Introduction

Launch of KMEX SA Plant

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1 Introduction

The automobile market in the Americas continues to be active, and customers continue to move south. The advancement of automobile-related companies in Mexico is especially remarkable. KYB has also been successful in our sales expansion activities in the region, requiring us to strengthen our production capabilities. After considering the supply system for the overall production plants in the Americas (KAC/KMEX/KMB) while also considering customer trends, we have decided to establish a shock absorber (SA) plant in KMEX to enhance our production system (Fig. 1).

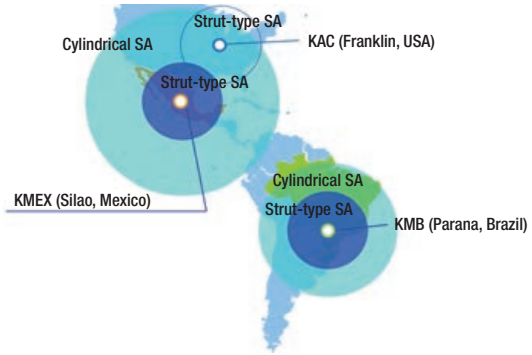

Fig. 1 KYB's production strategy in the Americas

In order to provide high quality SA at low cost, we have made a number of considerations for the entire production process from component procurement to shipment in the plant construction stage.

In this report, I would like to introduce the following initiatives:

① Phased investments according to product launch in order to control investments (plant/process/machine)
② Internalization of processes to be promoted from the beginning of the launch
③ Establishment of production lines with good transportation efficiency that are rectified with process sequence positioning, which can be a model line for future production lines.
④ Establishment of processes that do not create or bring in contamination with the aim of achieving high quality

2 Overview of plant

KMEX was established in October of 2012, and the CVT plant started its operations in October of 2014. The SA plant will be the second plant here.

KMEX is located within the Silao industrial park, which is 350km from Mexico's main city, Mexico City. KMEX is approximately 5km from Del Bajío International Airport in León.

Fig. 2 Location of KMEX (from Google Maps)

Photo 1 Exterior view of KMEX SA Plant

3 Implemented Initiatives

3.1 Phased Investment to Control Investments

We formulated a plan to make phased capital investments according to product launches (Fig. 3).

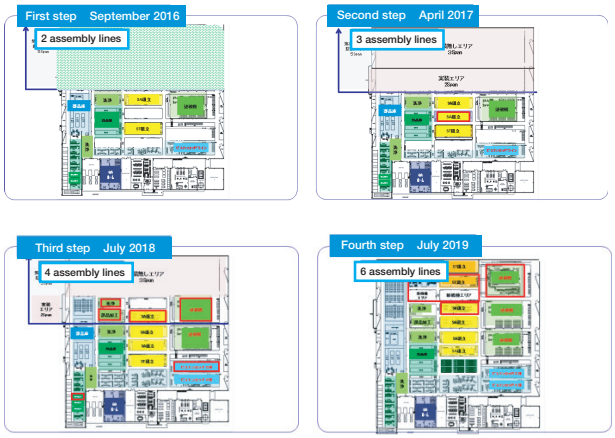

Fig. 3 Plan of factory layout (Phased investments)

Since the production volume was small in the beginning, we launched the SAI production line for cylindrical SA, which flows both aftermarket products and OEM products, in May of 2016 as the first step. We also began delivering aftermarket products (Fig. 4).

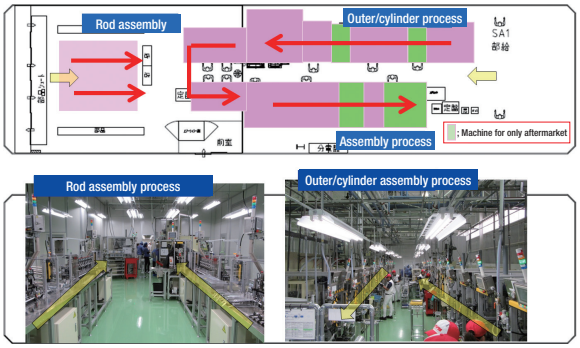

Fig. 4 SA production line #1 overview

We launched the STI production line for strut-type SA in September of 2016 as well and began delivering OEM products along with the cylindrical SA.

In the future, we plan to add SA production line #2 and exclusively use SA production line #1 for OEM and SA production line #2 for aftermarket products, with the aim of streamlining our production.

3.2 Initiatives to Internalize Processes

(1) Tube cutting process (outer/cylinder)

Operation was launched in May of 2016 with the aim of reducing the variable expenses and inventory by promoting local procurement of materials and introducing tube cutting process.

We will add processes in a phased manner in response to demands (Photo 2).

Photo 2 Tube cutting process

(2) Piston rod process

We launched the process according to the following concepts, with the aim of achieving the global standard (Photo 3):

- Establish the production line according to the demands to control the investments, and procure the machines in the optimal manner from the aspects of quality/cost/performance.
- Important machines are to be procured from Japan.
- Machine specifications are to allow production of small lots as small as 40 in order to respond to aftermarket products.

Photo 3 Piston rod process

3.3 Rectified Layout

We have established the plant layout in accordance with the KYB Production Standards so that products flow in a certain direction from the component warehouse → assembly area → completed product store area (Fig. 5).

