### Create from the voice of the world

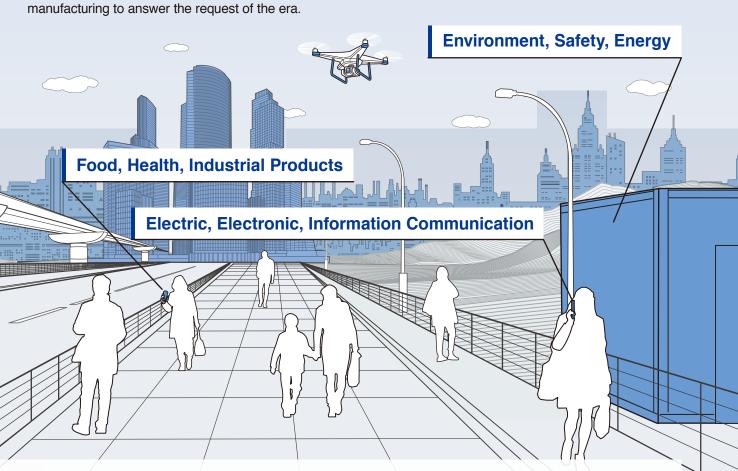
Currently, the world is transforming vastly in unseen speed due to the evolution of the technology.

Therefore, NLM is focusing in dialogue, technology, and development.

Power of dialogue to search answers of the engineers and users in the field. High technological ability polished with vast amount of production.

Out of the box thinking and ability of research and development utilizing the aluminum material.

We will answer to the expectation of the customers around the world with superior resources and



The NLM Group is contributing to the environment friendly automobiles prevailing around the world and protecting the global environment. And, make efforts to create a better environment by creating from the voice of the customers.

Restriction of CO2 emission is rapidly increasing in the developed countries in the recent years, further increasing the request to reduce

In addition to the trend of xEV, new concept of values where mobility is fused with service, such as "CASE" and "MaaS", are generated in the world of mobility through the background of those carbon neutrality (realizing a decarbonized society).

Among those, traveling performance, ride quality, fuel economy, and environmental friendliness are required to enhance the performance and value of an automobile. Furthermore, reducing the weight is one of the important challenges.

Aluminum is drawing attention as a powerful card to certainly reduce weight with its characteristics of 1/3 specific gravity of iron or copper. Within these market background, the NLM Group is continuing to provide product optimized to the needs of customer through the integrated system covering from the material, manufacturing, designing, and evaluation.

### Let us hear your voices

Next innovation is born from voices of the customers.





日本軽金属ク"IL-フ°

### Conversation with the customers are full of ideas.

What we have emphasized is to sincerely come face-to-face with customers. We may find a hint to solve a challenge from an unintentional word from the customer. Where is the real challenge? How will the market environment change? Optimal products and plans are derived through the conversation.

### Nippon Light Metal Holdings Co., Ltd.

Urbannet Uchisaiwaicho Building, 1-1-13 Shimbashi, Minato-ku, Tokyo

https://www.nikkeikinholdings.co.jp





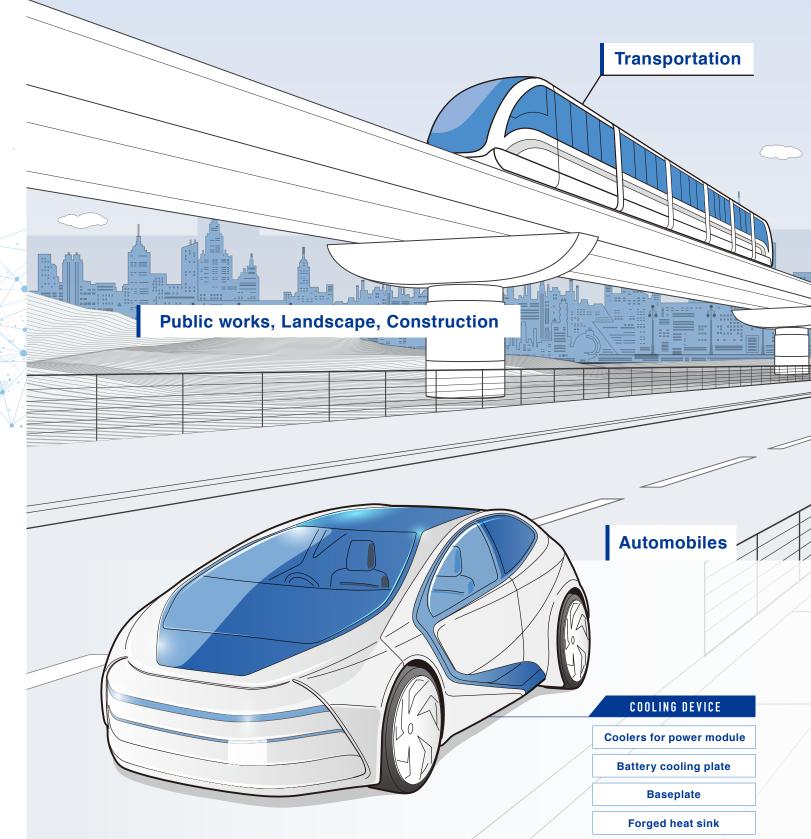
## Create from the voice of the world





Cooling device team

# The technology of NLM is utilized somewhere in the world at this moment.



# Core technology recognized for various products Change the environment through aluminum and processing technology

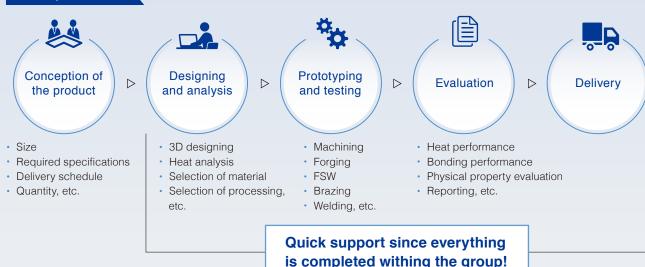
Automobiles are evolving further than the required functionality and performance.

