

Business Briefing Automotive Products Business

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June 8/10, 2022

Furukawa Electric Co., Ltd.

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FURUKAWA ELECTRIC CO., LTD.

1. 2025 Mid-term Plan
 - (1) Policy and vision
 - (2) Business environment and business strategy
 - (3) Business plan (FY21 actual, FY22 forecast, FY25 forecast), FY22 product strategy / Priority initiatives
2. Product strategy
3. Initiatives for SDGs centered on becoming carbon neutral

Appendix – Product overview

1. 2025 Mid-term Plan (1) Policy and vision

Contribute to becoming carbon neutral and the evolution of automobiles through energy management, lightweight and response to safety. Develop a lineup of next-generation products that include the domain combining energy, information and mobility.

2025 Goal

Realize growth through strengthening the businesses designed to solve social issues



Social issues

Reduce traffic accidents, Realize a carbon-free society, Realize more resilient traffic infrastructure



Vision directed at achieving Furukawa Electric Group Vision 2030

Today

Supply wire harnesses and components mainly to manufacturers of four-wheel vehicles.

【Wire harness】

Business environment

- Increased customer needs for lighter weight
 - Accelerated shift to EV in response to the trend toward carbon neutral
- Demand assumption: CAGR of +4–5% (Estimate by Furukawa Electric)
 - Impact of the semiconductor shortage is expected to remain ongoing until FY23
- Continued supply chain issues
 - Further BCM related requirements from customers
 - Soaring transportation expenses will remain prolonged

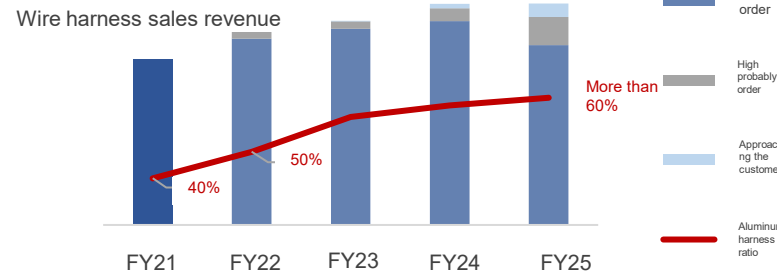


Business strategy

Maintain superiority in aluminum harnesses
 ⇒ **Expand the harness business and increase profitability**

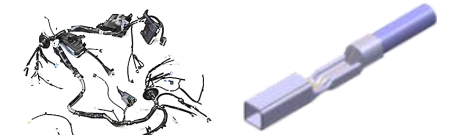
Reap the benefits from the investments in increased production

Aluminum wire harness use
 Expand from 56 models of 6 manufacturers in the end of FY21 to 100 models of 8 manufacturers in FY25



Initiatives for realizing the strategy

- Secure orders and make α terminals the defacto standard
 ~Superiority & high reliability~
- Excellent corrosion resistance of the α terminals, and integrated production from the materials to laser machining
 - Manufacturing the aluminum conductor wire from the casting process



Prepare a response for next generation wiring systems (from FY25 onward)

Promote redundancies/ resilience in the supply chain
 Enhance the supplemental production systems at multiple sites

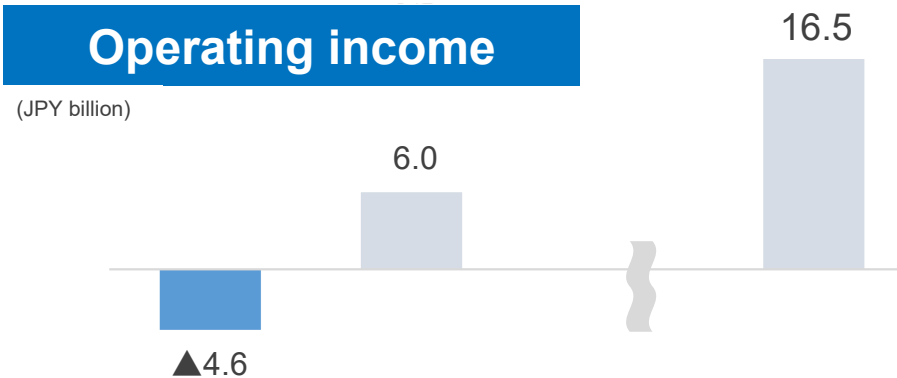
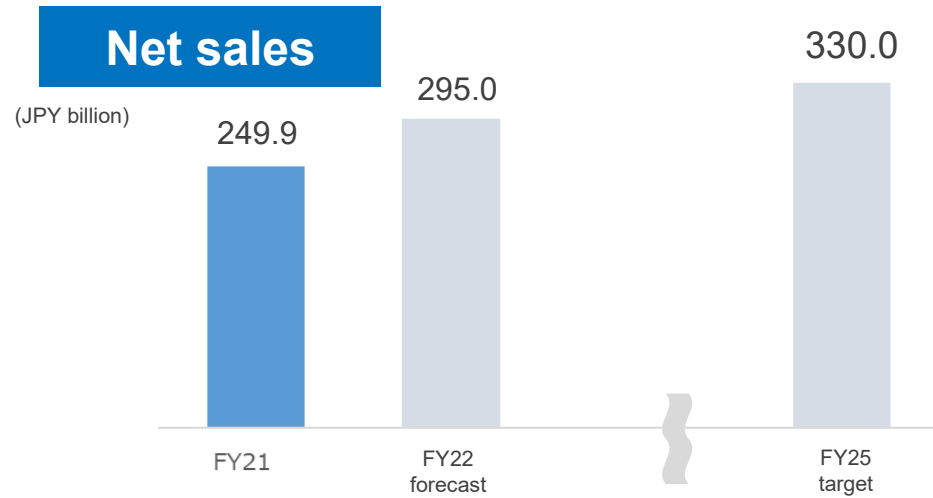
Bridge production, optimized production network
 Secure “strategic space”
 Reduce required manpower and space through automation

