Solving the 5 difficult problems the manufacturing business faces with TPiCS

It's not wonder that you might think, "How could no more than 1 or 2 million yen systems do such a thing?" Of course, you can't solve the "difficult problems" just because you bought TPiCS-X. You have to understand the basic concepts of production control we are proposing and to put them in practice. That road is never smooth, but it surely leads to real solutions.

1. The Production for Short-term Delivery and Ready for Whatever Changes Come Along

In TPiCS-X, you can change even the schedule that has been released for an order depending on the situation. Not only that, TPiCS-X performs the MRP calculations including order-released schedules as well.

It does them, simulating whether or not this production (these sales orders) will be feasible based on the order-released schedules.

Since TPiCS-X performs the MRP calculations based on all the unfinished schedules of today and in the past with the current inventory as a starting point, you will be able to tell whether or not the production for today and for tomorrow that supports today's sales orders will be possible. In TPiCS-X, you make the production schedule over simulation, and go along to make arrangements for parts and materials.

On the contrary, the general MRP systems don't take care of the rest as the system afterwards once they are finished with calculating the required quantities by inventory allocations and lot-sizing, and issuing orders. So, we had to use the calculator to figure out the immediate schedule changes and whether the parts necessary for tomorrow's production would be really sufficient.

With TPiCS-X, you can leave everything of the production schedule to the system. But, in order to leave everything to the system (let the system calculate,) the data to let the system calculate must be something meaningful. Not to mention the stock quantities and the master records the system keeps, the order-released Schedule data also have to be maintained properly. We call this the "schedule management." We will achieve the production for short-term delivery while doing the schedule management.

Other than this, in order to achieve the production for short-term delivery, there are also problems like "the leveling," "instructions to the factory floor" and "suppliers." Refer to "Solving the 5 difficult problems the manufacturing business faces with TPiCS" for those problems.

2. Achieving to Make the Factory Floor Observable

There are two aspects in "making it observable:"
① By the improvements of the factory floor representing 5S's,
② You can tell if you look at the screens of the system.
Making it observable by the system will be able to be achieved on its own by the above "schedule management" being performed repeatedly.

3. Reducing Delays in Shipment

You cannot prevent delays in shipment due to disasters, such as earthquakes and lightning strikes, and big accidents from happening even if you use TPiCS-X, but, as far as the troubles in production due to "mistakes," "omissions" and "oversight" in regular work, you will build a scheme where you can foresee those troubles by performing the above "schedule management" to reduce them.

4. Reducing Inventory

We consider inventory to be categorized into the following two by the source of occurrence:
①Dead stock due to mistake, miscalculation and engineering change,
②Operating inventory that occurs in day-to-day production activities.
Further analyzing the cause of the dead stock, we find multiple factors that are occurring intricately on top of another many times, and we cannot find easy countermeasures. Regarding this problem, too, the answer would be "down-to-earth improvement."

There's a mechanism in TPiCS-X to reflect the design information, including even the engineering change, in the production information accurately, promptly and easily. This can solve the half of this problem.

Since the degree of accuracy for probability is out of range of TPiCS-X, you think about keeping the damage minimized even if you have miscalculations. In order to do that, you are going to make the lot size small and shorten the purchasing lead-time. But there are other problems in this method. Refer to "Solving the 5 difficult problems the manufacturing business faces with TPiCS" for those problems.

We consider the operating inventory by separating it into the following two:
②-1. Inventory that is caused by that the person in charge of arrangements has made adjustments for the quantity to purchase with "seat-of-the-pants" in consideration of handling changes,
②-2. Inventory that occurs inevitably from coming into the factory to going out of there.

Since you can set up the "buffer to handle changes" in TPiCS-X, inventory by adjustments in purchasing is not a work to rely on the "seat-of-the-pants" any more, but you reduce inventory by changing it to the work managed by the system.

Inventory from coming into the factory to going out of there can be controlled by the "delivery/mfg. lead-times" and the "lot size."

In the state of the "schedule management" having been achieved, you can tell a critical point at which you will not able to produce as planned when you make these settings smaller. This is where the bottleneck for inventory reduction lies, so you must improve it.