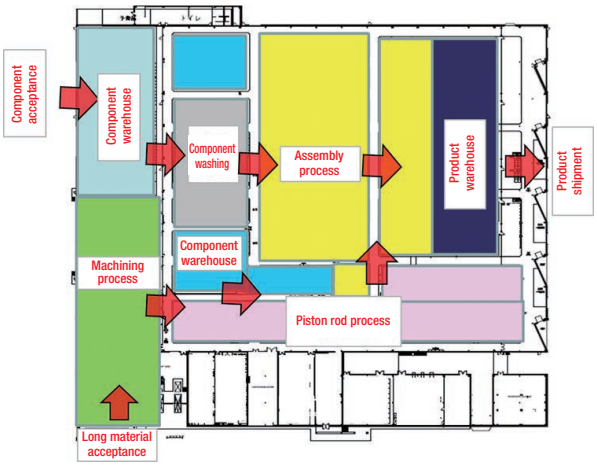

Fig. 5 Overall plant layout

3.4 Contamination Measure (Plant – Process – Machine)

(1) Preventing mutual contamination between plants

- Once a worker enters the plant, he/she can perform the day's work without leaving the plant.
- Pressurize the connecting passageways (Photo 4) between plants so that workers can remove contamination with an air shower (Photo 5) so that contamination is not brought into the plant.
- Introduce special shoes for the plant so that contamination is not brought into the plant from outside.

We promoted the initiative in accordance with the above concepts.

Photo 4 Connecting passageway

Photo 5 Air shower

(2) Contamination Measure within the Plant

By cleansing components before bringing them into the assembly room, we prevent contamination within the assembly room.

Internal component preparation and valve and rod assemblies are performed in the assembly room (Fig. 6).

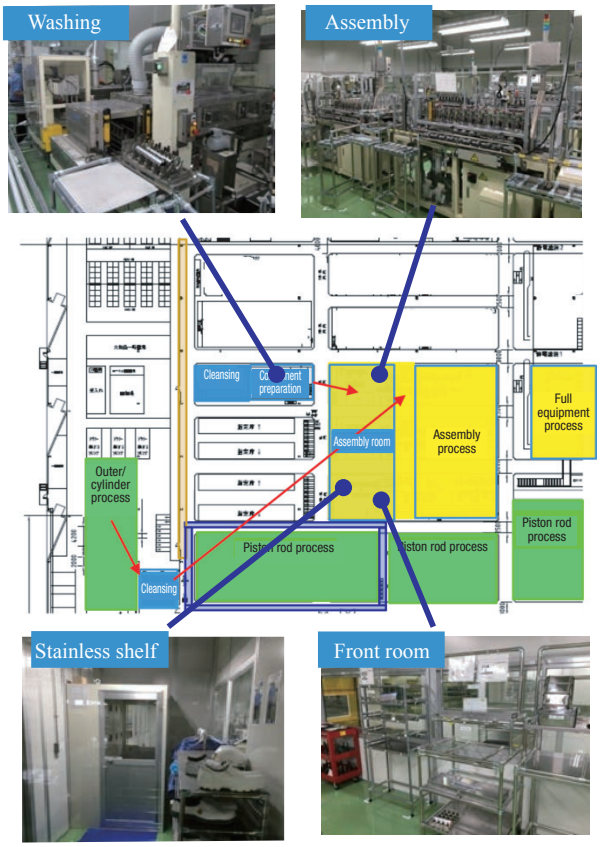

Fig. 6 Contamination measure within the plant

4 Launch of Production Line

(1) Prior confirmation in Japan

Since this was the first SA production line launch in KMEX, we manufactured accessories, such as component feeding chutes and work benches, when we made adjustments to the machines in Japan. We confirmed the following items in the environment that allowed us to perform operation in the same manner as KMEX (Photo 6):

Photo 6 Launch of production line in Japan

・There is no unsafe point/operation.
・Operator can work as per the planned standard work.
・Target cycle time is achieved.
・Required documents have been prepared. (Condition table, etc.)

In the final phase of the machine adjustment, we identified issues through the production trial, in which operations were actually appointed by assuming mass production (Photo 7).

Photo 7 Verification of standard work

(2) Evaluation of launching production line in KMEX

We launched the production line by confirming each item that was evaluated in Japan along with local staff from the machine setup stage to evaluation completion (Photo 8).

Photo 8 Production trial

After passing the internal review in KMEX, we started the production as per the following schedule (Photo 9):

・Launch of production for aftermarket products
From May, 2016
・Launch of production for OEM products
From September, 2016

Photo 9 Internal review in KMEX

5 In Closing

We were able to safely complete the launch of aftermarket products and OEM products by enhancing the progress through utilization of periodical meetings with KMEX.

New launch of many aftermarket products and OEM products are scheduled in the future, so we will launch the production lines as per the schedule by thoroughly evaluating the production lines and products to avoid defects.

Finally, I would like to express my sincere gratitude for everyone who has provided support for this initiative.

Author

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Joined the company in 1992.
Production Engineering Dept., Gifu North Plant, Automotive Components Operations.
Engaged in overseas support work.