

Kihara Manufacturing Company, Ltd.

## Pipe Manufacturer Chooses Asprova for Scheduling Speed Achieves Load Leveling and Major Inventory Reduction



The Ibaraki factory of Kihara Manufacturing Company specializes in production of piping and tubing, including truck exhaust pipes, engine pipes, and hydraulic pipes for construction equipment. Production scheduling is performed twice each morning, first for products and then again for parts. Weighed down by the complexity of handling a large number of customers and product varieties and the resulting large number of order changes, they were drawn to Asprova's ability to maintain fast scheduling speed in the face of overwhelming data size. Due to the flexibility of the Asprova program, they were able to deal with the large number of customers and products while keeping customization to a minimum.

### Problems Prior to Introduction

- MOUNTAINS of paperwork due to complicated scheduling procedures
- CONFUSION on assembly line due to contradictory instructions from different process managers
- PROCESS managers hoarding inventory to avoid missed deadlines

### Reason for Introducing Asprova

- ASPROVA's scheduling speed
- MINIMAL need for customization
- QUALITY of response from Scheduling System Laboratory

### Benefits of Introduction

- ASPROVA's load calculations enabled scheduling to be performed centrally every morning without exchange of paperwork.
- CONTROL of factory floor through reliable schedules led to inventory reduction of more than 200 million yen.
- CLARITY of priorities and accuracy of load calculations in Asprova's manufacturing instructions eliminated need for corrections by process managers.

### Production Scheduling in State of Confusion

Up till now in the Ibaraki factory of Kihara Manufacturing Company, process managers for each customer carried out instruction-based production which depended on the exchange of considerable paperwork in the form of production plans, work charts, missing item lists, and instruction supplements. Since it was not feasible for detailed factory-wide production schedules to be drawn up centrally on a daily basis, much of the burden of scheduling was placed on the shoulders of the process managers themselves, who were often unable to set appropriate priorities to the requests for needed parts coming in simultaneously from numerous other managers. As the factory floor and production management office became increasingly swamped in paperwork, the problem was worsened by managers making unnecessarily large request for parts or hiding inventory stock for fear of missing deadlines. Although a production management system had been installed on the factory mainframe for more than 20 years, the reality of the factory's production scheduling was that it was in a state of confusion.

"For more than 10 years," explains Masami Satoh, Chief of Production Management, "we had been looking into introducing a scheduling management system, and in fact we tried several different ones, but none of them reached the stage of actual installation." The main reason, he says, was that most of the systems were unable to handle the large number of customers and product varieties. They decided on Asprova because of the high speed of its scheduling computation, and because they valued Scheduling System Laboratory's quick response to all of their needs. Concerning the speed of computation, Satoh says, "We saw the demo and were amazed."

#### Data Volume

Finished products	3,400
Total items	10,000
Resources	100
Processes	3
Scheduling period	58 days
Scheduling cycle	once / day
Lots in scheduling period	6,000
Jobs in scheduling period	15,000

#### Kihara Manufacturing Company, Ltd.

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Ibaraki factory: 5166 Uchimoriya-cho, Mizukaicho-shi, Ibaraki-ken 303-0042 Japan

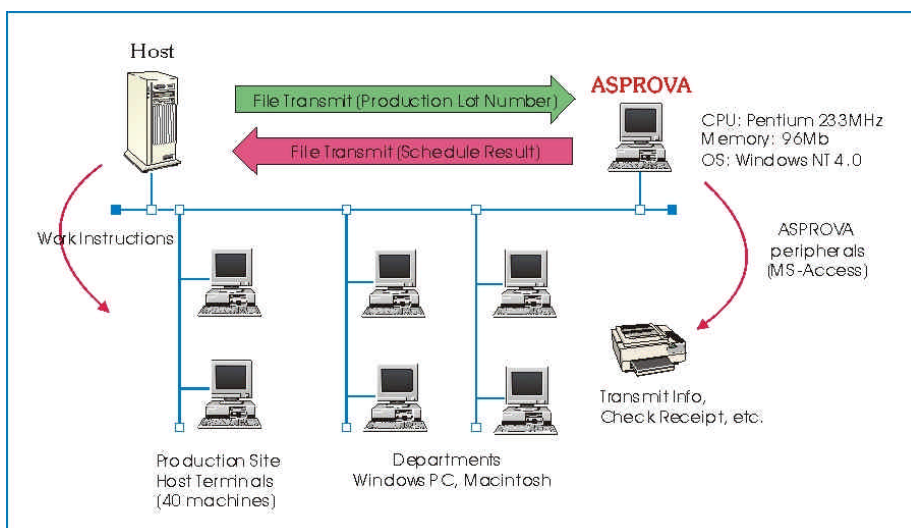
Company established: February 1943, Factory established: July 1954

Representative director: President Tsuneo Kihara

Capital: 107 million yen, Employees: 270 (as of June 1998)

Annual sales: 5 billion yen (in 1997)

Since its establishment, Kihara Manufacturing Company has specialized in producing a diverse range of low-pressure to high-pressure pipes for use in motors, industrial machinery, ships, and other machinery.



