

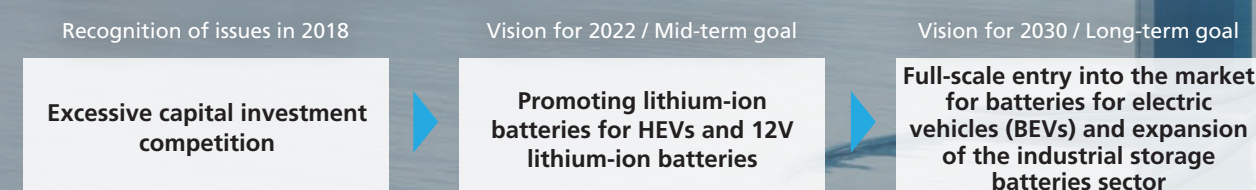
## Automotive Lithium-ion Batteries

### Long-term strategy (Vision for around 2030)

#### Long-term vision

- Establish our position and improve profits through enhancement and evolution of alliances with reliable partners
- Promotion of lithium-ion batteries for HEVs and 12V lithium-ion batteries
- Full-scale entry into the market for batteries for electric vehicles (BEVs)
- Expansion of the industrial storage batteries sector

#### Recognition of issues and future vision



#### SWOT

|  |   |
|--|---|
| <b>S</b><br>Strengths <ul style="list-style-type: none"> <li>■ Stable supply of lithium-ion batteries for HEVs</li> <li>■ Advance expansion into 12V lithium-ion battery market</li> <li>■ Extensive track record of supplying to Japanese and European automakers</li> </ul>      | <b>O</b><br>Opportunities <ul style="list-style-type: none"> <li>■ Environmental regulations such as ELV Directive in Europe and NEV in China</li> <li>■ Accelerated offering of full-line of electric vehicles (BEVs, PHEVs, HEVs)</li> </ul>                                |
| <b>W</b><br>Weaknesses <ul style="list-style-type: none"> <li>■ Stable material procurement capability</li> <li>■ Ensuring management resources that reflect the growth of lithium-ion battery market</li> <li>■ Competitiveness in high capacity lithium-ion batteries</li> </ul> | <b>T</b><br>Threats <ul style="list-style-type: none"> <li>■ Increased competition within the lithium-ion battery business</li> <li>■ Increase bargaining power of suppliers</li> <li>■ Emergence of alternative lithium-ion batteries (all-solid-state batteries)</li> </ul> |

### Leveraging knowledge gained through pioneering product development to deliver corporate value

We have worked on lithium-ion batteries for HEVs and PHEVs, and supplied the world's first lithium-ion batteries for HEVs in mass-produced models. We are proud to have thus contributed significantly to the spread of HEVs, which offer excellent fuel efficiency and are effective in reducing CO<sub>2</sub> emissions. I myself am proud to have been at the forefront of lithium-ion batteries for HEVs over the past 10 years or so, from their development to the launch of Blue Energy Co., Ltd. and subsequently getting it on track.

As we continue to develop products with automakers, we have learned and grown a great deal, including mass production technology and the productization process. I believe that an evolution and deepening of our knowledge is important, both in our business processes and in the process of productization. The accumulated experience of digging deep into specific themes and creating products generates a virtuous cycle that enhances the strength of our employees and the organization as a whole.

Storage batteries will become increasingly essential to society going forward, and our responsibility in this business is significant. We will work to leverage our experience and expertise to make further contributions to society, in the belief that the role expected of us is tied directly to our corporate value.

### Addressing an early, full-scale entry into the BEV market with evolution and deepening

In Japan, we expect demand for HEVs to increase through 2030 and then maintain those levels until about 2035, but starting in 2040 we expect to see a shift to BEVs. This is why, in April 2022, we established a new BEV Battery Development Department within the business unit with the goal of making an early, full-scale entry into the BEV lithium-ion battery market. By setting up a dedicated organization within the business unit that is directly connected with the automakers, we aim to further accelerate development and productization by gaining a direct understanding of automaker's needs. Because of the relationships and trust we have cultivated with the automakers to date, we believe there are many opportunities to enter the BEV lithium-ion battery market. Our goal is to quickly enter that market by deepening our review of our business processes, and by leveraging our accumulated experience and expertise in development and mass-production technologies to evolve our products to satisfy automakers' needs.

