings Friction Stir Link to the next step, presenting the quote. According to John Hinrichs, that’s a lot easier thanks to the simulation. “When the customer sees how we’re solving the problems, the quote becomes less of an issue. RobotStudio is a great tool to get people on both sides working together instead of finger pointing.”

Do it once and do it right  
Saving money is important at all stages of a new system installation, not least because the friction stir welding processes requires heavy-duty equipment. Chris explains: “Error proofing is a primary area for RobotStudio. When we’re working up-front to show the customer how things are going to look, we find out what resources are necessary. Once we’re given the project, we do a much more detailed analysis where RobotStudio helps us plan things exactly, while uncovering more possibilities.” Knowing which size of robot will be needed, or even how many robots, can make a big difference to the economy of a new production system. Chris sums up: “RobotStudio helps to save money. If you know your ABB robot, then you can use RobotStudio very effectively.”