

Super Lightweight Tank

Case Study Transcript
Manufacturing Issues

Parker Counts & Bryan O'Connor

Parker Counts:

One of the first problems and issues we had was: when we developed, when we had to go – (from the, we had developed the properties of aluminum-lithium at the small ingot level) to go to production yield – we had to increase that size of that ingot by several orders of magnitude.

Second issue we had along those lines was: we had done a lot of research and a lot of study work on making the initial weld of aluminum-lithiums; so we could do those quite repeatedly at an initial state. What we had failed to realize is: that with an external tank having 36,000 inches of weld – that we'd have to do a lot of repairing; we have to repair a lot on the original material of 2219 aluminum. So we'd try to do our repairs, and we could not repair it

Bryan O'Connor:

The real issue here was material properties. Can we weld these things and will the welds stand up to inspection. Are we going to have a problem with good quality welds? Now that really should not be and wasn't in my opinion, a flight safety issue because of the inspection. You know when you have a bad weld; you know when you have to go fix it. That was really more of a schedule issue than a flight safety one.

The non-destructive evaluation techniques were very good, well known, well established and like I said, if you have a bad weld and you would see that then you would have to back and repair it or start over or whatever is appropriate. We felt when we got it ready to fly; we knew the welds were good. The material was good, the welds were good, and we understood the loads. The residual risk issues were minor when it comes to flight safety.