# 5 Growth Industries in Kansai

# 5-1 Green Innovation (Storage Batteries)

- Kansai is a major base for development and production in storage battery industries such as lithium-ion batteries and Redox Flow Batteries using vanadium.
- Battery manufacturers, manufacturing equipment makers, and material suppliers are concentrated in the region, accounting for over 30% of the national market share.

#### Many lithium-ion battery production bases are located in Kansai!

Automotive (and consumer/industrial, etc.) Lithium-ion battery production base Consumer/Industrial Lithium-ion battery production base



Examples of companies working on next-generation storage batteries

# **Panasonic**



▲Scheduled to be produced at Wakayama Plant

A new production facility for next-generation automobile lithium-ion batteries (4680) has been set up at the Wakayama plant, and preparations for mass production are now complete.





Long-life, High-safety Storage Battery "Redox Flow Battery"

SUMITOMO

The company develops and manufactures Redox Flow Battery, which stabilize the power grid, achieve load leveling through power peak shifting, and enhance power resilience, all of which are necessary to expand the introduction of renewable energy.

### Evaluation and Testing Facilities Supporting the Kansai Battery Industry

Evaluation and testing facilities are available to support all stages of the battery industry, from the research phase to the product phase.

# *<b>CLIBTEC*



Consortium for Lithium-Ion Battery Technology and Evaluation Research Center (LIBTEC)



▲ Equipped with prototype and evaluation equipment

#### LIBTEC Director-General Dr. Yoshino Akira

•2019 Nobel Laureate in Chemistry • Graduated from the Graduate Schools of Engineering at Kyoto University and Osaka University • Honorary Fellow, Asahi Kasei Corporation

# nite National Institute of Technology and Evaluation



# National LABoratory for advanced energy storage technologies (NLAB)

World's Largest Thermostatic

"Large Storage Battery System Test and Evaluation Facility" Compatible with container-sized storage battery systems

\*MIDDLE : Multiple Innovation-Directive Development and Leading-edge Evaluation

To assist companies in developing new materials for lithium-ion batteries, the consortium creates standard battery models in line with battery market trends, creates material evaluation methods, and performs evaluation analysis.

41 companies, including battery manufacturers, material chemical companies, and automotive companies, are involved as members.

#### The NLAB, located in Suminoe-ku, Osaka, can safely handle combustion, explosion, and toxic gases generated during the testing of lithium-ion batteries, allowing the testing and evaluation of large storage battery systems to be conducted in NLAB's indoor type testing facility, regardless of weather conditions.

Various tests, including seismic, transportation vibration, crush, and drop tests, can also be conducted.

Additionally, a new advanced technology evaluation and experimental facility (MIDDLE Chamber) for next-generation batteries, such as solid-state batteries, has been established. Testing services commenced in October of 2024.

# 5 Growth Industries in Kansai

#### **Green Innovation (Hydrogen)** 5-2

- Kansai is home to many manufacturing companies, including heavy industries in port areas, and has high potential for the demand and supply of hydrogen.
- Various companies in Kansai are developing technologies in the hydrogen field by using their core technologies and are leading the country in many hydrogenrelated demonstration projects.

### Port areas in Kansai working toward carbon neutrality



#### Data collection of hydrogen-related companies in Kansai



We have compiled data showing examples of companies based in Kansai that have entered the hydrogen field. https://www.kansai.meti.go.jp/5-1shiene/smart\_energy\_initiative/hydrogen\_data/english/r6\_h2data\_en\_overall.pdf

#### "Suiso Frontier" to transport liquid hydrogen, including hydrogen derived from brown coal, from Australia to Japan, and unload it at the liquid hydrogen cargo handling terminal "Hy touch Kobe" (Kobe City). Japan's first commercial liquid hydrogen production plant

#### OHydro Edge Co., Ltd. Sakai City, Osaka Prefecture

Hydro Edge began commercial operation in 2006 as Japan's first commercial liquid hydrogen production plant, contributing to a stable supply of liquid hydrogen in the country. Expansion work was carried out in 2020, and the plant's annual liquid hydrogen production capacity has reached 60 million m<sup>3</sup>, making it the largest plant of its kind in Japan.

