

Proposing the construction of an optimum development environment!



Prime Planet Energy & Solutions, Inc.

DX Promotion Div. General Manager
Secondary role: Planning Promotion Dept.,
Value Innovations Field
Mr. Kotani, Manager



Value Innovations Field
Facilities Equipment and Environmental Management G,
Planning Promotion Dept.
Mr. Yano, Group Manager



Value Innovations Field
Green Battery Development Activities Dept.,
Basic Technologies Development Div.
Mr. Tsujiko, Group Manager,
Basic Technologies Development 2G



◆ What type of work do you do?

Mr. Kotani: I've been in charge of everything digital for a few years. I am now doubling as the general manager for the Planning Promotion Dept. in the Value Innovations Field, which supports the foundation of DX promotion and research and development.

Mr. Yano: I am in charge of the maintenance and management of the facilities, motive power, and utilities at the Kobe base, and also handle the promotion of EMS activities. I also serve as the contact point for the support of facility planning in Kobe and Kasai.

Mr. Tsujiko: I work on the development and storage of basic technology to be used in future batteries.

◆ Tell us about the challenges you face in your work

Mr. Tsujiko: Since the establishment of our company in 2020, we have been excited to work more actively on new technologies for the future. To make that happen, we first need a development environment, but we have hit a wall both in terms of promotion and start-up production.

Mr. Yano: A developer's main job is to produce development results. We need the equipment to make that possible. However, preparing such equipment is not directly related to our work as developers, so we don't like to be too involved in its installation. Most cases like this usually don't have very good results. Of course, there's also the matter of experience. Those who usually install such equipment are more competent. There are also issues that arise such as oversights in registration with authorities, forgetting to incorporate safety specifications, and not being able to adequately train or manage the operators. We wanted to do something about these issues.

Mr. Kotani: When installing equipment at Toyota Motor Corporation (the company that I was assigned from) for research and development purposes, we're always courteously supported by professionals experienced in handling equipment and utilities, so we developers were able to install the necessary testing equipment even without the basic knowledge pertaining to equipment or electricity. At my current company, however, developers have to manage the entire process themselves, from establishing the specifications and arranging the required utilities to ensuring work safety, filing the necessary government paperwork, and coordinating construction activities. In addition, there was no clearly defined process for introducing new equipment, so we often didn't know how to proceed.

◆ What are the requirements for solving issues?

Mr. Tsujiko:

- 1)The ability to work safely and efficiently within a limited space.
- 2)The ability to making previously impossible tasks possible to advance future development.
- 3)The ability to digitally store input data, conditions, and output data.

Mr. Yano:

- 1)We need to clearly identify the purpose and goals, and determine what is genuinely necessary.
- 2)We then need to define the equipment specifications required to realize the concept.
- 3)We must provide support for space coordination, schedule coordination, regulatory filings, and coordination with contractors.



Coating equipment installed in a dry environment

Adding value to the implementation environment by accurately understanding customer needs and conditions on-site!

◆ What were the benefits of working with TTDC?

Mr. Tsujiko: When we truly need help, they are always there for us. Whenever issues arise or we need advice, they come back with multiple concrete proposals that make it easier for us to make decisions. Also, when development engineers are at risk of overlooking regulatory requirements, they help identify and list potential issues from an expert perspective. Having those options made it much easier for us to evaluate them and make informed decisions.

Mr. Yano: I really value the way TTDC worked closely with our team to clearly define the requirements for new equipment and provides reliable support throughout each step of the project, ensuring everything stays on track.



Roll press installed in a dry environment

◆ What were the results of engaging TTDC?

Mr. Tsujiko: There were three main benefits. The first of these was installing a pressing machine. Despite the limited installation space, they incorporated our requirements into the design, such as accommodating a long drying oven and allowing for a roll press with larger rollers. During the technology development stage, we also wanted to press short electrode samples rather than only continuous rolls, so it was necessary to balance those requirements with the available space. Of course, they also took operator safety into account and developed dozens of layout proposals before arriving at the final design. As a result, our work has been running very smoothly, and we're able to produce electrodes safely and efficiently. I believe that's the result of TTDC's persistence in developing and refining the layout. The second benefit was the ability to perform various types of measurements for chemical reaction systems. They looked into various manufacturers and discussed with us how to measure and integrate flow meters and gas sensors. They also helped us consider installation methods and configurations that would minimize the impact on the reaction system. We believe that being able to proceed with development while collecting data with future digitalization in mind, rather than simply carrying out synthesis as usual, will have a significant impact on accelerating future development. Finally, when introducing powder-handling equipment, we had two requirements: to create a safe working environment and, at the same time, to maintain work efficiency. A single, centralized exhaust system alone was not sufficient, so TTDC provided several proposals, including opening windows locally during operation.

We were then able to select the solution that best suited our needs. Among all the solutions I have seen, including those from other companies, I believe this equipment achieves the best balance between safety and work efficiency.

Mr. Yano: One of the things we are very pleased about is that we have been able to reduce the amount of time developers spend on equipment implementation. More importantly, however, they have provided additional value by helping prevent oversights in regulatory filings, ensuring equipment and construction safety, and reducing investment costs through clearer specifications.

Mr. Kotani: The key stakeholders in equipment implementation are the users (developers), site personnel, and suppliers. I believe TTDC's role is to effectively bridge the different perspectives of these three parties and facilitate efficient equipment implementation. One visible result has been the reduction in cost. For one piece of equipment, we were able to reduce costs by 8% compared with the original plan by accumulating a series of small improvements. We are extremely grateful for their contribution, which was made possible not only by their expertise as equipment professionals, but also by their thorough understanding of our business processes.

◆ What are your expectations for TTDC going forward?

Mr. Tsujiko: Now that we can operate safely and collect data from the equipment, we would like to further expand our use of data and accelerate development.

Mr. Yano: From the perspective of equipment planning support, we would appreciate it if TTDC could help us strengthen our internal capabilities so that, over time, our members can develop a certain level of expertise in equipment implementation.

Mr. Kotani: TTDC is primarily supporting us with equipment implementation, but we would ultimately like to connect that support to the creation of new development themes. To win the competition in battery development against Chinese and South Korean companies, we need to accelerate our efforts even further. We would like to explore win-win opportunities that utilize TTDC's strengths in areas such as data analysis, AI, and system control, and connect them to faster technological innovation.



Back row, from the left: Mr. Imai (TTDC), Mr. Hamajima (TTDC)
Front row, from the left: Mr. Yano, Mr. Kotani, Mr. Tsujiko