

CIRCUNOMICS RECEIVES THE 2023 MARKET LEADERSHIP AWARD

Identified as best in class in the European circular marketplace for battery trading industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Circunomics excels in many of the criteria in the circular marketplace for battery trading space.

| AWARD CRITERIA | |
|----------------------------|-------------------------------|
| Growth Strategy Excellence | Technology Leverage |
| Implementation Excellence | Price/Performance Value |
| Brand Strength | Customer Purchase Experience |
| Product Quality | Customer Ownership Experience |
| Product Differentiation | Customer Service Experience |

Circunomics

Circunomics is setting out to become the go-to marketplace for battery second-life commerce. Automotive original equipment manufacturers (OEM) recognize the growing volumes of electric vehicles (EVs) that will result in an increasing number of lithium-ion batteries that could potentially have second-life applications and viability. Circunomics’s two offerings, Circular Analytics and Circular Marketplace, provide value across the complete second-life value chain, delivering end-of-life planning through data analytics for batteries and providing an open marketplace to give OEMs and energy storage companies a place to buy and sell batteries for second-life projects. Frost & Sullivan is impressed by Circunomics’s innovation, as its Circular Marketplace is poised to become the industry’s primary trade location for second-life batteries.

Circunomics: Positioned as a New Leader

Circunomics developed a two-fold product strategy with its Circular Analytics and Circular Marketplace offerings. The company’s Circular Analytics uses data integrated from batteries; it combines first-life analytics (including a state of health (SoH) and remaining cycle prediction) with second-life simulation to create a battery passport, empowering end-of-life planning and identifying batteries feasible for second-life applications. The platform integrates with battery management systems to capture battery data and understand how the battery has performed and degraded over time. Based on this data, Circunomics’s

Circular Analytics estimates battery reuse while considering second-life applications or recycling as alternatives. Finally, its scalable and customizable dashboard allows for maintenance and planning of end-of-life decisions, decreasing battery storage costs while potentially increasing profits for OEMs from second-life battery sales. Circunomics' performance estimations are 97% to 98% accurate and continuously improving as more battery performance information is integrated into its system, ensuring customers purchasing batteries for second-life applications receive the kilowatts per hour and performance expected.

Circunomics goes beyond just offering data analytics capabilities that estimate a battery's SoH, remaining cycle predictions, and recommendations for second-life options to provide a business-to-business (B2B) marketplace connecting OEMs (with batteries applicable for second-life applications) with energy storage solutions companies (who have large demands for second-life batteries). Its scalable Circular Marketplace delivers an ecosystem for second-life battery commerce, allowing OEMs to capture additional revenue through battery sales and providing energy storage companies access to second-life batteries needed for energy storage. The Circular Marketplace's simple interface displays all relevant information, thereby empowering connections between OEMs and energy storage providers based on specific project needs.

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- Sandhya Jesu
Industry Analyst, Mobility

It allows OEMs to develop listings for batteries for sale and enables energy storage vendors to create a listing seeking batteries for particular projects, allowing both sides of the market to proactively fulfill their needs. Listings (whether supply or demand) include all relevant information, including the battery health passport from the Circular Analytics solution, battery type, volume, and simulated second-life performance.

The Circular Marketplace will recommend projects, enabling users to filter to what extent listings match their specific needs. Since the demand for batteries is usually three to four times greater than the supply, OEMs often receive multiple bids on a single listing posted on Circunomics's Circular

Marketplace. Furthermore, Circunomics provides recommendations to listers regarding the best fit for the battery's second life, but the seller gets to select which bid to accept, allowing them to choose the best bid based on either existing partnerships or the highest bid offering. As shipping and storing batteries is a complicated process, Circunomics also helps OEMs and energy storage providers with the logistics of shipping batteries. As a result, Circunomics empowers previously unseen connections between OEMs and energy storage providers to empower battery reuse. Finally, Circunomics is also empowering connections for future projects so that if an energy storage company sees that they have a future need for a project, they can post tenders with future project dates, preemptively forming partnerships before a project begins, allowing for even further decreased storage costs as they already know where batteries will be sent before they have even ended their first life application.