Logistics response
 Secure multiple routes and containers

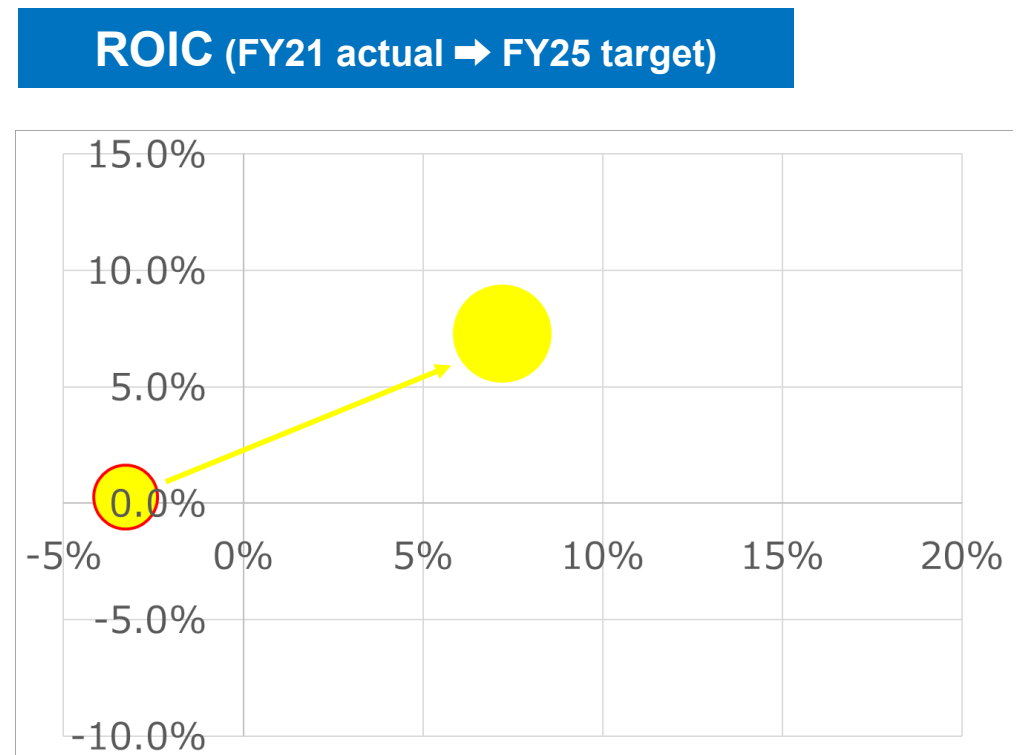
Appropriate inventory
 With consideration for BCM, reestablish appropriate inventory levels in partnership with customers

【Functional components】 Will be explained separately in the product strategy

2025 Mid-term Plan Net sales and operating income forecast



(JPY billion)	FY2021 actual			FY2022 forecast			FY2025 target		
	Net sales	Operating income	Profit margin	Net sales	Operating income	Profit margin	Net sales	Operating income	Profit margin
	Automotive Products & Batteries	249.9	▲4.6	▲1.9%	295.0	6.0	2.0%	330.0	16.5



Vertical axis: Net sales CAGR (FY17-21→FY21-25)
Horizontal axis: ROIC (FY21→25) ※ Bubble outlined in red indicates a negative figure
Bubble: NOPAT (FY21→25)

	FY21	FY22 forecast	FY25 target
Average market price of copper (JPY/kg)	1,136	1,260	1,085
Average exchange rate (JPY/USD)	112	120	110

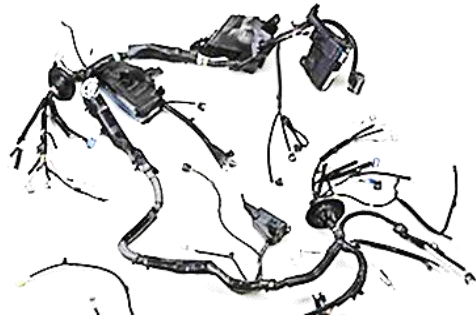
(3) Business plan, product strategy / Priority initiatives

Product strategy		Main issues and initiatives	
Wire harness	<ul style="list-style-type: none"> Expand the scope of aluminum harness applications (seat W/H, wiring inside the battery pack, etc.) Further promote production automation (BCM, improved quality) Contribute to reducing CO2 throughout the product life cycle 	<p>(1) Strengthen the ability to respond to change and variability</p> <p>【Management】</p> <ul style="list-style-type: none"> Work with the customer to establish a production, inventory and logistics system that can quickly adapt to variation in net sales <p>【Buying】</p> <ul style="list-style-type: none"> Promote procurement from multiple suppliers <p>【Making】</p> <ul style="list-style-type: none"> Bridge production at multiple sites, and possess back-up facilities Promote automation and space saving from the perspective of BCM <p>【Carrying】</p> <ul style="list-style-type: none"> Optimize logistics LT through the use of multiple routes <p>【Possessing】</p> <ul style="list-style-type: none"> Optimize inventory based on logistics LT and the production system <p>【Selling】</p> <ul style="list-style-type: none"> Incorporate the soaring raw materials prices and logistics expenses in the sales price, including the application of market based pricing 	
SRC	<ul style="list-style-type: none"> Respond to the evolution of automobiles (higher speed, response to steer by wire, etc.) 		
BSS	<ul style="list-style-type: none"> Evolution of the features and functions that contribute to improved fuel efficiency/power consumption and securing reliable power supply Develop new functions such as fault detection 		
Radar	<ul style="list-style-type: none"> Expand vehicles adopting high performance next generation products (MMR2) Newly enter the construction/agriculture equipment, forklift and traffic infrastructure markets 		
High voltage products	<ul style="list-style-type: none"> Develop products that support higher voltages/ large currents and the growing electric vehicle market Develop technology and improve price competitiveness of power cable, connector, exterior and wiring components 		
Combined domain New business	<ul style="list-style-type: none"> Study new businesses in the domain combining mobility, information and energy 		