### Drafting and executing plans from a long-term perspective for sustainable growth

Since lithium-ion batteries have a long life and are not replaced, new automobiles sales volume directly affects our sales and profit. The Company has worked to optimize our production systems and reduce costs in order to minimize the impact of the drop in new

automobiles sales volume caused by the semiconductor shortage and other factors. We believe we have been successful in doing so. In addition to changes in market conditions, various other risks are expected going forward, including natural disasters, supply chain issues, and country risks. To prepare for such risks, we will work to incorporate further specifics into our business continuity plan (BCP), including how we will ensure stable procurement of raw materials and diversify procurement sources.

Blue Energy second plant began operating in April 2022, and even in the short term we have been receiving inquiries from a variety of manufacturers. To meet this brisk demand, we plan to expand annual production capacity to 70 million cells in the latter half of the 2020s. Lithium Energy Japan Ltd. is also in the process of developing new models, having already received further orders in addition to those for its existing lithium-ion batteries for PHEVs and commercial BEVs. In addition, GS Yuasa is also conducting R&D into next-generation batteries for the post-lithium-ion battery era.

The situation is such that we will be able to forecast operating profit of over 10 billion yen in the not-too-distant future. Looking ahead, we intend to use profits from batteries for HEVs, our current mainstay business, as a source of funding for our next business.

The need for storage batteries is increasing as the world works to achieve carbon neutrality. In this context, we believe our worth as a company lies in solving social issues with storage batteries, including next-generation batteries. We will aim for sustainable growth as we work toward achieving a sustainable society.



**Kenji Kohno**  
Executive Officer  
Business Unit Manager of Lithium-ion Batteries,  
GS Yuasa International Ltd.



## Automotive Lithium-ion Batteries

### Mid-term business policy (Fifth Mid-Term Management Plan)

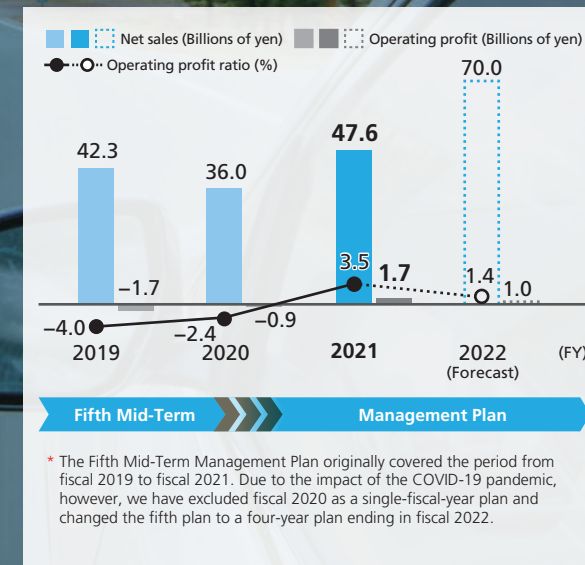
#### Business policy

**Build the foundation for a differentiation strategy with a view to future business expansion by grasping changes in the business environment in advance**

#### Strategy and important tasks

- Focus on lithium-ion batteries for HEVs primarily for Japanese manufacturers, 12V lithium-ion batteries for European manufacturers, and industrial-use lithium-ion batteries
- Strengthen coordination with existing customers for long-term dealings involving lithium-ion batteries for PHEVs and other BEVs
- Promote development of future technologies that will differentiate us from competitors

### Change in performance and plans



### FY2021

#### [Overview]

- **Blue Energy**
  - Sales volume of lithium-ion batteries for HEVs increased due to start of trading with Toyota Motor Corporation from the previous fiscal year and the expansion of adopted models
- **Lithium Energy Japan**
  - Strong sales performance of vehicles equipped with lithium-ion batteries

### FY2022

#### [Initiatives]

- **For HEVs**
  - Responding to increased demand by starting operations of Blue Energy second plant
- **For PHEVs**
  - Stable supply to existing customers and sales expansion
  - Expansion of sales activities
- **For BEVs**
  - Stable supply and cost reduction of lithium-ion batteries for commercial BEVs
  - Accelerating full-scale entry into the BEVs market through the establishment of the BEV Battery Development Department

### Progress in business strategies

#### 1 Increased sales and profits due to strong sales

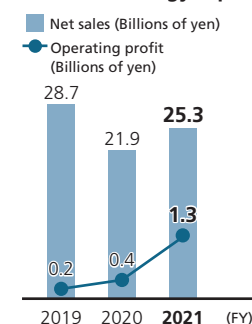
##### ● Lithium Energy Japan

Due in part to strong sales performance of vehicles equipped with lithium-ion batteries, sales volume of lithium-ion batteries for PHEVs increased, resulting in increased sales and profits.