Seamless Integration Empowering Ease-of-Use

Circunomics forms close partnerships with clients, providing them with service and support upfront to empower customers' self-sufficiency over time. Upon initial contact, Circunomics's technical team assesses a customer's specific battery situation, identifying how to gather data from a client's specific environment. The company then creates a pilot plan to show customers how to integrate Circunomics's solution into their existing environment and its overall ease of use. Circunomics implements and integrates its analytics capabilities from front to back end with its advanced team of developers, system architects, information technology experts, and customer service specialists, ensuring seamless integration after deployment. Finally, after deploying the solution into a customer environment, Circunomics helps clients to create their first onboarding of the listing on the platform. Circunomics thoughtfully and strategically designed its platform to guide users through the listing development process, allowing customers to easily create subsequent listings with all the related information without requiring support.

A Customer-centric Approach Driving Unmatched Client Experience

Circunomics built its offerings on a core foundation of meeting the market's needs and providing customers with an easy-to-use solution. As such, Circunomics built the platform based on feedback from vehicle OEMs and energy storage providers, ensuring that the platform is easy to use and that listings have all relevant information. The company continues this commitment to usability and satisfaction, soliciting customer feedback regarding the solution's user guidance and missing features while getting feedback regarding new capabilities before large-scale releases. As a result, Circunomics ensures that the platform enhances overall value and safeguards usability. The company recognizes the need for a primary, circular B2B marketplace for all second-life battery transactions to empower a single interface for OEMs and energy storage companies. As such, Circunomics will integrate other vendors' passports into its Circular Marketplace since data will be consistent with the creation of industry-wide data standards, allowing customers to buy or sell batteries regardless of its data analytics partner. This strategic approach positions Circunomics's Circular Marketplace to become the industry standard marketplace for second-life batteries.

Global Trends Positioning Circunomics for Rapid Growth

The global shift toward increased focus on reducing emissions sparked government regulations and programs, boosting EV uptake. For example, the United States 2021 infrastructure bill expands EV infrastructure and invests in emission-reducing technologies, increasing the adoption of electric engines across various transportation verticals¹. Additionally, Canada recently committed to achieving net-zero emissions by 2050² and has implemented multiple regulations to accomplish this goal, including a requirement that at least 20% of new vehicles sold will be zero-emission vehicles by 2026, at least 60% by

¹ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/06/fact-sheet-the-bipartisan-infrastructure-deal/>

² <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html>

2030, and 100% by 2035³. In addition to the overall transition to EV and zero-emission technologies, the European Union (EU) recently announced that they are creating a new battery directive requiring

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everyone using batteries larger than two kilowatt-hours in whatever application to have a battery passport showing the battery’s performance, enhancing battery data availability, and empowering increased potential for second-life applications for batteries.⁴

These growing regulations and investments in electric energies and EVs increase the need for batteries, thereby raising the volume of available batteries. Currently, many automotive OEMs do not have the infrastructure to collect information from their batteries inside vehicles, so the data remains inaccessible and unused. This data silo constrains the overall ability to perform analytics for a

battery’s potential for second-life uses. With the rising shift toward EVs and increased regulation requiring battery passports, OEMs will invest in infrastructure to capture data, positioning Circunomics for wide-scale growth as it can provide analytics and a B2B marketplace based on the information collected. As a result of this growing industry awareness and potential for increased interest from OEMs, Circunomics is focusing on expansion both regionally and into other sectors in addition to automotive OEMs, such as trucks, and other transportation verticals, such as electric trains. The company’s current customer base is primarily in Europe; however, due to the technical nature of its offerings and the lack of defined standards and regulations, no geographical boundaries hinder its growth plan.

