Product Introduction

Development of camper vans

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Photo 1 Concept image of KYB camper van

1 Introduction

KYB Special Purpose Vehicles Div. provides concrete mixer trucks as its flagship product and has long led the market, boasting the top domestic market share. However, the demand for fresh concrete is trending downward in the medium to long term and hit a record low in 2023. The business environment is at a major turning point. This situation presents an excellent opportunity to reevaluate our traditional business model, which relies on concrete mixer trucks, and to seek new growth strategies.

Conversely, the camper van market has grown steadily, reaching a market size 138% larger than the previous year in fiscal 2023 (Figs. 1 and 2). Although the Japanese market is still small compared with those in Europe and the United States, it is a promising sector expected to grow in the future. In particular, van-based camper vans, or "van conversions,"[Note 1)] enjoy high popularity. High-value models, such as European vehicles, are driving the market.

In light of these market trends, KYB will fully launch its venture into the camper van business,

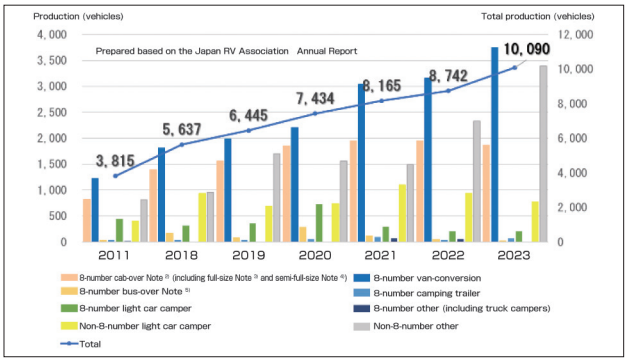

Fig. 1 Camper van production[1)]

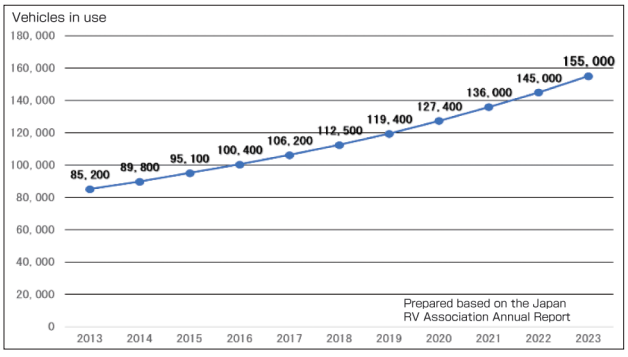

Fig. 2 Camper vans in use[1)]

leveraging the manufacturing technology and body design expertise cultivated through concrete mixer trucks. This report explores how to develop a high-quality product that combines safety, handling stability, and ride comfort to provide new value to customers who enjoy an outdoor lifestyle and to open up new possibilities for the KYB brand.

Note 1) A camper van whose interior has been modified for camping purposes.

Note 2) A camper van with a living space built onto the cargo bed of a truck.

Note 3) A monocoque camper van with a unique body designed specifically for camper vans.

Note 4) A converted camper van that retains the base and front cab sections of a bus.

Note 5) A camper van that has been converted from a bus and has a modified interior.

2 Vehicle Concept

Since the launch of the company-wide camping car project, we have continuously collected and analyzed user needs. Specifically, we conducted a questionnaire survey at exhibitions and heard the detailed needs of users through builders in order to extract the values demanded by customers. As a result, we learned that customers did not need camper vans for simple transportation. Rather, we recognized that maximizing customer satisfaction requires achieving two elements at a high level. The first is ride comfort and handling stability. The other is a comfortable living space.

Conventional camper vans tend to prioritize livability. Often, driving performance and safety become issues.

Conversely, KYB adopted a van-based vehicle with excellent handling stability, leveraging its suspension development technology for passenger and commercial vehicles, cultivated both domestically and internationally, as well as its body design technology, honed through special-purpose vehicles. We also implemented a dedicated suspension and optimized weight balance to achieve ride comfort and handling stability. Additionally, we achieved a comfortable living space by adopting an interior that combines luxury and functionality with the texture of natural wood and a highly insulated structure.

Furthermore, we equipped the vehicle with features such as an open deck and a high-capacity battery system to enrich outdoor living.

As a newcomer to the camper van market, our goal is to distinguish ourselves from other manufacturers, improve customer experience, and establish a new position in the camper van market.

3 Vehicle Configuration

3. 1 Achieving a Comfortable Ride and Handling Stability

3. 1. 1 Base Vehicle Selection

Selecting a base vehicle (Photo 2) is one of the most critical factors in realizing the product concept for this development project. We adopted a European-made van with excellent handling stability. Compared with cab-over models, van-type vehicles are less susceptible to crosswind buffeting and provide superior driving stability, ensuring high safety during long-distance and highway travel. Additionally, they have a proven track record of low accident rates. Thus, van-type vehicles provide customers with a sense of security.

Furthermore, European van-type vehicles have spacious interiors, particularly in terms of headroom. This makes it possible to create a comfortable living space in a limited area. They also feature stylish and eye-catching exteriors, appealing to customers with an outdoor lifestyle. In Europe, they are widely used as the base for luxury camper vans. We utilized this body to build the vehicle in order to strike a balance between the two values: driving performance and livability.