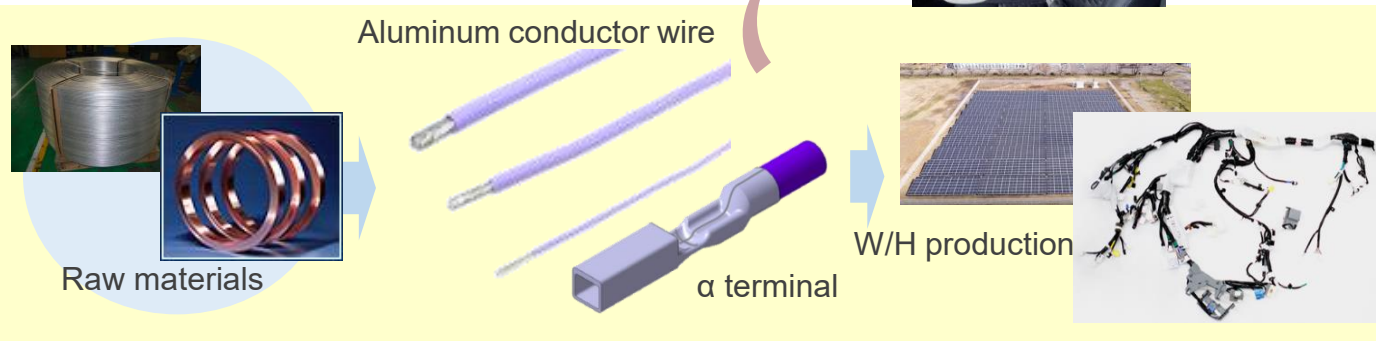
2. Product strategy (1)

Lightweight

Wire harness



Use green energy from the raw material through W/H production



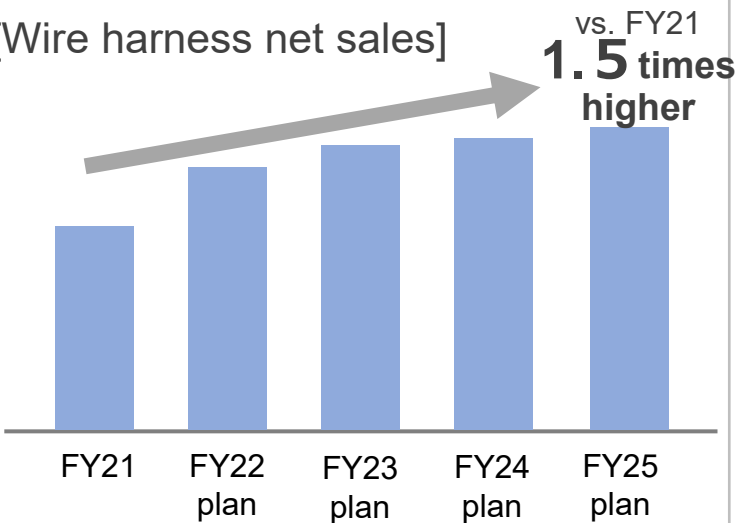
Expand applications to locations requiring high environmental durability

Improve fuel efficiency by reducing vehicle weight



Reduce CO2 emissions throughout the value chain

[Wire harness net sales]



Strategy

- Expand the scope of aluminum harness applications (seat, inside the battery pack, etc.)
- Promote further production automation (BCM, improved quality)
- Contribute to reducing CO2 throughout the product life cycle

Initiatives

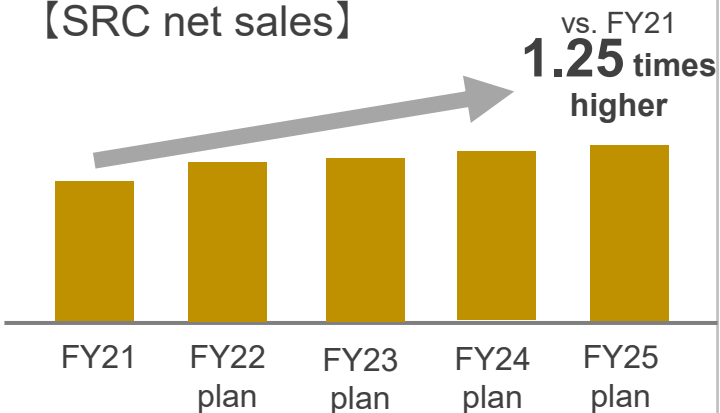
- Leveraging the excellent corrosion resistance of the α terminal, expand the use of aluminum to locations requiring high environmental durability, and increase sales of the α terminal
- Directed at promoting automation, accelerate cooperation with OEM from the design stage
- Promote CO2 reductions through the use of green energy throughout the value chain (Raw materials – conductor wire / component production – W/H production)

2. Product strategy (2)

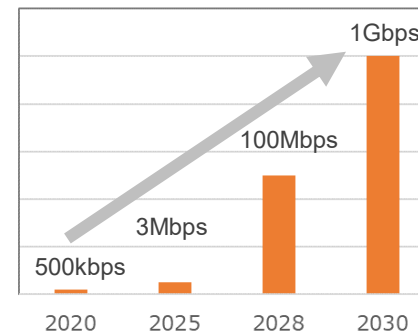
Safety SRC (Steering roll connector)



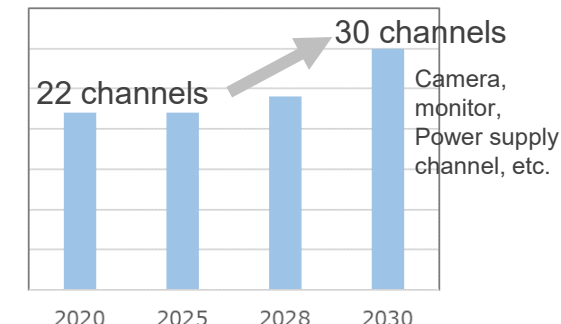
【SRC net sales】



SRC internal communications speed (Estimate)



Number of channels in the SRC (Estimate)



Strategy

- In addition to powering airbag activation, steering switches and heated steering wheel functions, evolve the SRC to include functions that contribute to advances in high-speed communications and safety required for CASE
- Leveraging the position as the leader in global share, grow the business through stable supply to the global market

Initiatives

- In addition to technological strengths developed for SRC, including materials and flat wires, utilize the high frequency technology accumulated by Furukawa Electric Group in the telecommunications, broadcast and copper foil domains to achieve further differentiation
- Strengthen BCM through cooperation between the 6 manufacturing sites located worldwide

2. Product strategy (3)

Safety

Energy management

BSS® (Lead battery state detection sensor)