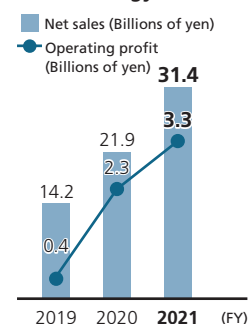
##### ● Blue Energy

Due to an increase in the number of battery-equipped models for Honda Motor Co., Ltd. and Toyota Motor Corporation, sales of lithium-ion batteries for HEVs were favorable, resulting in increased sales and profits.

##### ● Change in net sales and operating profit of Lithium Energy Japan



##### ● Change in net sales and operating profit of Blue Energy

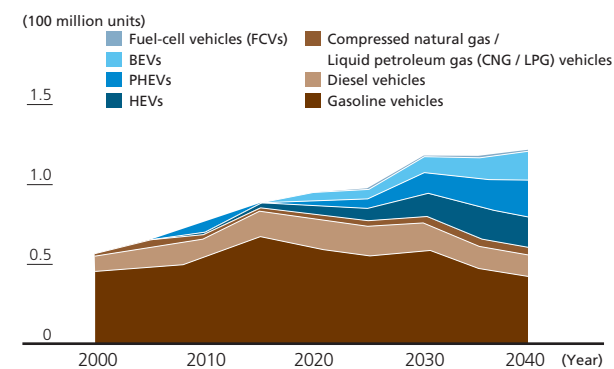


### Market data

#### 2 Accelerating electrification of automobiles

Policy moves toward carbon neutrality in countries around the world are accelerating the shift to electrification of automobiles. The market for HEVs, a particular focus for automakers—primarily in Japan—is expected to expand until about 2030. It is expected that, following this, the transition to BEV will advance gradually. We are also promoting product development with the aim of an early, full-scale entry into the BEV lithium-ion battery market.

##### ● Global market forecast for automobiles

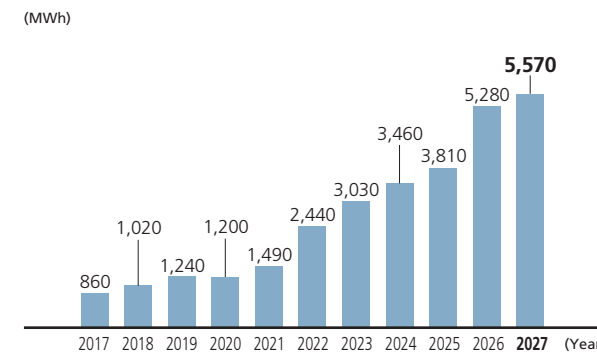


### Market data

#### 3 Production volume of lithium-ion batteries for HEVs trending upward

Production of lithium-ion batteries for HEVs has continued to increase year to year. In Japan in particular, demand for lithium-ion batteries for HEVs is expected to grow over the medium to long term, in part due to the strategy of Japanese automakers aimed at achieving the goal of electrification of all new automobiles by the mid-2030s. At the Company too, we are responding to the demand from Japanese automakers by expanding our production capacity.

##### ● Change in production volume of lithium-ion batteries for HEVs

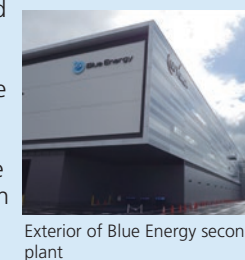


### TOPIC

#### Blue Energy second plant started operations in April 2022

In order to respond to the growing demand for HEVs, mainly by Japanese automakers, operations of Blue Energy second plant were started in April 2022. The second line is expected to be operational in the second half of fiscal 2022, and the Company plans to expand its production capacity to 70 million cells per year in the second half of the 2020s.

In the future, it is expected that there will be further expansion in adoption of models by existing customers and we will continue to strengthen our sales activities to acquire new customers.



##### ● Blue Energy's production capacity

Increased about **3.5 times** compared with FY2020



**FY2020**  
20 million cells / year

**Late 2020s (planned)**  
70 million cells / year

**Second half of FY2022 (planned)**  
50 million cells / year