

Ricoh Co., Ltd

Established: February 6, 1936

Head office address: 8-13-1 Ginza, Chuo-ku, Tokyo

Capital: 135,400,000,000 yen (as of March, 2008)

Annual sales: 2,219,900,000,000 yen (on an consolidated basis, March 31, 2008)

Number of employees: 82,400 employees

Business areas: Manufacturing and selling digital complex machine, MFP, semi-conductor, electrical component unit, and related equipment

URL: <http://www.ricoh.co.jp>



Installing Asprova in order to deal with high-mix, low-volume manufacture realized a **50 percent cut** in both production lead time and production planning time, and resulted in **reduction** of in-progress inventories.

The forerunner of Ricoh Co., Ltd, "Riken photosensitive paper Co., Ltd" was established in 1936 to manufacture and to sell "Riken positive paper". After the war, Ricoh established mass production method of cameras, launched world first facsimiles for office use in 1970s, and advanced the development of digital multifunction copier. Since 2000, Ricoh has advocated "the document highway", Ricoh's new architecture and rules to integrate networking equipments and application systems including imaging peripherals in order to realize efficient data application for offices. Since then Ricoh has provided wide varieties of solutions. Hatano office, the Electric Equipment unit, which manufactures make-to order pc-board, decided to install Asprova, aiming to achieve reduction of human workload and accuracy improvement when making production plans. We received insight into the company's background, the reasons for selecting Asprova, and the results of installing Asprova from Director Mr. Akihisa Okamoto, Section chief Mr. Masaki Fukaya, and specialist Mr. Yukio Fujita, Production Control Division of the Electric Equipment unit company.

The ratio of high-mix, low-volume manufacture increased, as Ricoh expanded sales to non-group companies

Although Ricoh is very famous for its office-use digital copier and MFP, "Multi-function printer", the company actively expands its business to other areas than office solution machine. One example is its electric equipment unit company in Hatano office where make-to order manufacturing of PC-board, hereinafter called as "PCB", is carried out for sales to non-group companies. As of year 2000, Hatano office had a factory manufacturing PCBs for MFP which were provided to group companies. It, however, increased PCBs sales to non-group companies, and now produces most PCBs to provide outside group companies. As this change occurring, the number of types of PCBs produced in the factory increased and the number of production per one lot decreased became more significant. Mr. Akihisa Okamoto, the Director of Production Control Division, the Electric Equipment unit company, explained about the situation at that time. "High-mix, low-volume production is required when you deal with sales to non-group companies. In that, a lot of small volume orders must be accumulated in order to achieve same work volume we used to deal with. Frequent machine changeovers are also needed. We considered that was a big chance if we could build a structure which managed to deal with this high-mix, low-volume production."

The increasing number of managed machines made the team to recognize the necessity of production scheduler.

The PCB production includes the processes of setting up the parts provided from outside parts manufacturers on to PC boards. The products were manufactured by passing through several units the factory then had, and each unit contained many production machines connected. The input times of parts into the starting point in each unit would tell automatically the output times from the end point, and the production plans were made by those times. To deal with high-mix, low-volume production, however, the connected condition/situation for one kind of product does not always most suit for other products. Hatano office then released and reallocated all the machine connections. The release and reallocation of machine connections brought a new big problem. Releasing machine connections increased the processes to be managed and the workload to make production plans also multiplied. "In brief, it means that we had to make the same number of production plans than that of the machines, and it was not manageable manually. Then production schedulers became necessary because the operation of production plan must be automated and efficiently calculated."



Ricoh Co., Ltd.

Electric Equipment Company
Product Control section,
Product Control Division
Director Mr. Masaki Fukaya (left)

Electric Equipment Company
Product Control section,
Product Control Division
Specialist Mr. Yuuo Fujita (right)

■Clients' voices

Hatano office, Ricoh Co., Ltd.
Electric Equipment Company
Mr. Akihisa Okamoto, Director
of Product Control section

At first we reviewed the way of manufacturing under the circumstances which external factors change. And if we carried out the solution found from the review, there was another matter to overcome. The matter was how efficiently and accurately we could make production plans the coverage being rather wide. Asprova enabled us to realize that. We will expand the use of Asprova as we become to understand it more deeply in the future.

■Points on which Asprova was highly praised

- Cut production lead time in half
- Reduced in-progress inventory
- Cut production planning time
- Improved the efficiency of production planning
- Reduced the ratio of delivery delay

Choosing Asprova by its user-friendly feature and great achievement of other division which installed Asprova

It was 2003 when Ricoh raised the issue to consider a production scheduler installment. In the processes after the review, several machines are connected to manufacture products, and workers cover up some processes, such as soldering process, which machines cannot deal with. The number of processes including both machines and workers is thirty four, and all the processes are the subject to the management of the production scheduler. Upon selecting the scheduler, Hatano office drew upon Atsugi office's experience to decide Asprova and read the office's document on examination.

Mr. Masaki Fukaya, the section chief of Product Control, raised the decisive factors. "Asprova's great installation records in many sites were the biggest reason why we decided on the installment. We found that Asprova had many user-friendly functions when reading the research documents on production schedulers under examination by Atsugi office. We then downloaded the trial version of Asprova, checked its suitability, and examined if the model data we had could be used to register data in the new master system as well. As a result, we concluded that Asprova was such a flexible scheduler that all our requirements could be fulfilled with its standard features." In December 2005, Asprova was installed to Ricoh Hatano office.

The production lead time was almost halved, in-progress inventories were reduced, and planning time was cut about fifty percent.

It has been three years since the installment of Asprova. Mr. Fujita in Product Control section describes the advantages of installing Asprova: "Asprova has enabled us to simulate before producing and has shortened planning time dramatically. Especially for the latter, one click on Asprova automatically makes the production plans, cutting the planning time to one half of what was needed before. For each production site we create execution plans with Asprova. Before the installment of Asprova, we had to set up the constraint conditions of machines manually. Now we just input the conditions to as master data to Asprova, and production plans are automatically calculated. That has enabled us to reduce the hours we

spend to make production plan." Mr. Fujita set up all the master data by himself using the help functions of Asprova website and without any help from Sler. As a tangible effect of the installment, the ratio of delivery delay per day decreased to that of less than one third. The production lead time from the point in which material is inputted into the first process to the point in which all the processes are finalized, have also been halved, resulting in reductions in in-progress inventories. In addition, the reduction of in-progress inventories has lead to accuracy improvement of inventory management. "These improvements were achieved, because we made the goal clear to ourselves before installing Asprova."

Considering the use of Asprova to make purchase plans and the expansion of the use at foreign sites

Mr. Okamoto says that Asprova brought many benefits after the installment, but there are still many processes which can be further improved by Asprova in Hatano office. For example, Mr. Okamoto says, "we can use Asprova to do load calculation based on sales order information, to make plans of inputting materials, and to improve the accuracy and efficiency of the purchase planning which is combined with sales orders at the logistics phase."

Mr. Fujita says that in the field which even closer to production sites, the issue, "filling the gap between execution plans made by Asprova and the actual workability", is raised. Many other divisions with different business categories have installed Asprova after Atsugi office installed Asprova in 2000. "Ricoh's electrical component business will expand subsequently the use of Asprova into other Ricoh's foreign sites besides the Shanghai based production companies which are already using Asprova", Mr. Okamoto explained. The effective use of Asprova in Ricoh is expected to expand even more in the future.



Asprova Corporation

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