

Exclusive interview with **CHRISTIAN OCHSENBEIN**

Swiss Battery Technology Center,
Partner, Executive Board Member at
Switzerland Innovation Park
Biel/Bienne



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**ICM: Please present the activities of Switzerland Innovation Park Biel/Bienne in a few words.
Christian Ochsenbein:**

The Switzerland Innovation Park Biel/Bienne (SIPBB) is an important innovation center in the heart of the bilingual city of Biel-Bienne, which is known for its watchmaking and precision industry. It serves as a dynamic environment where around 500 professionals work, research, and study. The park is part of the Switzerland Innovation Foundation's national network, designed to foster industrial and applied research and development.

SIPBB comprises four specialized research centers:

- **Swiss Smart Factory (SSF):** This is Switzerland's first test and demonstration factory focusing on Industry 4.0, offering a platform for businesses, particularly SMEs, to explore and implement new technologies in smart manufacturing.
- **Swiss Healthtech Center (SHTC):** Facilitates interdisciplinary projects in medical and health technology, bringing together researchers, medical professionals, and industry experts.
- **Swiss Advanced Manufacturing Center (SAMC):** Focuses on advanced manufacturing technologies, particularly metal additive manufacturing with lasers.
- **Swiss Battery Technology Center (SBTC):** Offers comprehensive system development for energy storage solutions, understanding the ageing behavior of batteries and solutions for upstream processes in battery recycling.

**ICM: You are hosting a part of the plant tour at ICBR24, what will our delegates visit?
Christian Ochsenbein:**

Visitors can explore two laboratories within the Swiss Battery Technology Center:
The **Battery De-Manufacturing Lab** and the **Battery Testing Lab**. In the Battery De-Manufacturing Lab, we research solutions for the automatic dismantling of EV batteries. Meanwhile, the Battery Testing Lab offers insights into battery aging processes, SoC and SoH algorithm, and strategies to extend battery life. Additionally, we investigate how batteries can be effectively operated in their second life

**ICM: How is the Switzerland Innovation Park Biel/Bienne (SIPBB) contributing to the advancement of battery technology and sustainability, and what are the key initiatives at the Swiss Battery Technology Center aimed at enhancing recycling rates and safety?
Christian Ochsenbein:**

We are currently working primarily on the non-destructive automatic dismantling of EV batteries. Our aim is to use artificial intelligence to dismantle batteries with robots. We are using Reinforcement Learning (RL) and the Metaverse to train the dismantling activities. RL, a machine learning method, allows robots to learn by performing actions and receiving feedback, improving through trial and error to maximize rewards. This approach enables robots to autonomously develop skills for dismantling EV battery core components, making them adaptable to dynamic, unstructured environments. Unlike traditional programming, RL fosters flexibility, essential for tasks like unscrewing parts, removing connectors, and handling high-voltage cables. Combining RL with computer vision (CV) and simulations ensures robust training for detecting and interacting with battery parts. By focusing on frequent dismantling tasks, we aim to generalize our methods across various EV battery types, addressing feasibility concerns and ensuring real-world applicability.