5. Handling Delays in Engineering Change and Release of Drawing

The essence of difficulty and toughness of the production control lies in "change and alteration." And the source is the "change in quantity and period when anticipation turns to the actual demand" and the "engineering change."

TPiCS-X has the "Structure Information Conversion Option" (something we touched in inventory reduction) that provides you with the function to reflect an engineering change in the production information, and, in addition to that, you can also issue a cancel or additional order by directly verifying with something that has already been arranged.

Supports the manufacturing industry all the way from mass production to individual order specification:

Mfg. No. System of f-MRP

It can handle both of the functions of "f-MRP", which is strong in repetitive production, and "Mfg. No. Control", which is directed to the individual order production, and mixed management of them is possible. You can specify how to manage in units of products, intermediate units, parts and materials like making arrangements for products and intermediate products from fixed sales orders and managing parts and materials, in which commonality is high, using f-MRP.

Repetitive Production System

It is suitable for the production where repetition is high and the production where there are many common parts. While responding to changes in the sales orders and forecast, you can reduce the impact of the production of products, intermediate processes, and the procurement of parts and materials.

Mfg. No. Control System

It is suitable for the production of high-mix low-volume and with less change of schedule. It is easy to understand the relationship between each instruction and sales order by the schedule connected with the mfg. no. from the product to the intermediate process, the first process and the raw materials.

Schematic Of System Functions
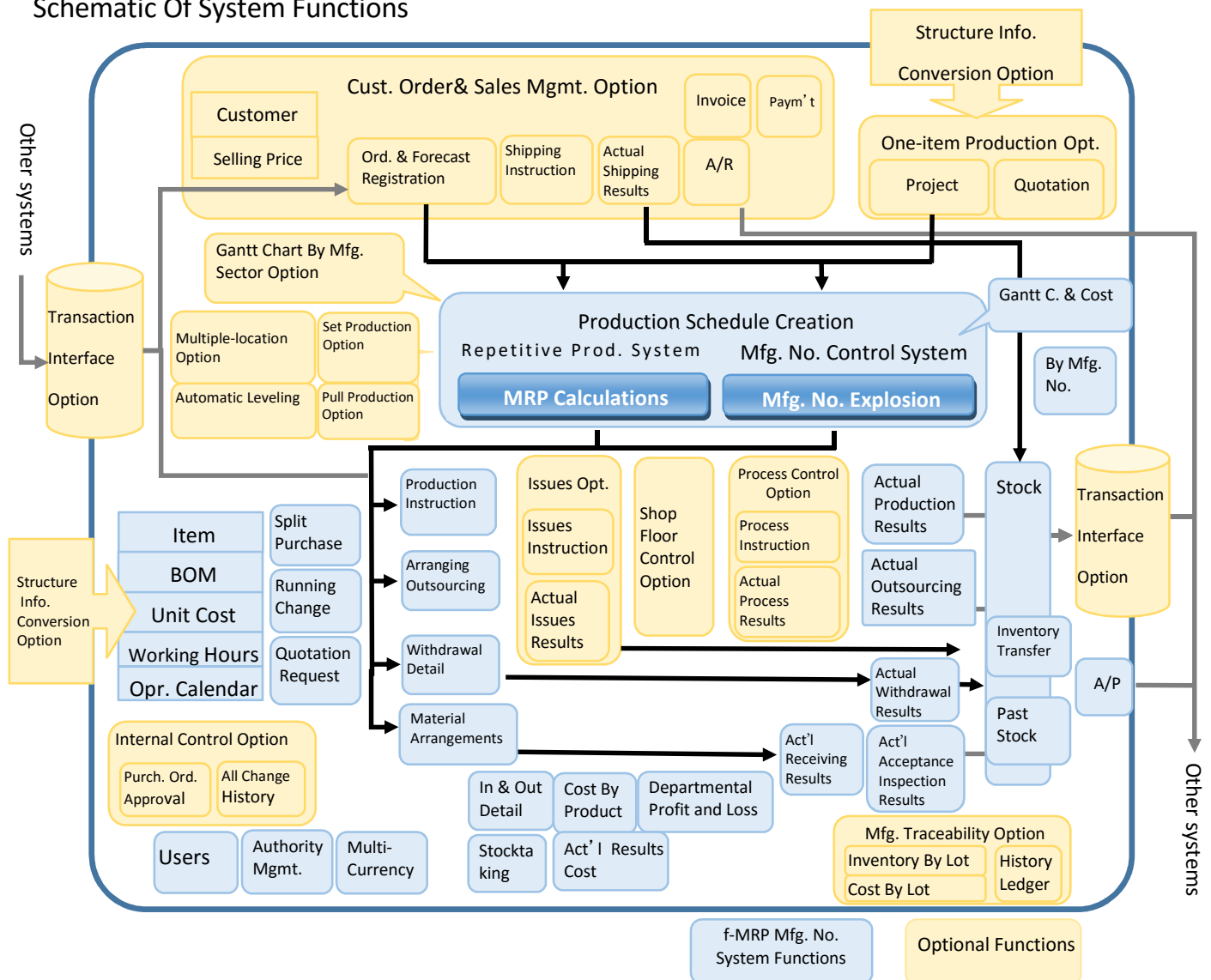
f-MRP Mfg. No. System