Van-type vehicles also offer excellent customizability. With a high degree of freedom in interior design and equipment, they can be customized to meet a wide range of customer needs. We determined that we could develop a camper van offering value not only as a means of transportation, but also as a comfortable living space.

Photo 2 KYB van-type camper van

3. 1. 2 Suspension Tuning

Achieving both ride comfort and handling stability in camper vans is critical to determining their value. Therefore, KYB fully leveraged its

suspension development technology for passenger and commercial vehicles, cultivated in Japan and abroad, to design specialized dampers. Traditionally, concerns have been raised about the driving stability and ride comfort of conventional camper vans due to their increased weight and a higher center of gravity. Handling deteriorated, particularly during high-speed driving or in situations prone to crosswinds. This contributed to increased driver fatigue during long-distance travel.

We then developed a suspension that effectively absorbs road input while ensuring responsiveness during steering by optimizing the damping characteristics through repeated driving and adjustments on the test course. The dedicated damper was designed to accommodate the specific weight balance of camper vans, with an aim at achieving both a soft ride and handling stability (Photo 3).

This effort made it possible to achieve both a comfortable ride and handling stability at high levels, which had not been possible with traditional camper vans. Consequently, we achieved vehicle performance that gives customers a sense of security and comfort during long-distance travel and outdoor activities.

Photo 3 Developed camper van driving on the road

3. 1. 3 Installation of Specially Designed Seats

We installed specially designed seats for the driver and front passenger to improve comfort during long drives (Photo 4).

Photo 4 Special dampers and seats

3. 1. 4 Interior Design with Weight Balance Considered

To optimize the vehicle's overall weight balance, we carefully reviewed the placement of interior components, including storage compartments and equipment. This ensures stability while driving. Additionally, we used lightweight materials for the interior to improve handling stability. One typical example is the honeycomb sandwich panel[Note 6] used in the open deck. This structure significantly reduces weight while maintaining high strength, thereby keeping the vehicle's total weight down and contributing to an optimized weight balance.

Note 6) A three-layer structure consisting of a collection of hexagonal cells sandwiched between surface materials.

3. 2 Creating a Comfortable Living Space

3. 2. 1 High-Quality Interior Design

To improve the comfort of the living space, we adopted superior texture interior design under the supervision of an interior designer (Photos 5, 6, and 7). We introduced a pattern with meticulously aligned wood grain to impart a sense of unity and luxury to the entire space. Utilizing the unique texture and warmth of natural wood brings a sense of calm and tranquility to the living space while creating an environment that remains comfortable during extended stays.

Photo 5 Interior design

Photo 6 Bed in extended position

Photo 7 Living space

3. 2. 2 Upper Storage

We designed and installed interior equipment that balances quality and functionality while making full use of the limited interior space to realize a comfortable living space. For the design of storage spaces in particular, we adopted a structure inspired by aircraft overhead bins[Note 7] to effectively utilize the headroom and ensure storage capacity without compromising the living space's sense of openness (Photo 8).

Note 7) The luggage storage compartments located above the passenger cabin in an aircraft.

Photo 8 Upper storage

3. 2. 3 Battery System

This vehicle uses a high-capacity LFP battery[Note 8] as an essential power supply system for maintaining a comfortable living space. The battery provides a stable power supply, even during long stays or when multiple electrical components are in use simultaneously, which improves livability. In addition to a local switch, we adopted a touch-panel control unit to enable easy operation of the electrical components.

Note 8) A lithium-ion battery that uses iron phosphate as the cathode material.

3. 2. 4 Open Deck and Reclining Seats

A retractable open deck has been installed at the rear of the vehicle (Photo 9) that seamlessly connects the interior and exterior, enabling luxurious use of space. The open deck is designed to create a sense of openness during camping and outdoor activities, allowing passengers to enjoy spending time in harmony with nature. To maximize its appeal, a reclining seat has been installed inside (Photo 10). It provides a comfortable space where passengers can relax while enjoying the outdoor scenery.

Photo 9 Open deck

Photo 10 Reclining seat

The vehicle was unveiled as the VILLATOR at the Tokyo Auto Salon 2025 in January 2025, and orders were accepted (Photo 11). Furthermore, following the announcement, it has been exhibited at numerous events, such as the Japan Camping Car Show. Sales activities are currently underway.

Photo 11 Image released at the Tokyo Auto Salon 2025

4 In Closing

We have taken the first step to launch KYB's first camper van onto the market. However, we recently identified price competitiveness issues with the high-end camper van. To address this issue, we plan to establish a comprehensive framework for costs, sales channels, after-sales service, and other factors. We also plan to expand our product lineup to meet user needs.

Finally, we would like to thank void Co., Ltd. for designing the camper van's interior and exterior, and our partner companies, in-house project members, and everyone who supported us at exhibitions and during media interviews.

References

1) Japan RV Association: 2023 Annual Report

Author

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Dedicated Section Manager, Engineering Dept., Kumagaya Plant, Special Purpose Vehicles Div.
Engaged in development of camper vans after working on the design of special-purpose vehicles.