Example of equipping in a vehicle

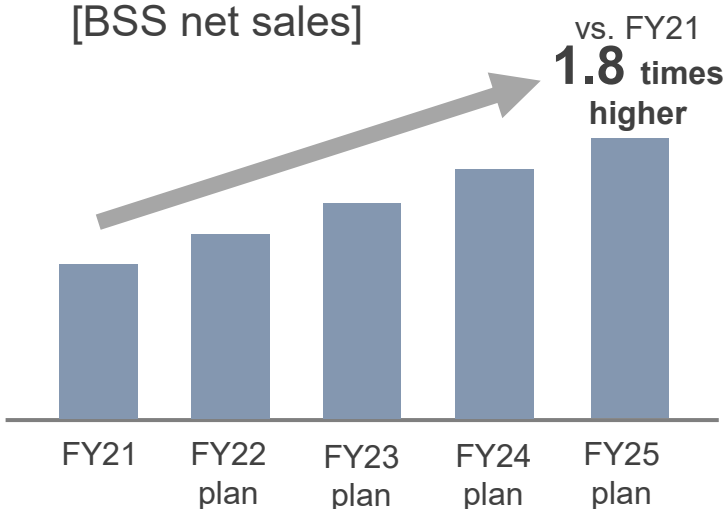
Strategy

- In addition to optimizing lead battery charging and discharging, expand the applications for launching the system safely, definitely and risk-free. Respond to the need for power supply reliability resulting from advances in electrification, and grow the business
- Going forward, further establish service and kotozukuri, and provide value that will lead to achieving the customer's targeted SDGs

Initiatives

- Started mass production in 2020 as a Toyota TNGA component. In addition to planned use in THS (Toyota Hybrid System), currently rolling out to other OEM
- Contribute to increased power system quality
- Focus on preventing the battery from dying while the vehicle is parked. Along with creating a feature that enables advance warning, enter the commercial and MaaS vehicle markets

[BSS net sales]



2. Product strategy (4)

Safety

Peripheral monitoring radar



For vehicles



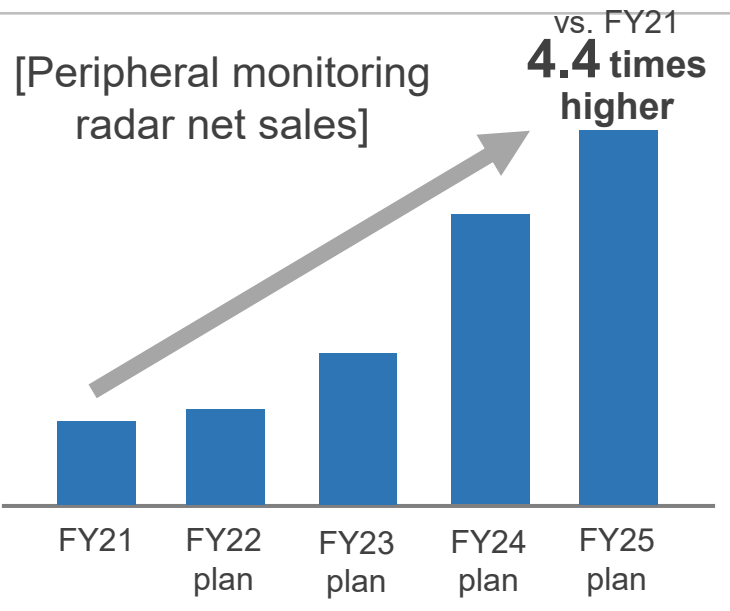
Wheel loader



Forklift



For construction equipment



Strategy

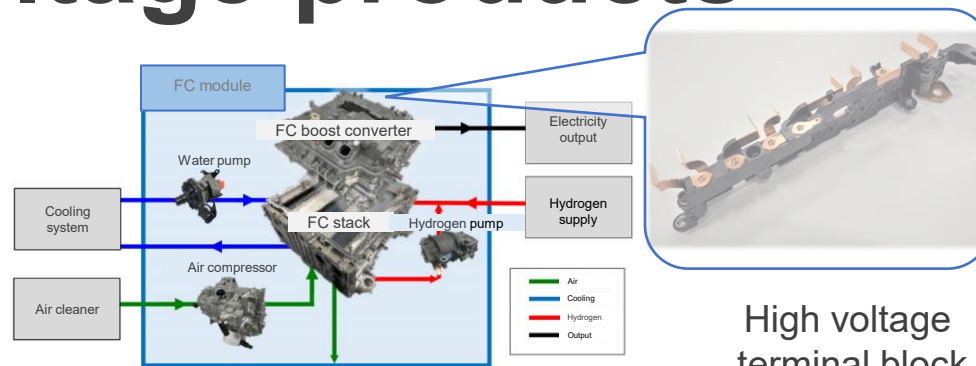
- Leveraging the fact that our product is negligibly affected by rain, snow and fog, expand into new markets including kei cars, SUVs, agricultural equipment, construction equipment, forklifts (cargo handling vehicles) and traffic infrastructure applications
- Develop next-generation products (MMR2). Completed compliance with regulations for function safety and cybersecurity. Be the first to comply with new requirements in Japan, and expand adoption in new vehicle models

Initiatives

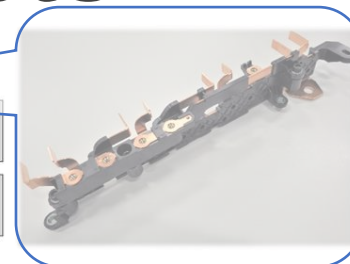
- Started mass production of the MMR2. Expanded adoption in new models with use in the new Mazda CX-60 crossover SUV released in Japan in April of this year
- Currently responding to inquiries from new markets including kei cars, SUVs, agricultural equipment, construction equipment, forklifts (cargo handling vehicles) and traffic infrastructure applications

2. Product strategy (5)

Electrification High voltage products



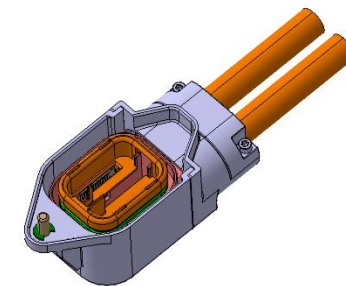
From Toyota Fuel Cells on Toyota Motor Corporation's official website



