Automotive Products

2025/04/21　Nippon Seiki Co., Ltd.

Benefit

Nippon Seiki develops and manufactures meters and head-up displays (HUDs) for four-wheel vehicles, providing optimal driver information. This enhances traffic safety, meets driver needs, and creates cohesive, inspiring driving experiences.

Key highlights of Nippon Seiki's exhibition will include:
・Mass Production Meters
・Wide Field of View TFT Head-Up Display (HUD)
・Offset ultrashort laser projector
By showcasing these advanced technologies, Nippon Seiki aims to demonstrate its commitment to developing innovative solutions that meet the evolving needs of the automotive industry.

Automotive Mass Production Meters

Nippon Seiki's development concept for four-wheel mass-produced meters is ""Safer and More Comfortable."

In recent years, meters equipped with large TFT screens have become the mainstream, leading to an increase in the display of varied contents. Under this concept, we are committed to developing easy-to-read meters that convey information effectively, thereby enhancing the driving experience to be safer and more comfortable through various initiatives.

Our specific initiatives include:
Promoting multifunctionality compatible with Intelligent Transport Systems (ITS)
Enhancing visibility to cater to an aging society
Advancing sophisticated instrument panel designs
Pursuing ergonomics from the user's perspective
Promoting the adoption of self-illuminated and digital-analog types of meters
Through these efforts, we continue to stay at the forefront of meter development, anticipating changes in social environments and technological advancements.

Wide Field of View TFT Head-Up Display (HUD)

A Head-Up Display (HUD) projects various information, such as vehicle speed and navigation data, onto the windshield. This allows drivers to verify information more quickly and accurately while keeping their eyes on the road, thereby promoting safer driving. Consequently, the integration of HUDs into automobiles is increasing.

Recently, Augmented Reality (AR) displays that overlay navigation and other information onto the forward view (road conditions) have been gaining significant attention. To realize these AR displays, it is essential to enlarge the display area that is superimposed onto the forward view, thus requiring a ""wide field of view"" in HUD specifications.

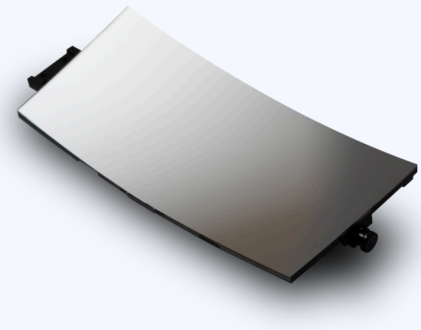
Achieving a wide field of view in HUDs involves enlarging internal optical components and increasing optical magnification. Maintaining the precision of these components while enlarging them requires advanced design and manufacturing technologies. If the components

lack precision, the display may become distorted, adversely affecting driver visibility. Therefore, the production of wide-field-of-view HUDs is considerably more complex compared to traditional HUDs.

Nippon Seiki Co., Ltd. has established a comprehensive production system that covers everything from the design of HUDs and optical components to mold manufacturing, part molding, and product assembly. Along with the know-how accumulated over many years of mass production, this integrated production system has enabled us to achieve high-quality HUD displays with the wide field of view required for AR HUDs.

By leveraging our extensive experience and integrated production capabilities, Nippon Seiki Co., Ltd. is uniquely positioned to offer innovative and reliable wide field of view TFT-HUD solutions. This presents new business opportunities in the target market by enhancing the driving experience and promoting safer driving.

Note: Augmented Reality (AR) refers to extending reality by overlaying digital information onto the physical world.



Offset ultrashort laser projector

Nippon Seiki anticipates significant changes in the value of vehicles, traditionally viewed as mere means of transportation, driven by advancements in autonomous driving technology and vehicle electrification. As autonomous driving technology progresses, external image advertisements on certain vehicles (such as buses and trucks) are expected to evolve into more effective video advertisements. Moreover, this technology will enable flexible advertisement displays on all types of vehicles, including private cars. In response to this trend, we are actively advancing our projector technology.