Following the most recent schedule change, the f-MRP Mfg. No. System of TPiCS realizes the stable production by f-MRP that has added the concept of buffer to the existing MRP based on the assumption that there's repeatability to some extent.

Also, you can set up the Mfg. No. Control associated with the production schedule for customer orders and products, the f-MRP Control and the Mfg. No. Control for each product, part, material and intermediate process. So, you could have a mixed operation like using the Mfg. No. Control up to the intermediate process for arrangements for products, and the f-MRP Control, which is tolerant of changes, for those for parts and materials.

Function to Create the Production Schedule (f-MRP)

- TPiCS realizes the "prompt, inexpensive, responsive, but stable production" through its own f-MRP function.
- Using the sales plan and the production schedue for products as a starting point, TPiCS automatically creates the schedules for production and arrangements up to intermediate units and end raw materials according to the bill of materials, the mfg. lead-time, the lot size, etc.

  When you use the Customer Order & Sales Management Option, it's also possible to operate the system to make the production schedule according to the customer order and forecasting information, and to automatically make the production schedule where the production is in time for the shipment, which is a starting point, in the environment where there's no customer order or forecasting information like responding to short-term or immediate deliveries, and make arrangements for intermediate processes, parts and materials from there.

- TPiCS makes the production schedule by adding something already purchased, something delayed in supplier's delivery and something delayed in operation to the current stock at the time of the MRP calculations. Multiple storage locations can be registered, and it's also possible to combine them for the calculation and to set them to the storage location not subject to the calculation.

- It's possible to register operating calendars. With them, you can make the production schedule for the initial process in accordance with the calendar of your outsourcing processing company, and, when you are using the Customer Order & Sales Management Option, you can make the shipping and production schedules in accordance with the operating calendars of your customers.

Journaling Function (Warning Information)

In the MRP calculations, a schedule change one ought to pay attention to like "falling below the purchasing lead-time", which is derived from various situation changes such as a new customer order, a delivery date change, a change in quantity of customer order, a cancel order, and defective goods of intermediate process, will be displayed in the journal.

The production schedule table works with the journal. So, you can display the former from the latter to make adjustments for the production schedule, confirm the information of suppliers, and make sure of the status of the structures and the master tables.

Running Change Function

All you need to do is register old and new codes for a part in the Engineering Change Master, and that will automatically switch the old code to the new one for the purchase by calculating when to consume the stock that currently exists and what has been on order. Even if the production schedule or stock quantity changes for a product, the situation will automatically be handle. At the time of the Actual Results Entry for a parent, if the stock of a child part that was used gets negative, it will automatically be switched to the new code. You will be able to specify the date, too. (Bill of Materials)

- Gantt Chart By Mfg. Sector Option

  It's possible to confirm the workload for the department to manufacture from the created production schedule as a result of the MRP calculations, and to adjust it on the Gantt chart by mfg. sector.

- Automatic Leveling Option

  It's possible to perform the automatic allocation by the production capacity, the standard operating time, the quantity and the allocation priority of the work center.