One of the key technologies to operate the key components necessary for xEV, such as the invertor, motor, batteries, etc., in a normal manner and safely is the thermal management.

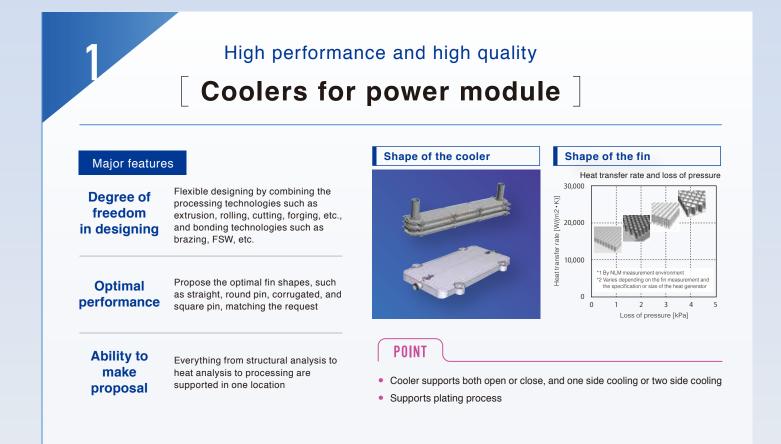
The NLM Group proposes the optimal heat countermeasure solutions constructed from the voice of the customers in one location by merging the long history of acceptance of the on-board cooling parts as a professional for aluminum, the technologies regarding the material, processing, bonding, designing and analysis of aluminum.

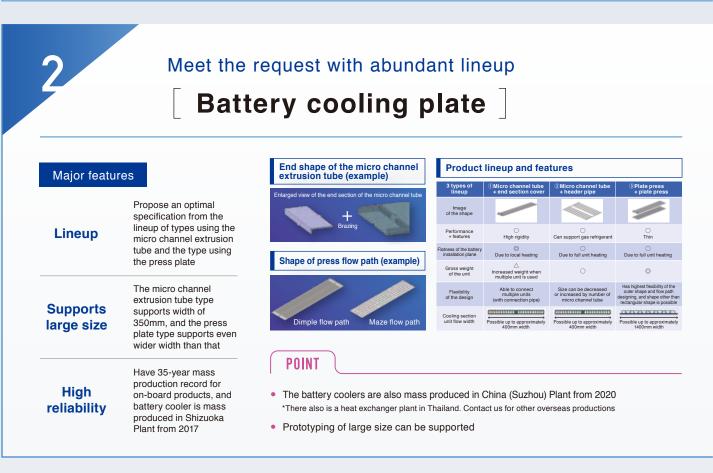
From the conception of the product to delivery, voice of the customer is put into a shape through the consistent system within the group, and provide an optimal total solution in a speedy manner.

### Development flow





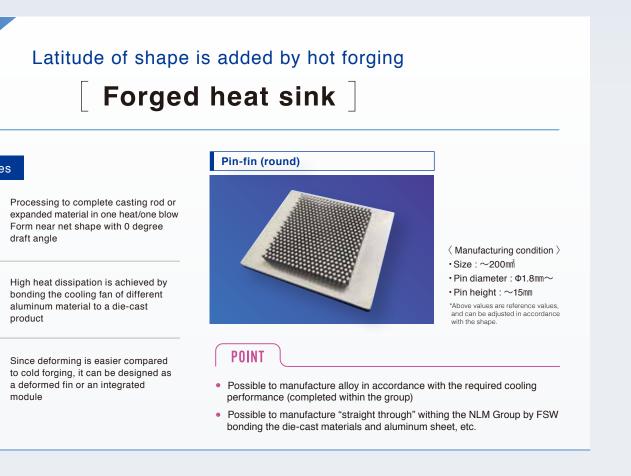




# Baseplate Major features PFDC (Pore-Free) The NLM Group has developed a special casting process to achieve high quality die-cast by using oxygen FSW + high heat dissipation is achieved by bonding the cooling fan of different aluminum material to a die-cast product Minimizing No small parts There will be no fastening due to FSW, contributing minimization of the product POINT Realized "watertightness + high heat dissipation + downsizing" by FSW bonding the die-cast alloy with the expanded material Possible to suppress the blowhole to 1/10 compared to normal die-cast product

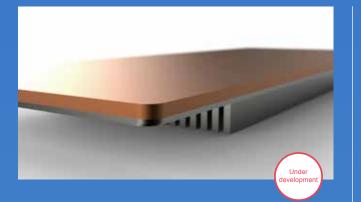
Major features

dissipation



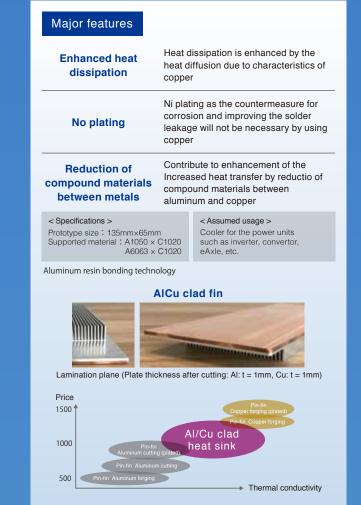
### Products for next generation

# New thermal management solution with "aluminum + 1"



Higher thermal conductivity than aluminum, lighter than copper.

### Aluminum x copper clad heat sink





Enhanced flexibility of performance designing, light weight.

### Resin chassis cooler