Current projects for public implementation of hydrogen in various parts of Kansai

#### Demonstration of RE100 solutions using hydrogen

#### OPanasonic Corporation Kusatsu City, Shiga Prefecture

Panasonic's H2 KIBOU FIELD is a demonstration facility for "RE100 solutions", in which aiming to use 100% of the power for site operations generated from renewable resources by using a self-sustaining power system that combines 99 5-kW pure hydrogen fuel cell generators and photovoltaic generators (approx. 570 kW) as well as lithium-ion storage batteries (approx. 1.1 MWh). It has been in operation since April 15, 2022.

# Hydrogen fuel cell ship in action at Expo 2025 Osaka, Kansai, Japan

#### OIwatani Corporation Osaka City, Osaka Prefecture

A hydrogen fuel cell ship runs on hybrid power of electricity generated by fuel cells and plug-in power. It uses only hydrogen and oxygen from the air, and emits zero CO<sub>2</sub> during operation. At Expo 2025 Osaka, Kansai, Japan, the first passenger service on a hydrogen fuel cell ship in Japan is scheduled to operate (from Nakanoshima Gate to Universal City Port to the Expo 2025 venue).















### 5 Growth Industries in Kansai

#### Life Science Innovation 5-3

- Since Kansai has long been a center of medicine, it is home to many pharmaceutical company headquarters, foreign-affiliated companies, and medical equipment manufacturers closely working with each other.
- Life science-related institutions are accumulated in Kyoto, Osaka, and Kobe.
- Leading research, such as that on iPS cells, as well as active efforts toward practical application and industrialization, are being conducted.

#### **Concentration of Leading Industry-Academia Collaboration and a Robust Platform for Life Sciences**

#### OMedical Device

Numerous universities and research institutions in the medical field are concentrated in Kansai. there are also many small and medium-sized enterprises with manufacturing technical expertise in various fields.

#### Kansai Medical Device Industry Support Network (KMSN)

17 industrial support organizations in Kansai assist companies entering the medical device industry and developing new medical devices.



### OBio-manufacturing

Technologies to produce substances from microorganisms and cells using genetic engineering are expected to contribute to solving social challenges.

#### ■ Biocommunity Kansai (BiocK)

BiocK aims to build the ultimate ecosystem in the bio-industry based in Kansai.



#### ORegenerative Medicine

At institutes such as the Kyoto University iPS Cell Research Institute (CiRA), Osaka University, and Kobe University, worldleading research and efforts toward the industrialization of regenerative medicine are underway.



Center for iPS Cell Research and Application, Kyoto University (CiRA)

#### Nakanoshima Oross

To expedite the practical application and industrialization of cutting-edge future medicine, medical institutions, companies, startups, and support organizations are gathered under one roof. Nakanoshima **Qross** 



■ KRIC: Kansai Regenerative medicine Industrial consortium

KRIC supports corporates collaboration to accelerate the realization of regenerative medicine.



A large cluster of pharmaceutical company headquarters		Concentration of research and development bases and core institutions	
🗢 Sumitomo Pharma	Sumitomo Pharma Co., Ltd.	Kansai Branch of Pharmaceuticals and Medical Devices Agency (PMDA) Kansai Branch of Japan Agency for Medical Research and Development (AMED) Center for iPS Cell Research and Application, Kyoto	
	Shionogi & Co., Ltd.		
KOBAYASHI	Witsubishi Tanabe Pharma		
Takeda Pharmaceutical Company Limited		University	
010	ONO PHARMACEUTICAL CO., LTD.	Saito (International Culture Park) <life park="" science=""></life>	
🐺 FUSO Pharmaceutical Industries, Ltd.		KOBE Biomedical Innovation Cluster	
Santen	Santen Pharmaceutical Co., Ltd.	RIKEN	
Medical equipment manufacturers concentrated in this area		A large cluster of pharmaceutical company headquarters	
OS4IN 🚺	NIPRO CORPORATION	AstraZeneca	AstraZeneca K.K.
OMRON	OMRON Corporation	Lilly	Eli Lilly Japan K.K.
🕀 SHIMADZU	SHIMADZU CORPORATION	BAYER RR R	Bayer Yakuhin, Ltd.
sysmex	SYSMEX CORPORATION	OCON	ICON