- Multiple-location Option

  It's possible to make the production schedule where products and units are automatically split proportionally across multiple mfg. locations, where it's normally produced within the company, but it's partially produced by a subcontracting company as a consignment if the upper limit is exceeded, and where the production is distributed to the mfg. locations at one's discretion.

f-MRP Mfg. No. System

● Function to Create the Production Schedule (Mfg. No. Schedule)

f-MRP mfg. no. — repetitive prod. — mfg. no. ctrl.

・The Mfg. No. Control of TPiCS allows for the following 3 control methods:

B-Seiban: This is a basic method. The arrangement schedules that are connected to product, intermediate unit, material and part through the mfg. no. will be created from the mfg. no. schedule according to the product structure through the mfg. no. explosion. You can change the product structure for each mfg. no. schedule.

S-Seiban: This is the mfg. no. control of precedent arrangements. You can arrange and produce the intermediate unit with the preceding mfg. no. attached, and allocate it to the final mfg. no. to produce the product.

F-Seiban: This is the mfg. no. control of f-MRP. This is a control method where the calculation of required quantity is performed by f-MRP, which is flexible in demand fluctuation, and the association with the created Schedule Detail is done through the mfg. no.

In the Mfg. No. Control as well, TPiCS presents very advanced mfg. no. control functions:

・It provides the lot-sizing.

・You can set up in such a way that you allocate all of the quantity you performed the lot-sizing on or only the required quantity of it to the mfg. no.

・You can automatically allocate to the Order Balance data in the middle of being arranged.

・You can automatically release/re-allocate something insufficient/ excessive from/to the mfg. no. due to defects and good yield.

・It manages revisions, and you can select the stock to allocate.

Structure Change Function

・Two ways of changing the product structure by mfg. no. are prepared:

① Way to use the option code

You can register a part to be used in the option code in the Bill of Materials, and change the structure by specifying the option in the Mfg. No. Schedule and exploding it.

② Way to change the structure after the mfg. no. explosion

You can change the product structure of the data that was exploded for the mfg. nos. An addition and a deletion are easily made by mfg. no. all the time. You can change only the data of the mfg. no. without affecting any master tables.

Cost Aggregation By Mfg. No. Function

・You can calculate unfinished work as the predetermined cost and manage budget and actual amounts in contradistinction to the standard cost.

・You can save the cost at a certain point in time in the past and refer to it later on. (History management of the cost)

・You can include a part that was calculated by f-MRP as well in the Cost By Mfg. No.

Gantt Chart Display Function

・You can display child parts that have the association with the mfg. no. and the progress status of each process.

・You can tell at a glance if the preceding process is finished, or if inventory is available for f-MRP parts, and consequently whether or not it's possible to start now.

・You can change the scheduled date, the supplier and the in-charge line with a drag-and-drop.

・You can issue the changed order for what has been changed and, if linked to the Strategic Due Date Adjustment Option, automatically send the changed content by e-mail to your part suppliers and outsourcing parties.
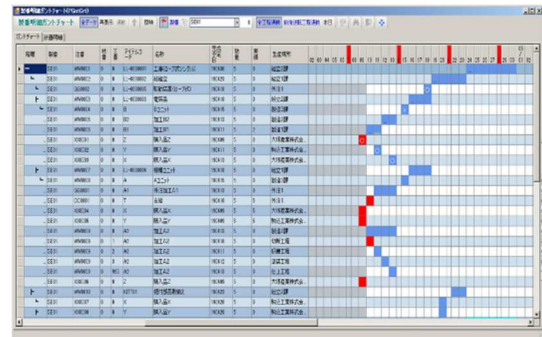
Mixed Management of f-MRP and the Mfg. No. Control