High voltage terminal block



High voltage junction box



High voltage connector

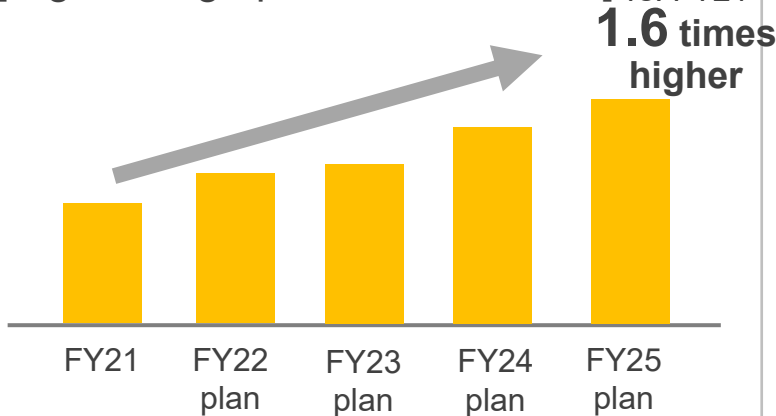
Strategy

- Increase sales through the development of a high voltage product lineup suited to the electric vehicle market, which is rapidly growing directed at becoming carbon neutral
- Increase sales of high voltage harnesses, high voltage terminal blocks and high voltage junction boxes for HEV and ZEV (EV/FCEV), and at the same time, expand the product lineup, such as high voltage connectors
- Secure superiority in the market through development of compact, lightweight, high performance products using Furukawa Electric Group's well-differentiated technology

Initiatives

- Increase sales of high voltage junction boxes to China and India
- Deliver high voltage terminal blocks for FCEV (Toyota Mirai) through Toyota for applications other than passenger vehicles (trucks, buses, railroads, etc.), and contribute to carbon neutral
- Apply the well-differentiated metals technology including copper alloy/plating, machining technology using fiber lasers and polymers technology including power cable insulation to high voltage junction boxes, high voltage connectors and high voltage power cable

[High voltage products net sales] vs. FY21



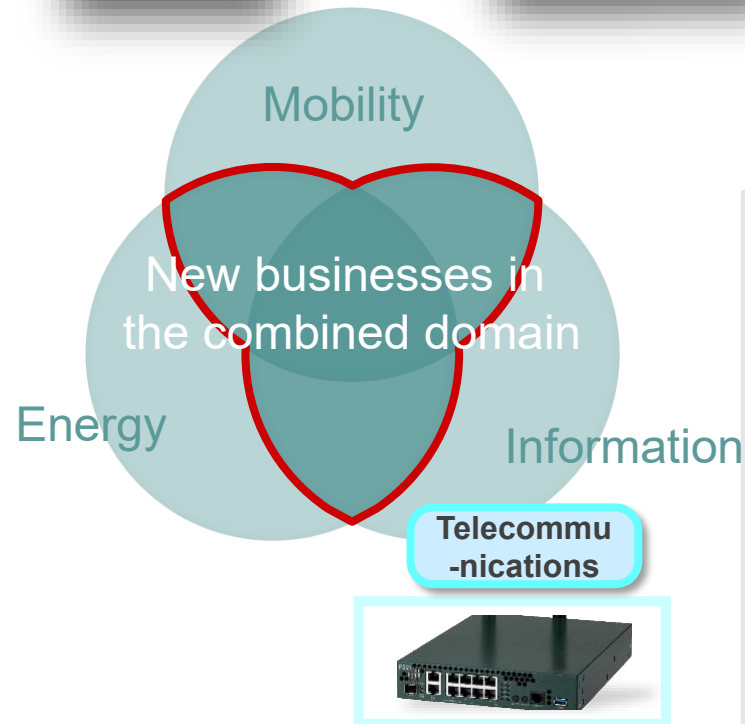
2. Product strategy (6)

Safety Light-weight Electrification Energy management

New businesses in the combined domain

Wiring

Sensing



V2X telecommunications

Disaster prevention & mitigation

Support autonomous driving

Wireless power transmission for mobility

Traffic monitoring radar

Support for safety and autonomous driving

Wireless power transmission

Next generation urban planning

Strategy

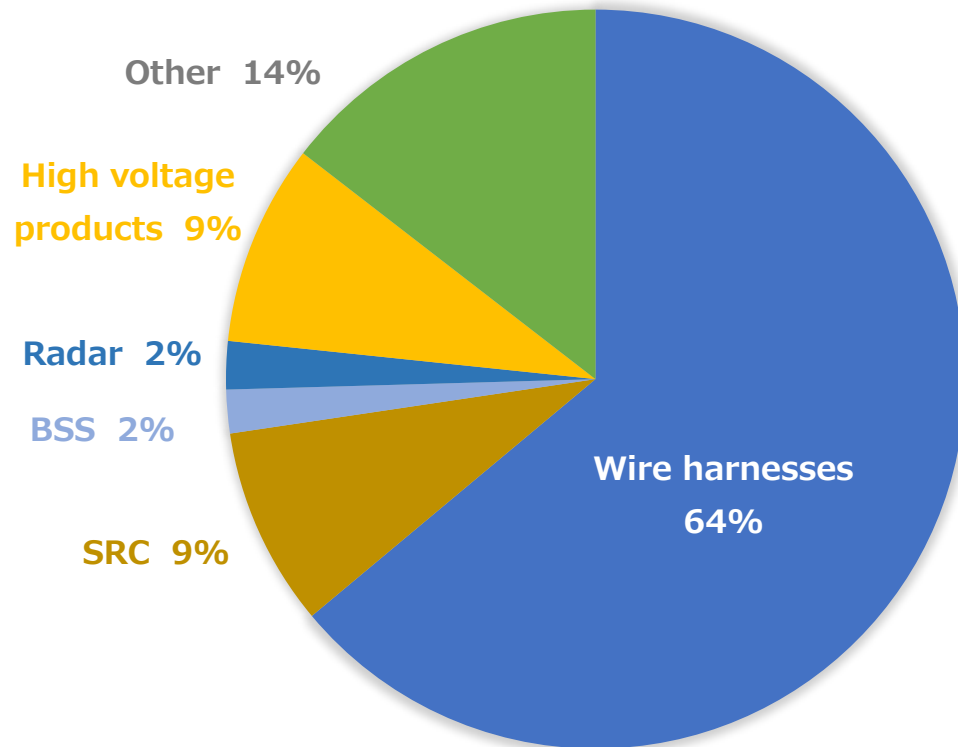
- By creating new businesses in the domain combining information, energy and mobility, contribute to becoming carbon neutral, solving the social issues and further diversification of automobiles

