

Case Study

Bringing Safer Micromobility Products to Worldwide Markets



TQ Group



Safety. Science. Transformation.™

Bringing Safer Micromobility Products to Worldwide Markets

Successfully overcoming challenges of global differences for testing and certifying micromobility devices.

Challenge

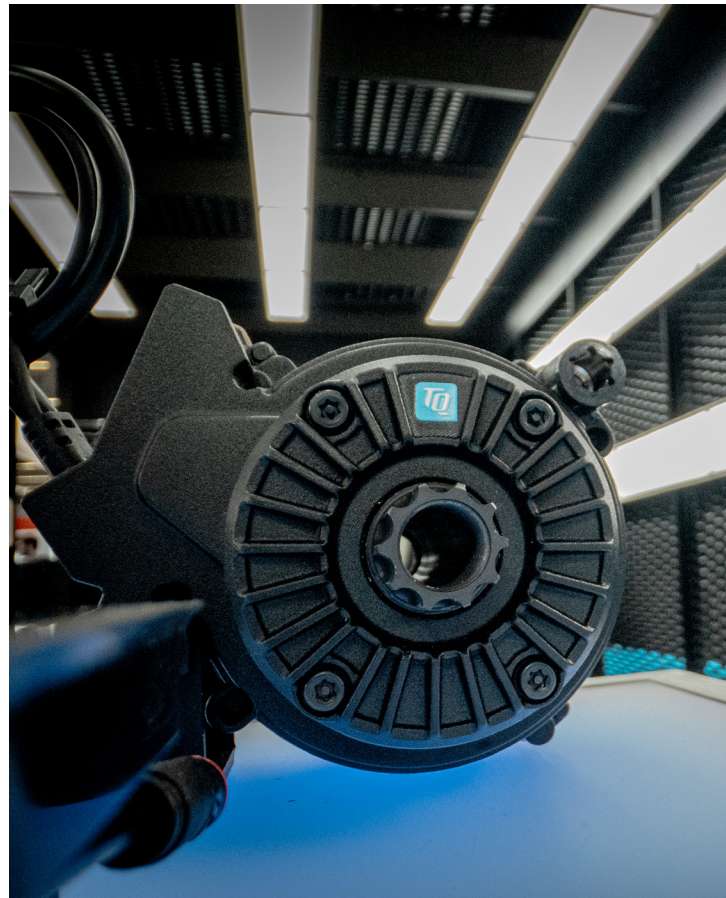
The TQ-Group was founded in 1994 as a two-person company and today has nearly 1,900 employees working at 13 locations in Germany, the U.S., Hungary and China. As one of the largest technology service providers and electronics specialists in Germany, TQ implements customized, innovative solutions for various industries, both in the hardware and software sectors, from development to production, as well as other services through to product life cycle management.

Advancements in battery technologies, such as higher-energy-density lithium-ion batteries, have made micromobility products more affordable, more powerful, easier to charge and lighter weight. To keep pace with these innovative products entering the market, specific safety standards help evaluate products' battery and electrical and charging systems. These safety standards help mitigate electrical, fire and mechanical hazards in micromobility products.

The challenge for TQ was to bring its new product, the TQ-HPR50 e-Bike System, to market while meeting the rigorous requirements for product safety and compliance that apply — and differ — worldwide. The TQ-HPR50 Drive System is a lightweight and completely integrated system with an extremely quiet motor. The e-bike community — notably Pinkbike, the world's largest online cycling community and news source — has heralded its release. It named the TQ-HPR50 motor its 2022 Innovation of the Year.

However, electrical systems for e-bikes are still a new product category, and the standard requirements are not yet clearly defined in each market. TQ was having difficulty finding a testing and certification supplier that could offer competence and technical expertise in product safety compliance and provide a better understanding of the required standards.

TQ applied many technologies developed in-house specifically for this product that have never been used before in this specific application, such as the engine and the tool that provides diagnostics for retailers. They needed a competent partner to test specific standards and certify products worldwide while providing guidance on both processes and meeting an aggressive go-to-market timeline.



CASE STUDY

Answered

TQ contacted UL Solutions for clarification on UL 2849, the Standard for Electrical Systems for eBikes. UL 2849 is the ANSI-accredited national safety Standard for electrical systems for e-bikes; it covers safety requirements for e-bikes powered by lithium or other rechargeable batteries. It provides requirements that apply to the electrical drive train system, battery system, charger system combination, interconnecting wiring and e-bike power inlet.

“UL Solutions was the most helpful in clarifying the Standard,” said Andreas Böhm, project manager for TQ-HPR50 at TQ-Group. “It was a very new standard at the time, and they helped us get a deep understanding of it and get our components certified step by step with weekly meetings and very good and open communication. Our contact in Poland was competent, had a deep understanding of the standards and was very patient in providing us a better understanding of UL 2849 specifically.”

UL Solutions, a global safety science leader, tests and certifies micromobility devices to international, national and regional regulations to help manufacturers get safer products to market. The company assesses the safety of battery packs and battery management systems to the requirements of relevant safety standards to minimize the potential risk of fire, explosion and electric shock during real-world use.

As evidence of its status as a global leader, UL Solutions provided guidance to the New York City Council as it worked to pass Initiative 663-A, mandating that e-bike, e-scooter, e-mobility device and light electric vehicle (EV) battery packs be third-party certified. On March 20, 2023, New York City Mayor Eric Adams signed it into law. With this new

law, any company selling, leasing or distributing micromobility devices, such as e-bikes or e-scooters, has until Sept. 16, 2023, to obtain certification from an accredited testing laboratory.

Result

Understanding how to manage safety standards when producing new and innovative micromobility products that consumers trust is critical in today’s environment. Many factors contribute to the increase in consumer demand for these products:

- Higher gas prices
- Increased consumer interest in environmentally friendly products
- The need for cost-effective and clean alternatives to traditional transportation
- Rising trends of on-demand transportation services
- Smart city government initiatives such as micromobility vehicle lanes, charging stations and parking zones
- Potential for time-saving travel, especially in highly congested urban areas

Manufacturers of battery-powered products like micromobility devices need to integrate certified batteries safely into their products while also taking deliberate steps to ensure that their end products meet known safety standard requirements. Safety accidents can lead to the dramatic erosion of consumer trust in products, the retailers who sell them and the brands that manufacture them.

Despite this, some companies and consumers continue to purchase and use self-declared products without independent, third-party certification of the battery, electronics and end-product construction. With these factors in mind, TQ accelerated its go-to-market timelines and worked closely with UL Solutions to test and certify the components and the full TQ-HPR50 e-Bike System.

“We have been able to test and certify our products in the most important focus markets according to our previously defined prioritization,” said Andreas Böhm. “We successfully launched a UL Certified TQ-HPR50 e-Bike System on July 12, 2022.”

Conclusion

UL Solutions is the preferred partner for micromobility device testing and certification. Our comprehensive approach can help manufacturers access worldwide markets smoothly and quickly. UL certification is a valuable marketing tool that tells your customers that your product, process, service or company meets stringent requirements. Communicating this achievement can help you win in the market by strengthening your product’s presence and differentiating it from competitors.

Check out our “Micromobility How to Guide” for more insights on the services we provide for micromobility.





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