**Figure 1: System structure**

Data is transferred with the office mainframe twice daily in order to carry out scheduling, first for the customer-side plans, and then for the factory's internal requirements. The mainframe explodes requirements for parts, determines due dates, and outputs manufacturing instructions.

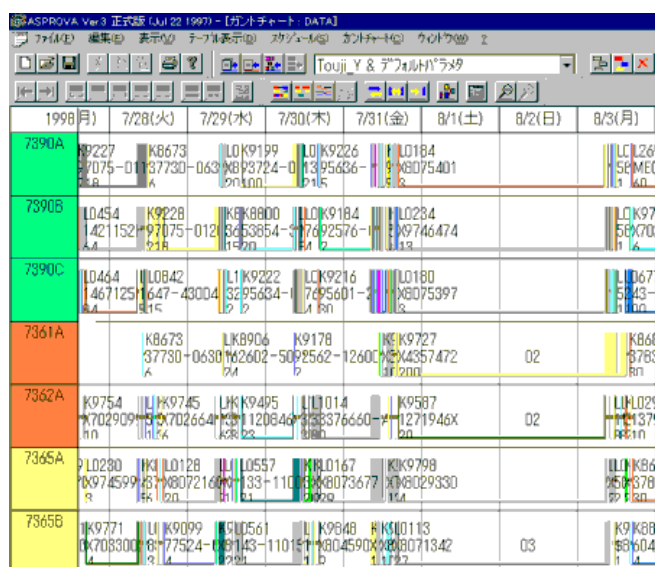


Figure 2: Gantt chart showing results of scheduling with Asprova.

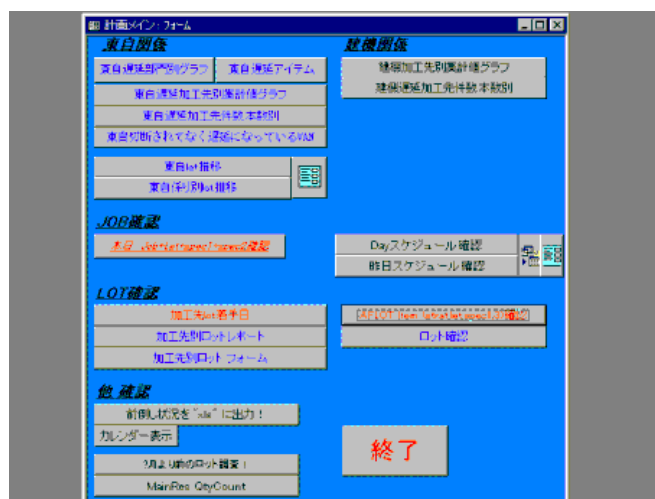


Figure 3: Main menu from Asprova peripheral utility, developed by Kihara Manufacturing Company in response to various needs from the customer relations department.

Satoh says their appreciation was further increased upon finding that Asprova's standard version was able to deal with the continual thorn in their side -- the huge number of product varieties -- with a minimum of customization.

## Can't Operate Without Asprova

Now scheduling is performed twice a day, first to schedule the final products, and then again to schedule the component parts based on those results. Although performing daily scheduling on a scale as large as the Ibaraki factory's means some daunting demands on the scheduler for computational speed, Asprova easily met the challenge by generating a schedule in only 10 minutes.

At the same factory, during the investigatory stages of the scheduler introduction, managers had described their hopes for the role of the scheduler in a list including such tasks as integrating customer-specific manufacturing instructions, generating reasonable instructions based on resource load planning, guaranteeing that following the schedule will finish lots on time, producing only the required items, facilitating frequent re-scheduling, and ensuring timely completion of job preparations. Asprova, they say, has fulfilled nearly 100 percent of their hopes.

Not only that, but Asprova has also allowed them to effect a drastic reduction in inventory. "Up till now," explains Satoh, "process managers were only managing to stay on top of demand by producing hundreds of pipes at a time. Now that we have scheduling under control, we've started producing smaller lots to cut down on inventory." On a price base, he says, this inventory reduction has totaled about 30 percent.

With this growing list of achievements, Asprova is rapidly becoming an indispensable element of the Ibaraki factory. As Sumio Sakamaki, Chief of Systems Development in the Production Division, says, "Asprova has become so much of part of our production management system, I don't think work in this factory could even go on without it."