Initiatives

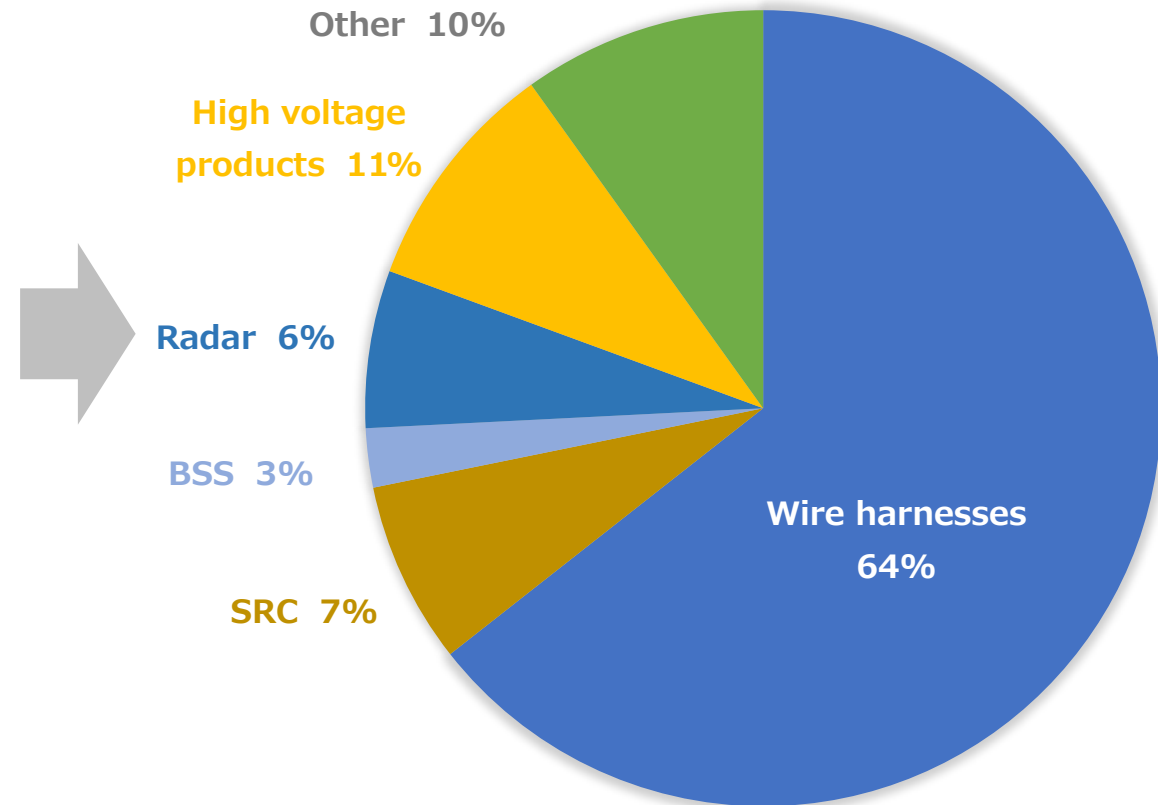
- Based on the sensing technology, wiring technology and telecommunications technology developed in the automotive products and infrastructure businesses, contribute to next-generation mobility that incorporates infrastructure
- Promote development of technology and products that will support next-generation mobility, including high reliability, low latency networks and highly reliable power systems