Brand Strength Driven by Expertise and Creation of New Industry-Standards

Many vehicle OEMs do not understand the benefits of battery reuse and second life, particularly as a result of recycling companies lobbying against the reuse of batteries to increase their own profits. As a result, Circunomics is challenged with educating the industry regarding the benefits, both in terms of increased sustainability and potential increased capital from sales for OEMs. It is focusing on empowering the industry shift in mindset, showcasing its platform’s ease of use, low financial risk, and ability to allow OEMs to make money from batteries that would previously require a cost to recycle.

Circunomics is actively helping to create new standards and best practices regarding battery second life and reuse by being active members of leading battery associations, including Catena-X, VDA, VDE, DIN, Global Battery Alliance, and Batteries European Partnership Association. One of the leading associations, Catena-X, was formed from industry participants, with almost all major car OEMs being members. As such, the association is creating standardization for battery data management and analytics, including setting

³ <https://www.canada.ca/en/environment-climate-change/news/2022/12/let-it-roll-government-of-canada-moves-to-increase-the-supply-of-electric-vehicles-for-canadians.html>

⁴ <https://www.stenarecycling.com/news-insights/insights-inspiration/guides-articles/eu-battery-regulations-make-new-demands-on-industry/>

the standards for battery passports. As a key association member, Circunomics is actively participating in understanding OEMs' needs and desires regarding battery passports and is helping to create industry-wide standardization. Moreover, Circunomics ensures that its passport aligns with these needs and is pursuing certification by Catena-X for its Analytics Passport capabilities, positioning its battery passports to become the de facto industry standard. Finally, multiple investors in Circunomics are former industry leaders in vehicle OEM brands, including Peter Mertens (former chief technology officer (CTO) of Audi and Volvo and former chief executive officer of General Motors) and Bram Schot (former CTO of Audi). These investors empower key partnerships between Circunomics and vehicle OEMs, allowing the company to increase education about the opportunity presented by battery second-life applications and aligning data passports with OEM needs.

Conclusion

With the growing global focus on reducing emissions and decreasing environmental impacts, increased regulations have empowered the transition to electric vehicles, augmenting lithium-ion batteries that are no longer viable for use in vehicles but potentially valuable for many second-life applications, such as energy storage. Circunomics is empowering an industry-wide shift from recycling to reuse, leveraging data analytics to estimate a battery's potential performance in various second-life applications, and providing a circular business-to-business marketplace to empower the sale of batteries for second-life applications. This strategic approach provides high value across the value chain as original equipment manufacturers experience increased revenue from battery sales and reduced battery storage costs. Moreover, energy storage companies can access cheaper batteries that apply to their specific storage projects. As a result of its advanced predictive analytics and the first circular marketplace for battery reuse sales, Circunomics is at the forefront of providing an industry-wide shift, becoming the go-to vendor for battery analysis and the de facto marketplace for battery sales, empowering reduced emission, and decreasing premature battery recycling.

For its strong overall performance, Circunomics is recognized with Frost & Sullivan's 2023 European Market Leadership Award in the circular marketplace for the battery trading industry.

What You Need to Know about the Market Leadership Recognition

Frost & Sullivan's Market Leadership Award recognizes the company that achieved the greatest market share resulting from outstanding performance, products, and services.

Best Practices Award Analysis

For the Market Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Growth Strategy Excellence: Company demonstrates an ability to consistently identify, prioritize, and pursue emerging growth opportunities

Implementation Excellence: Company processes support efficient and consistent implementation of tactics designed to support the strategy

Brand Strength: Company is respected, recognized, and remembered

Product Quality: Products or services receive high marks for performance, functionality, and reliability at every stage of the life cycle

Product Differentiation: Products or services carve out a market niche based on price, quality, or uniqueness (or some combination of the three) that other companies cannot easily replicate

Technology Leverage: Company is committed to incorporating leading-edge technologies into product offerings to enhance product performance and value

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and of high quality

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- **Growth Pipeline:** Continuous Flow of Growth Opportunities
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- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