Our projectors have two major features:

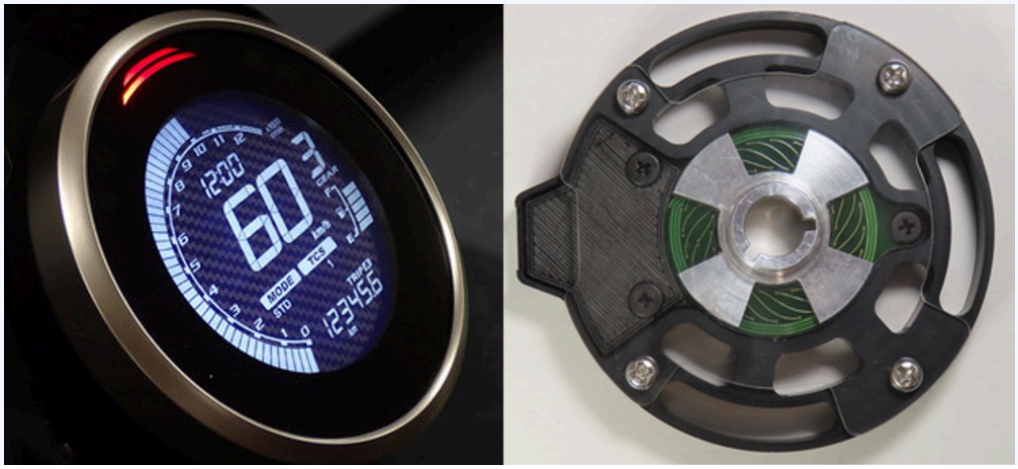
High Installation Flexibility: By integrating our proprietary optical fiber transmission technology with offset ultra-short throw technology, we have achieved high adaptability in installation. This allows the projector to be discreetly placed without obstructing passengers or creating shadow interference.

Superior Visibility: Utilizing a laser light source compliant with automotive standards, our projector offers high visibility with vivid color reproduction. This ensures that videos and images can be prominently projected in any desired location. For example, by displaying external vehicle interfaces or signage on body panels and windows, we propose innovative advertising models.

As autonomous driving technology and vehicle electrification continue to advance, Nippon Seiki aims to connect people and vehicles through projectors, thereby contributing to the creation of valuable interfaces.

Motorcycle Products

2025/04/21　Nippon Seiki Co., Ltd.



Benefit

Nippon Seiki develops and manufactures motorcycle meters that clearly convey information to riders. Using advanced technology from our automotive sector, we also provide various compact, precise, and reliable sensor products.

Key Highlights of Nippon Seiki's exhibition will include:
・Mass Production Meter
・Smartphone Mount Meter Concept
・Motor Angle Sensor
・Liquid Level Senso
By showcasing its diverse portfolio of products and solutions, Nippon Seiki aims to collaborate with manufacturers and partners to shape the future of mobility.

Motorcycle Mass Production Meters

Nippon Seiki's mass-produced motorcycle meters integrate a range of manufacturing technologies, including electronic board mounting, plastic molding, and printing. We also internally produce critical components, such as [specific part name], which drive the pointers indicating speed and engine RPMs. This comprehensive approach ensures that all processes are conducted within the Nippon Seiki Group, maintaining high standards of quality and consistency.

In recent years, TFT meters have become increasingly prevalent in motorcycle applications, with a trend towards larger screen sizes. To address this shift, Nippon Seiki has implemented advanced measures to enhance the visibility of TFT meters. One such innovation is the application of optical bonding technology. Optical bonding involves attaching the cover glass to the TFT display using transparent resin, which reduces light reflections and significantly enhances visibility. This feature is particularly vital for motorcycle meters used outdoors. Moreover, this technology is developed by our team within the Nippon Seiki Group and is supported globally, underscoring our commitment to pioneering advancements in the industry.

Looking ahead, Nippon Seiki will continue to develop meters that meet the evolving needs and preferences of consumers. By driving the advancement of mass-produced motorcycle meters on a global scale, we aim to contribute significantly to the industry's progress and innovation.

Smartphone Mount Meter

In recent years, motorcycle meters that can display navigation and other information via smartphone linkage have become increasingly common. However, for vehicles without such linkage functions, it has become standard practice both domestically and internationally for users to attach their smartphones using commercially available holders.

Our concept introduces an integrated system that allows users to attach their smartphones to a highly visible meter section of the vehicle without linkage functions. This design enables users to quickly and effortlessly view smartphone information while stationary.

Specifically, in the South Asian region, it is expected to help prevent accidents caused by one-handed driving while holding a smartphone.

