

Research and Development

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Core Mission

- Create new business that will become the fourth pillar after industrial materials, building materials, and engineering using new technology development focusing primarily on the resolution of social issues
- Develop the existing businesses and newly conduct advanced R&D to use as the driving force for business expansion
- Embody the product strategies fused together with each business' strengths

Focused Measures

- Utilize R&D center and promote co-creation with those outside the company (Open innovation)
- Expand investments in R&D
- With the company-wide medium- to long-term development direction, promote company-wide product development



R&D Theme

The R&D Center works on Ecology and Improvements in the Quality of Space in four sectors and promotes R&D that will contribute to a sustainable society.

Industrial materials

Further improvement of the existing industrial materials and development of industrial materials that will become a key to capturing new markets

- High functionality of the wooden boards and inorganic boards
- Wood building material utilization development in the new field
- Technology development to use unused resources
- R&D of industrial materials for new markets other than building materials



Building materials

Development of new secure and safe building materials that will be needed by society in the future

- Development of environment-conscious building materials
- Development of high functional paints and painting technology
- Development of new construction technique for building materials
- Adding a high value to wood building materials



Spatial environment

Development of spaces and building materials that will realize a comfortable life

- Development of energy-saving and indoor environment improvement technologies
- Analysis by simulation of the thermal, humidity, and cross-ventilation environment



Assay evaluation

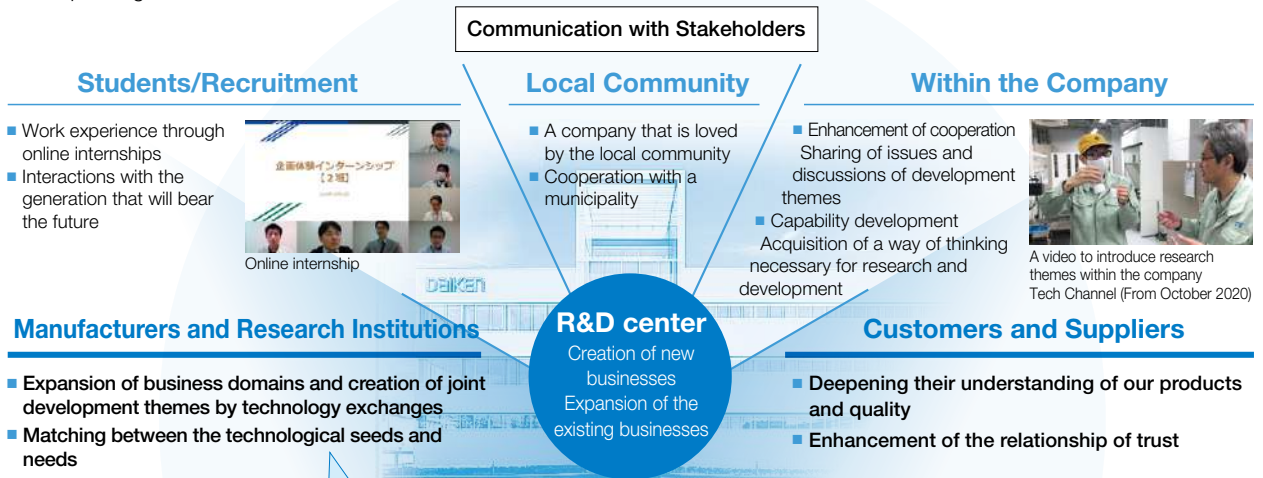
Various measurements and analyses of spaces and building materials using the expertise cultivated in R&D

- Measurement of air quality
- Sound insulation performance evaluation
- Building materials' heat generation test
- Asbestos analysis



Co-Creation Activities Centered on Daiken R&D Center

The Daiken R&D Center was established in October 2018 as the base to not only conduct our unique technology development but also fuse together with a wide variety of technologies in the world, as well as to deploy co-creation activities. While not being able to sufficiently fulfill its function as the place for communication with stakeholders during the COVID-19 crisis, we view the situation as the opportunity to establish a new co-creation method and proceed with the initiatives aimed at speeding up the far-sighted research and development and expanding the domains.



A video to introduce research themes within the company
Tech Channel (From October 2020)

Building materials development that used the Cellulose Nanofibers (CNF) technology jointly proposed with RISHO KOGYO CO., LTD., was adopted as the NEDO-subsidized project

Toward the new CNF application distribution, the two companies will cooperate in working on research and development and aim at developing highly functional and high-quality interior building materials that take advantage of the characteristics of CNF, such as lightweight and high strength.

Concluded a Comprehensive Partnership Agreement with Okayama University

In December 2020, with a view to implementing collaborative researches, promoting human resource development through interactions among researchers, deepening cooperation, such as mutual support, and contributing to achieving SDGs by solving social issues on a global scale, we concluded a comprehensive partnership agreement with Okayama University.