2. Breakdown of net sales by product and forecast

2022 Forecast

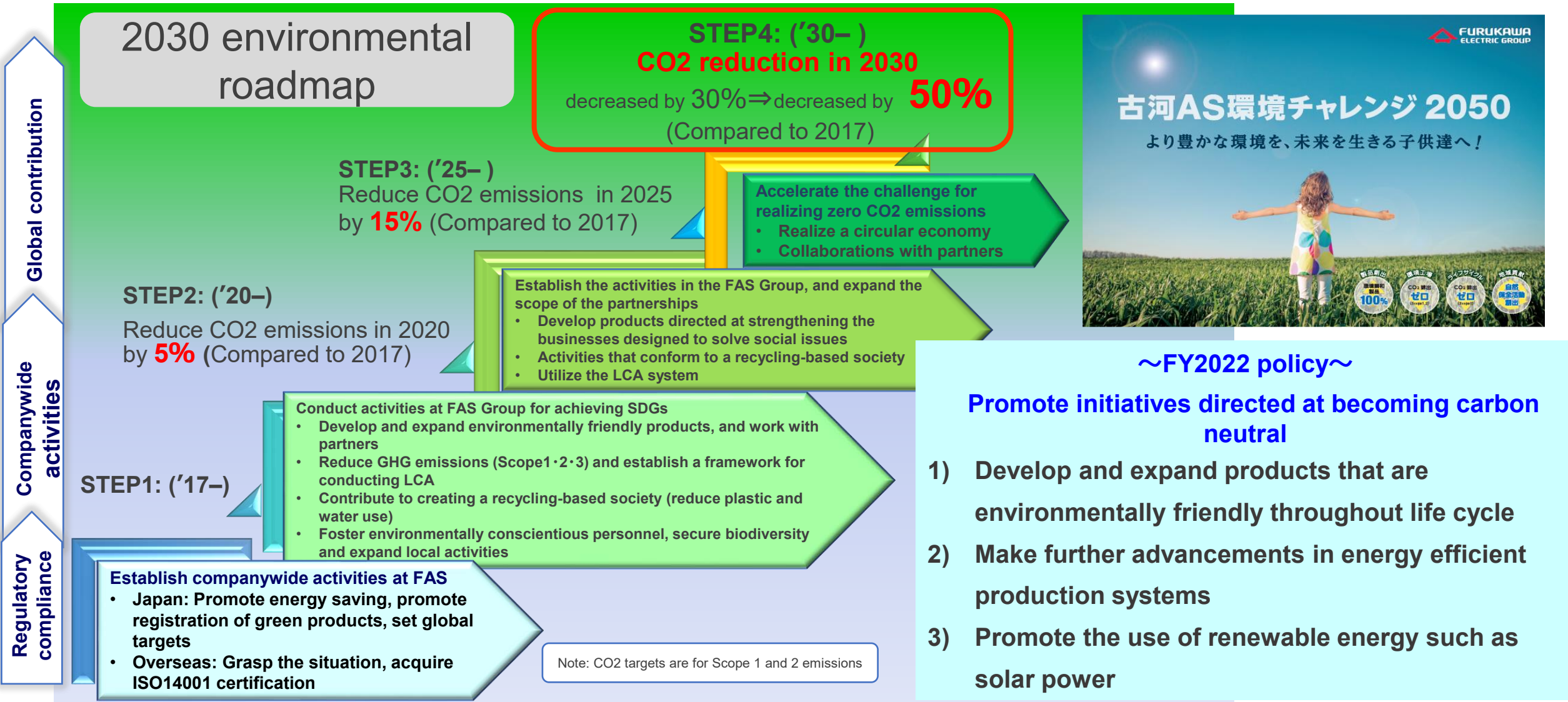


2025 Forecast



3. Initiatives for SDGs with a focus on carbon neutral

Environmental roadmap – Revised the 2030 reduction target to 50%



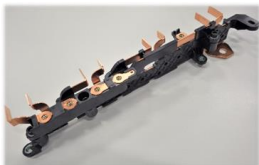
(1) Develop and expand environmentally friendly products

Contribute to the evolution of automobiles through products that are environmentally friendly throughout the life cycle

Electrification



High voltage harness



High voltage terminal block

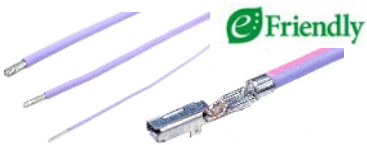


High voltage junction box



High voltage connector

Lightweight



Aluminum harness / α terminal



Products using flat cable

Energy management



BSS®



Develop new products

In order to strengthen the development of new products that contribute to carbon neutral, CASE and the evolution of mobility, currently leveraging the original technology of Furukawa Electric Group to develop competitive, well-differentiated products



- Promote 3R (Reduce, Reuse, Recycle) design, and develop the corresponding technology
- Develop elemental components for updateable (software first, later vehicle modifications)

- Increase sales of components related to lightweight, energy management and electrification (high voltage) (aluminum wire harness, BSS, high voltage components, etc.)
- Create environmentally friendly new materials and products (next-generation wiring system, next-generation power cable, etc.)
⇒ 3R (Reduce, Reuse, Recycle) design, materials, reduce the number of components
- Also promote initiatives for all businesses (logistics, partners, etc.)
- Develop means of conducting a life cycle assessment

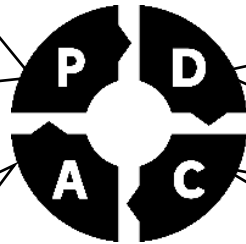
Create a plan for realizing factories with good energy management and high productivity

Effectively use the PDCA cycle by making the energy visible

6 keywords of energy saving activities

Quit, stop, reduce, revise, change, pick up

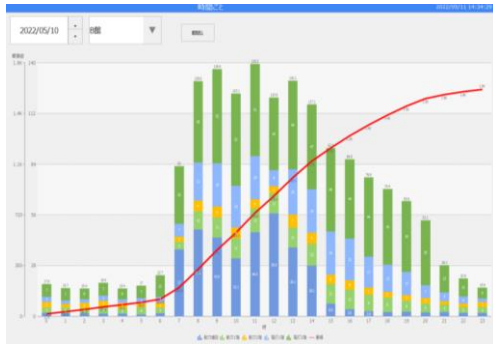
- Grasp power consumption trends
- Identify waste
- Consider energy saving measures



- Prepare energy saving measures
- Set forecast and target values
- Implement the energy saving measures

- Revise the measures
- Consider additional measures

- Confirm the status of measure implementation
- Target values and results

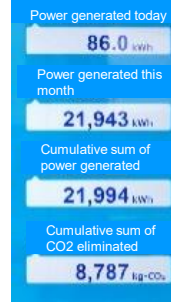


Make power consumption visible



Power being generated now is: 25.7 kW

Make the amount of solar power generated visible



Improve productivity by making the operational status of the facility visible using IoT

- Improve production efficiency by grasping operational status
- Making the operational status visible also contributes to BCM



Production facility

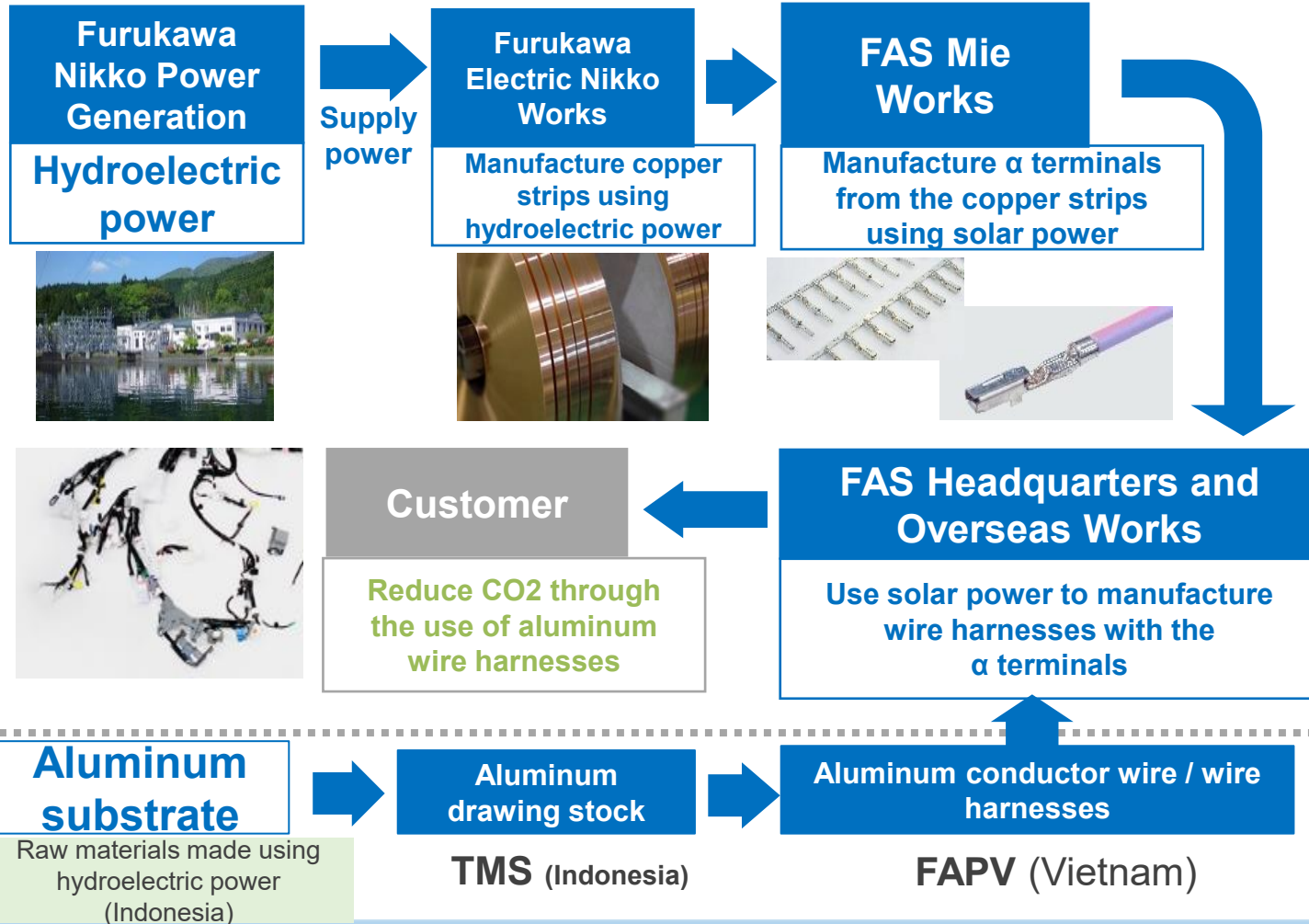
Actively install energy efficient equipment