This exhibit features a transparent cover that provides waterproof protection for the smartphone and prevents the rider from operating it while driving. Additionally, the structure includes a transparent case around the smartphone's camera lens, allowing the use of the camera function. This enables the smartphone to function as a drive recorder, capturing the scenery while riding.

Motor Angle Sensor

In the field of motor angle sensors (rotor position sensors for EV motors), conventional resolver-based position sensors have presented several challenges, including significant weight due to numerous metal components, the necessity for magnetic shielding, and lack of compliance with functional safety standards.

We believe that these challenges can be overcome by adopting inductive sensors that do not use magnets. This approach offers several key advantages:

Lightweight: Contributes to improved driving range for EVs by reducing overall weight.
No Need for Magnetic Shielding: Allows for system miniaturization, facilitating more compact designs.
Functional Safety Compliance: Ensures adherence to stringent safety standards, enhancing system safety.
Nippon Seiki is committed to advancing the electrification of vehicles through the development of innovative motor angle sensors utilizing inductive technology, thereby contributing to the future of electric mobility.

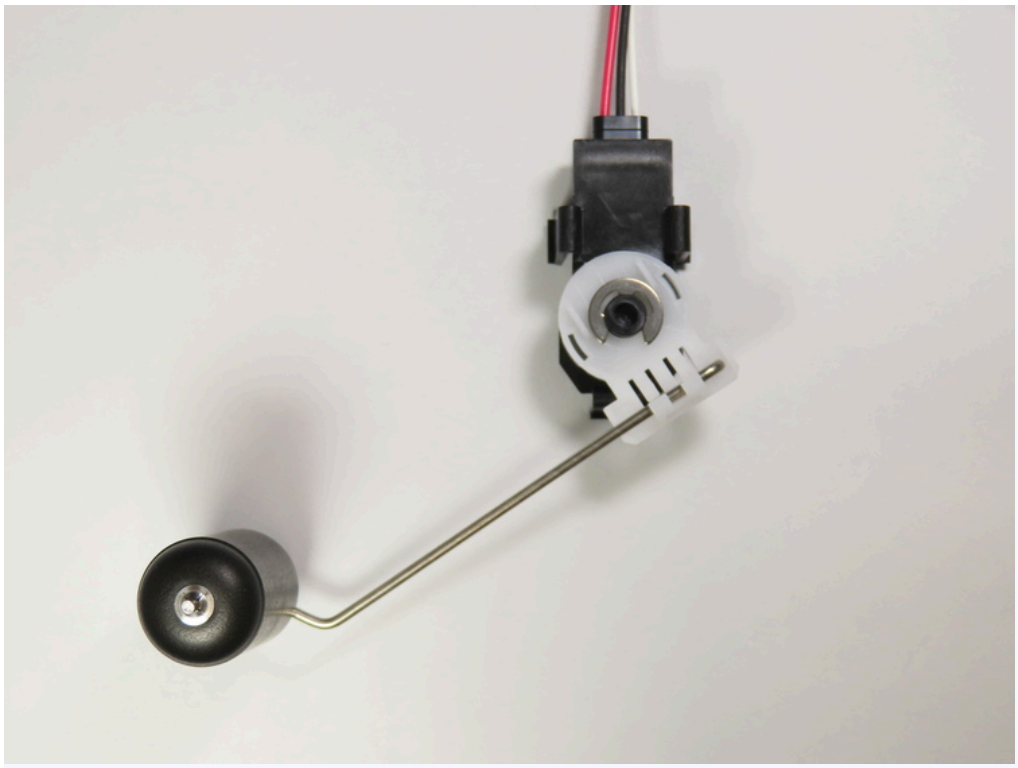
Liquid Level Sensor

When using traditional sliding resistance-type liquid level sensors with biofuels and similar fuels, high moisture content can cause resistance value changes due to electrolytic corrosion. This can lead to incorrect detections and sudden fuel shortages, posing significant challenges.

At Nippon Seiki, we believe these issues can be resolved by developing non-contact Hall IC liquid level sensors. Because these sensors have no sliding parts and operate using a non-contact mechanism, they are not susceptible to electrolytic corrosion and can be used reliably with various types of fuels.

