

# **KYB Museum Exhibit Renewal**

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## Introduction

The KYB Museum is located at the Sagami Plant (Sagamihara City, Kanagawa Prefecture, Japan). As part of the company's 70th anniversary project, the museum was completed in 2005 and is now in its 19th year. The original purpose of its establishment was to provide a place for human resource development and other internal uses. Today, the museum is used as a place for both internal matters and external communication. It is open to customers and business partners who visit a KYB plant or R&D center and is used for recruitment activities and summer vacation events for elementary school students.

We have recently renewed the exhibits, including presentation boards, to help visitors better understand KYB's history and high engineering prowess.

#### KYB Museum Layout

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The general layout of the museum is shown below (Fig. 1). The building has two floors to display KYB's history and original products, as well as products manufactured by Group companies.



Fig. 1 KYB Museum Layout

#### 3 Waiting Gallery

The first floor is always open as a waiting gallery for people visiting the museum for business meetings. The gallery actively casts digital signage, such as the plant introduction films newly created by the Public Relations & Investor Relations Sect. (Photos 1 and 2).

The videos of the KYB plants are also available on YouTube.



Photo 1 Waiting gallery



Photo 2 Digital signage

On the wall is a Chronology of KYB's Major Products. Positioing Oleo (hydraulic buffer strut) as KYB's DNA (Photo 3), the chronology shows how vibration damping, power control, and other technologies have been inherited by various product families (Photo 4).



Photo 3 KYB's DNA



Photo 4 Chronology of KYB's Major Products

While the chronology currently displayed includes products released up to 2023, the major products are shown in a way that looks towards 2035, when KYB will celebrate its 100th anniversary. Visitors who have viewed this timeline have commented on their amazement at KYB's history and diverse business development.

#### 4 Hydraulic Experience Corner

The museum has a dynamic exhibit for visitors to experience Pascal's Principle (Photo 5), which is the basis of power control technology. Visitors can experience how hydraulic pressure can produce a large force.

During the summer vacation of elementary school students, the museum hosts events for them to build original syringe excavators and learn about hydraulic and frictional forces (Photos 6 and 7).



Photo 5 Pascal's Principle experience machine



Photo 6 Original syringe excavator



Photo 7 Pascal's Law experience with large and small syringes

# 5 Hydraulic Components

One of KYB's core technologies is high-precision surface polishing in the micrometer order for surface mating. Our technical prowess in this technology has not been showcased before. Therefore we designed the experience corner so that visitors could actually pick up and touch the piston and spool.

We also created movies showing the production process of casting control valves and how the piston of the piston pump moves. These movies helped visitors better understand what was otherwise difficult to explain verbally (Photo 8).



Photo 8 Pump and valve corner

In addition, the travel motor exhibit was modified by disassembling the motor into components. The revamped exhibit allowed visitors to identify real parts they had only previously seen in illustrations.

We decided to exhibit the hydraulic system set of mini excavators, one of KYB's strengths, connected with piping. The new exhibit allows visitors to better understand how the hydraulic oil flows from the piston pump to the cylinder, the travel motor and swing motor via the control valve. We are always very happy to see the faces of customers who have understood it well (Fig. 2, Photo 9).



Fig. 2 Basic functions of hydraulic components



Photo 9 Mini excavator hydraulic system set

KYB can be characterized by its production capability of small to ultra-large cylinders, which should definitely be introduced in the museum. We have exhibited a full-scale model of the boom cylinder of mining excavators so that visitors can experience how big it is. Unfortunately, we decided not to display the real cylinder because of its weight (about 10 tons with a total length of 5 to 10 meters), but we accurately reproduced cut samples from the 3D model to display on the exhibit (Photo 10).

#### 6 Automotive Components

This section has a series of presentations to introduce KYB's automotive components, from the cue for the company to become a shock absorber (hereinafter, referred to as SA) manufacturer (Fig 3) to the types, structure, evolution, and latest technologies of SA.

Visitors may include those who do not even know the word "SA" and those who are involved in manufacturing. It is therefore necessary to explain KYB's SA with an approach that covers all types of visitors. The Automotive Components section provides an explanation of related technical terms including "damping force".

In addition, visitors can watch a comparative movie showing a vehicle with SA with/without damping force driving over a step as shown in Fig. 4 and Photo 11 to understand the need for SA.

Photo 12 shows an exhibit of a disassembled SA. The exhibit explains that the damping force varies with the number of leaf valves stacked in the valve and other factors, which affects ride comfort.



Photo 10 Full-scale model of mining excavator boom cylinder



Fig. 3 History as the cue for KYB Industry to become an SA manufacturer



Fig 4 Description of SA mounting locations and functions



Photo 11 Comparative movie of SA with/without damping force



Photo 12 Disassembled SA and valve description

The latest technology on display includes SwingValve and Prosmooth<sup>®</sup>, which means that KYB is an SA manufacturer that can even offer ride comfort specifically designed for the ultra-low speed range.

Since becoming able to internally develop the formulation of the hydraulic oil to be encapsulated in the vehicle's SA, KYB has developed the environmentally-friendly hydraulic fluid SustainaLub<sup>TM</sup>. This development has involved the engineers/researchers' passion for tribology, which is described in the tribology exhibit corner (Photo 13).



Photo 13 Tribology corner

The tribology corner also highlights that a World Rally eXperimental (WRX) vehicle with SA using the formulated hydraulic oil won the World Rally Championship (WRC) for Team and Driver (Photo 14).



Photo 14 WRC corner

# 7 Future Challenges

There are products from other departments that we have not introduced in this report. We are also striving to provide easy-to-understand exhibits of these products with unified presentation boards for all types of visitors, from those who are not familiar with technical terms to engineers, as mentioned above.

After the COVID-19 pandemic was over, various exhibitions have been held. KYB's exhibits in these exhibitions can be used in the KYB Museum. As public relations of technology, we believe that one of the roles of the museum is to let visitors know how wonderful KYB's core technologies are.

By learning from the museums and science halls of other companies, for example by participating in the KANAGAWA COMPANY MUSEUM LIAISION COMMITTEE, we intend to further develop the appearance of exhibits through digitization.

# 8 In Closing

The KYB Museum is open to the public on certain days. If you are interested in the exhibits, you are welcome to visit the museum (Open: 14:00 to 16:00, Thursday. More information can be found on the KYB website). KYB employees are also encouraged to visit the museum with their families. It would be a great opportunity for your family to learn about the company you work for.

Finally, we would like to express our deep gratitude to all those involved in the relevant operations and departments who have provided support and cooperation on a daily basis. We would like to take this opportunity to express our gratitude to them.

Please continue to support us.





KYB website, KYB Museum

KYB YouTube

#### — Authors -



#### KOMUTA Kumi

Joined the company in 2008. KYB Museum, Engineering Div.



## FUJISAWA Kyoko

Joined the company in 2008. Accounting Dept. (stationed at Gifu South Plant).

Taken present post after working in Administration Sect. of Electronics Technology Center, and Planning Sect. of Basic Technology R&D Center.