You can specify whether you'll go with f-MRP or the Mfg. No. Control by item in TPiCS. By this, for parts and materials that are too late to be exploded for mfg. nos. and be arranged after the customer orders come, you can make arrangements based on the forecasting orders using f-MRP that is tolerant of changes. And for intermediate units and products, you can issue mfg. orders with the final mfg. nos.
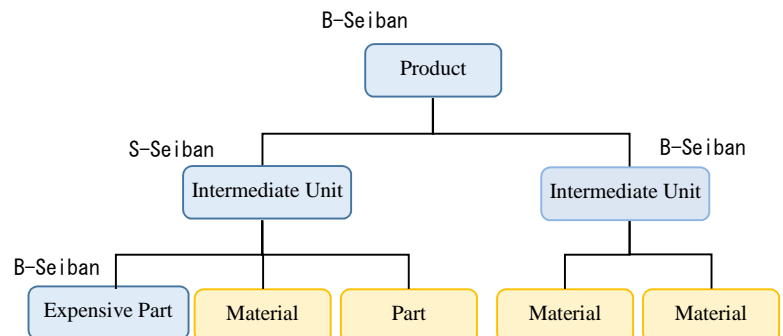
Shared Function Of Each System

● Function of the Order Issuance

Work Order, Purchase Order, Outsourcing Order, Transfer (Supply) Order

This allows you to issue orders based on the MRP calculations, the mfg. no. explosion and the manual entry.

Setting the Least Expensive Supplier Automatically

You register different unit prices in advance depending on the supplier, the season, the quantity and the degree of urgency in the Unit Cost Master. Then, at the time of creating a Schedule Detail, TPiCS is going to look at the season, the quantity, etc., search for the supplier that has the least expensive price to meet the conditions, and set it in the Schedule Detail. Thus, you can issue your purchase order to the least expensive supplier.

Purchasing with Supplier's Part No.

You can purchase using supplier's part no. (catalog no., etc.)

Parallel Purchase

You can issue purchase orders that have been split according to the ratio to multiple suppliers. Also, if the quantity exceeds the upper limit, you can purchase the exceeded portion to other suppliers.

E-mail Transmission

The purchase order by e-mail is possible.

Changing the Form Design

The order form is designed in Excel, which automatically reads and prints the data written from TPiCS.

Normally used format of multiple-items-per-page, one-item-per-page format suitable for the work order form, a form with a list of child parts to be used, and a design with the details of parts to be supplied are also prepared. You can change the predefined designs and add a new one by using a template (predefined design.)
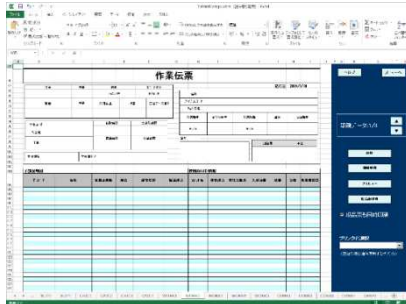
Writing Lot Nos. Clearly for Raw Materials To Be Used (Mfg. Traceability Option)

You can write the lot nos. clearly for raw materials to be used on the work order form.

Identification Tag

You can split the scheduled quantity according to the setting of the quantity of contents, and print the identification tag at the same time as the work order form, the outsourcing order form, etc.

Issuance of the Delayed Event List

You can print a list of not only delayed purchase and work orders, but also purchase and work instructions where the parts and materials that have been ordered are approaching their delivery dates. For example, you could print a list of scheduled receipts for next week by supplier. This, which is not the processing after the delay has occurred, can prevent the delays in delivery from happening.

Quotation Request

You can issue the "quotation request" for a part for which the unit price is undefined. By this function, you can create a purchase order that supports the Subcontract Act.

Entering the Actual Results

When you enter the actual results for an intermediate unit that's manufactured using parts and materials, inventory of the intermediate unit increases and that of the material decreases because of being automatically withdrawn. For the withdrawal, a suitable way varies depending on the production method for parts and materials. For example, in the actual results for assembly where the completed quantity is less compared to the scheduled quantity, in the case that you threw in the parts by following the scheduled quantity but you disposed of some of them because of defective goods, you will need the withdrawal in invested volume. But in the case of partial completion due to the delay in production, you will need the withdrawal with the same quantity as the partially completed quantity. Or, in the case of a liquid product, there's something where you want to adjust the withdrawal quantity each time you do the actual results entry. For this, you can set up a withdrawal at each management point like part, intermediate unit, or product.

You can enter the actual results time for each operator, work party, machine and process, and summarize it by each of these elements. The Accounts Payable Detail Ledger is created from the entered data.