R&D Center's Research and Development that Embody the Group Corporate Philosophy

As a division that embodies the group corporate philosophy with the mission of Creating a Wonderful Future with our Technology, Ideas, and Passion, the R&D Center has been conducting research and development to pursue the possibilities of sustainable industrial materials and a safe, secure, healthy, and comfortable space. As the specific themes, we have been focusing on the four fields of industrial materials and building materials to effectively use timber and discover new functions and possibilities, the spatial environment for people to spend the time comfortably, and assay evaluations, which form the base of these themes above. Through the initiatives at our companies and co-creation activities that actively utilize open innovations with a wide variety of stakeholders, the center proceeds with research and development aimed at improving medium- to long-term corporate value and contributing to a sustainable society.

Pursuit of Potential of Sustainable industrial materials

GLOW EARTH born by taking on a new challenge with the long-term vision being the point of origin

In the long-term vision GP25 formulated in 2015, a challenge to a new field without being bound by conventional ideas was presented, and the R&D Center has accelerated research and development to realize this and the initiatives toward commercialization. GLOW EARTH that we launched in January 2021 was born from such initiatives. While exploring new possibilities of timber, we conceived an idea to use wood fibers for cultivating plants and realized the commercialization after spending about five years for research and development. GLOW EARTH that makes the factor substances inhibiting the growth of plants harmless using domestic timber as raw material and that we realized industrial production opened a way to expand into the field of agricultural and horticultural materials. While agriculture has been becoming sophisticated by utilizing IT in recent years, as stable quality for medium culture for cultivation is required, we also aim to contribute to stable production of agricultural products by introducing it to large-scale agricultural facilities.



GLOW EARTH



Cultivation experiment

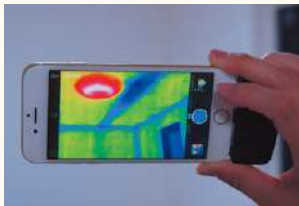
Challenge to CNF to pursue potential of wood fibers toward the future

Furthermore, as the theme toward the future, we have been proceeding with research and development of cellulose nanofibers (CNF) to use wood fibers at the nano-level. Development of high-quality and highly functional industrial and building materials that take advantage of the characteristics of CNF can be said to be truly the ultimate technology development to utilize timber that we have aimed for. We take advantage of collaborative researches with a university and the relationship of capital and business alliance with ITOCHU Corporation, have realized a collaboration with a company that had an intention of wanting to widely make use of this technology, and in October 2020, this was adopted as the NEDO (practical development of industrial technologies)-subsidized project. For the fields where plastic or metal is used because timber does not have sufficient strength, if we can replace such materials with those using CNF in the future, we will be able to more significantly contribute to a sustainable society. By effectively using wood resources continuously in the future, the Daikens Group will pursue new possibilities with an eye toward the future.



Strength test

Pursuit of a Safe, Secure, Healthy, and Comfortable Space



Thermal image measurement

Environmental analytical technique to know everything about factors that create spaces

In addition to the pursuit of the possibilities of industrial materials, we have been proceeding with research and development to give a new function to industrial and building materials. We grasp the spatial environment based on the assay evaluation technology, delve into it from the perspectives of the temperature, humidity, and sound environment that are essential when people spend time comfortably, and at the same time, we conduct assay evaluations toward making responses to harmful substances, such as asbestos and formaldehyde. Above all, one of the themes that we have been particularly focusing on in recent years is temperature and humidity. While further saving of energy in buildings is required toward the realization of a decarbonized society, we have been proceeding with research projects to simultaneously pursue the comfortableness of livelihood and the reduction of consumption energy by the functions of industrial and building materials.



Microorganism measurement room in the R&D Center

*The R&D Center has Biosafety level 2 experiment facilities that can handle the influenza virus and food poisoning bacteria and researchers who have high expertise are working in the facilities.

Beyond antivirus and respond to changes over time

Antivirus is another theme that we have been focusing on in recent years. We focused on the antiviral function in the wake of the outbreak of the novel influenza in 2009 and started collaborative research with the Medical School, Okayama University in 2011. In the following year, we put the function to practical use as the antiviral function BIOTASK ahead of the industry. With the COVID-19 outbreak, we reviewed the antivirus mechanism and have been proceeding with the initiatives aimed at contributing to mitigate the threat of virus. Performance that people require for spatial environment has changed with times. By grasping the spatial environment from the perspective of what performance will be necessary in the future and proceeding with technology development of functional building materials that constitute the space, the Daikens Group continues to conduct researches that will lead to creating a safe, secure, healthy, and comfortable space.