- Energy efficient design for new facilities
- Select energy efficient equipment during facility renewal
- Develop facilities that do not use electric power (“KARAKURI” improvement)

(3) Promote the use of renewable energy such as solar power


Promote initiatives that contribute to reducing CO2 emissions throughout the product life cycle

Example of using renewable energy during the product life cycle




⚡ Solar power

FME (India)




FURMEX (Mexico)




⚡ Geothermal power


FALP (Philippines)




FEAP (Philippines)
Contract concluded Oct. 2021



FAS Mie Works
Started operation in Apr. 2021



FAS Headquarters
Started operation in Jan. 2022



Thank you very much for your attention.





【2025 Mid-term Plan (Road to Vision 2030 -Transform and Challenge-) Basic policy】
 As decarbonization accelerates directed at becoming carbon neutral, evolve the existing products and create new businesses in response to requests for friendliness to the environment and response to safety, and contribute to energy management, lightweight, response to safety and electrification

【Business environment, strengths and issues】

Business environment – Main revenue opportunities	Strengths as a division
<ul style="list-style-type: none"> • New opportunities arising from the transformation of mobility • Accelerating decarbonization directed at becoming carbon neutral. Increased needs for environmentally friendly, safe vehicles • Shift to future wiring systems 	<ul style="list-style-type: none"> • Balanced product portfolio • Well-differentiated technology through the combination of the group's core technology and in-vehicle technology • Superiority of aluminum wire harnesses and α terminals • Promoting multi-layer supply chains and increased resilience

Business environment – Main menace and risks	Issues as a division
<ul style="list-style-type: none"> • Increased uncertainty and instability due to nationalism arising from the unstable global situation • Young generation's trend away from vehicles and from ownership to use • Lower customer production volumes due to the semiconductor shortage, soaring raw material prices, logistics disruptions and soaring container costs • COVID-19 lockdowns • Increased risk of cyber terrorism 	<ul style="list-style-type: none"> • Resources needed to create a lineup of next generation products (technology, manufacturing, HR, awareness) • Cost competitiveness (making, buying) • Group governance capability (frameworks, systems, personnel)

【 Main strategy for achieving the 2025 Mid-term Plan 】







(W/H) Expand the applications leveraging the superiority and high reliability of the α terminal, and promote lighter vehicle weight / Respond to future wiring systems through differentiation based on software expandability
 (SRC) Development that responds to high speed communications / automobile evolution
 (BSS) Improve fuel efficiency and power consumption, and secure power supply reliability
 (Radar) Increase adoption of the high performance next-generation products for vehicles (including response to cybersecurity) / Enter the construction equipment, agricultural equipment, forklift and traffic infrastructure markets
 (High voltage products) High voltage and large current / Develop products suited to the market growth

Social issues

Reduce traffic accidents, Realize a carbon-free society, Realize more resilient traffic infrastructure



Appendix – Products overview

	Automotive products					
						
Safety	●	●	●	●		
Lightweight			●	●	●	
Electrification			●		●	●
CN*	●	●	●	●	●	●
Main products	<ul style="list-style-type: none"> ● Quasi-millimeter wave radar 	<ul style="list-style-type: none"> ● Steering roll connector (SRC) 	<ul style="list-style-type: none"> ● Lead battery state detection sensor (BSS) 	<ul style="list-style-type: none"> ● Products using flat cable 	<ul style="list-style-type: none"> ● Aluminum wire harness ● Corrosion-proof terminal (α terminal) 	<ul style="list-style-type: none"> ● High voltage products
Main applications	<ul style="list-style-type: none"> ● Advanced driver assistance systems (ADAS) 	<ul style="list-style-type: none"> ● Connectors for airbags 	<ul style="list-style-type: none"> ● Vehicle power management 	<ul style="list-style-type: none"> ● Electrical supply and signal transmission for sliding doors and long slide seats 	<ul style="list-style-type: none"> ● Reduce the weight of vehicle wiring 	<ul style="list-style-type: none"> ● Wiring for electric vehicles
Main customers	<ul style="list-style-type: none"> ● Japanese automobile manufacturers 	<ul style="list-style-type: none"> ● Tier 1 	<ul style="list-style-type: none"> ● Japanese automobile manufacturers 	<ul style="list-style-type: none"> ● Automobile manufacturers 	<ul style="list-style-type: none"> ● Japanese automobile manufacturers 	<ul style="list-style-type: none"> ● Japanese automobile manufacturers

*CN: Carbon neutral