As such, Nippon Seiki's non-contact Hall IC liquid level sensors contribute to fuel diversification initiatives aimed at combating global warming. Additionally, compared to sliding resistance-type sensors, Hall IC sensors offer a wider oscillation angle and lower friction, allowing for shorter float arms and smaller floats.

As a result, they contribute to improving the layout flexibility within the tank.



Parts Business Products

2025/04/21　Nippon Seiki Co., Ltd.

Benefit

Nippon Seiki uses its expertise in automotive instruments and head-up displays, with NS Advantech (molds) and Kyoei Engineering (microfabrication), to offer full support from design to production of optical resin components.

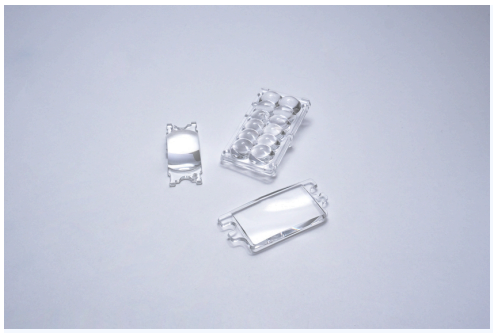
Key highlights of the parts business products will include:
NS Advantech Co., Ltd. products
Kyoei Engineering Co., Ltd. Products

NS Advantech Co., Ltd. products

As a member of the Nippon Seiki Group, NS ADVANTECH Co., Ltd. specializes in various operations, including resin material coloring and compounding, injection molding, screen printing, substrate assembly, harness assembly, sensor assembly, and complete instrument product assembly. This integrated system ensures high-quality, consistent production. At this exhibition, we will showcase the following products from our molding and resin material divisions:

HUD Lenses
Resin Material Compounds
1. HUD Lenses:
HUD (Head-Up Display) lenses are essential components in HUD systems, displaying information directly in the driver’s line of sight. These lenses must meet high standards of quality and precision. To meet various design requirements, including size and microscopic structure, we constantly improve our molding technologies. We have a proven history of mass-producing various shapes of HUD lenses through injection molding of thermoplastic resin. About 40% of our molding machines are dedicated to HUD lens production, manufacturing almost 300,000 HUD lenses per month. We use measurement tools like PV meters for strict quality control, ensuring high-quality products. Besides HUD lenses, we manufacture a variety of transparent resin components such as meter glasses and light guides, meeting diverse needs for transparent resin parts.

2. Resin Material Compounds:
Resin material compounding involves blending base resins with pigments, additives, and other resins to create materials with unique appearances, properties, and functions. This technology is essential for plastic products. NS ADVANTECH provides a range of resin compounding services, focusing on high-quality transparent and low-foreign-material compounds. Our clean lines, which make up about 40% of our total production lines, primarily produce low-foreign-material compounds. These lines allow precise control of foreign materials, ensuring minimal contamination. To expand into medical and food industries, where low contamination is vital, we obtained ISO 22000 certification for food safety management systems in 2024. We are also involved in developing biomass materials. Our goal is to become a trusted partner capable of delivering reliable products swiftly, meeting the needs of various industries.



Kyoei Engineering Co., Ltd. Products

Kyoei Engineering Co., Ltd., a member of the Nippon Seiki Group, has acquired various technologies to meet the wide-ranging needs of our customers in diverse fields including automotive, aerospace, medical, camera/O.A. equipment, and semiconductors. Through our extensive experience, we have accumulated know-how and established a comprehensive in-house system to support our customers from development and design to precision parts processing, mold making, injection molding, ultra-precision machining, micro-fabrication, and quality control.

At this exhibition, we are pleased to present products showcasing our expertise in ultra-precision machining and micro-fabrication.

Ultra-Precision Machining:
Using 5-axis simultaneous machining, we can process high heat-resistant materials used in engines and difficult-to-form turbine wheels. In addition to overall shape processing, we can create fine shapes on impeller blades to meet specific requirements.

Micro-Fabrication:
For INNER LENS used in automotive lamps, our fine step processing technology enables the creation of uniformly luminous surfaces with a luxurious feel. For light guides, conventional products have visible step shapes even when not lit. However, our fine step mirror processing makes the step shapes less noticeable when not lit. Additionally, when LED light is irradiated, it efficiently reflects the incident LED light, achieving brighter and clearer illumination.