



Let's talk about...

# First-In-Class Laser Welding for Cylindrical Cell Batteries in High Volume Production

CASE STUDY



Join thin dissimilar metal materials in EV battery modules safely, consistently and reliably.

## Challenge

Our customer's battery module design required the joining of thin metal materials such as 300-micron thick flex bus connector to a 400-micron thick cell terminal on a 10 mm<sup>2</sup> weld area with no tolerance for over penetration. The build-up of the battery module imposed very tight restrictions on part accessibility and tooling accuracies. The customer had a high-volume part mix that required 50 welds per second and only allowed for 1 failure per 10,000 cells. Laser welding was the only technique that satisfied these requirements.

## Solution

The customer asked for a safe, consistent and reliable process.

**Safe:** precise heat control and 24/7 operation safety

- Design of the laser process that ensured precisely controlled absorption of laser energy for a high quality joint with no risk of over penetration into the cell chemistry
- Class 1 laser welding machines with safe, reliable, light-tight enclosures

**Consistent:** >99.99% yield

- Integration of laser systems with the right laser process metrics (power, speed, beam positioning, etc) to ensure process consistency
- Design and build of robust tooling/fixtures
- Compensation for variances incoming product
- Integration of real-time in-process monitors with quality assurance metrics

**Reliable:** station operation

- Mechanical design had to be flawless and robust
- Station analytics are closed loop for intelligent feedback and real-time adjustment

## Results

ATS delivered a robust high-performance laser welding process integrated into an automation solution across **8 laser cells** to meet the production challenges of the project.

If you would like to contact an expert, please click here.

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