Entering the Hours Worked of Actual Results

You can enter the quantity in real time for the next process in the Actual Results Entry, and enter the hours worked of actual results on the dedicated form later. It's also possible to distribute the total of hours worked of each work party to multiple actual work results, and to automatically set it as each actual results time.

Actual Results Cost

You can take over the unit price purchased of the Purchase data to the actual results and change the unit price purchased of actual results at the time of entering the actual results. Also, in the actual work results entry, the hours worked of actual results and the processing cost rate are reflected in the actual results cost.

You can evaluate inventory using the moving average method, the last cost method, the gross average and gross price method, or the lower-of-cost-or-market value method.

Entering In Block

If you can produce as planned everyday, it's natural that you want to save time for the entry. In this case, you can automatically set the temporary actual results quantity in the schedules that are scheduled to be completed today, and enter only the Schedule Detail for which you could not produce as planned. Thus, you can enter the actual results in block.

Entering the Lot Name (Mfg. Traceability Option)

When you are required to enter a lot no. at the time of receiving something because, for example, it's an important raw material, the Lot Name Required is the setting for you.

You can specify which raw material (lot no.) you used at the time of entering the actual production results, and you can go back to view that data any time you want. It's possible to record a mfg. history as necessary from the point in time of receiving to that of production completion (shipment.)

● Inventory Management

Inventory List

The management of multiple stock locations is available. You can specify a location to store into at the time of receiving and a location to pick from at the time of picking, to be able to figure out how many of what item is stored at what warehouse.

The management of inventory within the process and at the supply-to is available.

The management of in-process inventory for each receiving lot is available.

"Stagnant Inventory" (parts that have not been used for a specified period) can be displayed and printed with a push of the button.

Shared Function Of Each System

● Function of the Quantity Conversion

The following units of measure are available: for the quantity used for the calculation of the production schedule table, to display the Inventory List, and to display on the order form. You can display a converted value by setting up a factor for each product, intermediate unit, part, etc.

For example, the required quantity for the production schedule table would be in liter because you use a liquid there, but you could say 1 can or 2 cans for the purchase order form.

● Cost Control

Cost Summary Table By Product

How much it cost to produce each item this month is aggregated and displayed based on the Actual Results data.

Cost By Department, Summary Table of Profit & Loss

Considering what the following process has used the sales, the profit and loss by department is aggregated and displayed.

Cost Summary Table By Mfg. No.

You can view costs by contrasting the standard cost with the forecast for actual results including the unfinished predetermined cost.

Function of the Re-calculation of the Actual Results Unit Cost

If you calculate the actual results unit cost using the moving-average method, you can re-calculate it by reprocessing all the Actual Results data in the order of their date, starting with the value of the beginning of the month.

Supply Management

Managing paid and free supplies is possible.

● User and Authority Management

Role Management

You can set up coverage for the person responsible for operations to be able to operate like "The person responsible for the planning operation can execute the Item Master, the Bill of Materials and the MRP calculations." and "The person responsible for the Actual Receiving Results Entry can only do the Actual Receiving Results Entry for materials."

User Management

You can set up a role for the user. A combined setting like the planning operation and the purchasing operation, and a grouped setting containing multiple users are possible.

It's also possible to manage using the login user of Windows.

● Function of Data Search, Filtering & Sorting

In almost all forms and items, searching with a full or partial match, or with a match in the beginning is available. Also, Quick Search --- a search occurs as you key in the search value --- is available. With this, you can display the data you need, making sure of the result as required.

● Function of Adding A Field &
Changing the Entry Design

You can display and enter a field the user has added to the database. Since you can register an SQL statement in the item, you can display a field by reference from other tables TPiCS doesn't have and data from the system of other companies. As well as with the existing items, searching, displaying the pull-down list, changing the font color and size, etc. are possible.

● Accounts Payable & Receivable Ledgers

Accounts Payable Ledger (Accounts Payable Detail)

You can enter the material cost, the hours worked, the supplier, etc. at the time of the Actual Results Entry, and they are reflected in the Accounts Payable Ledger.

You can export data of the Accounts Payable Detail and the Accounts Receivable Detail according to the "import format for the journal data" of almost all the general accounting systems for the PC.

Accounts Receivable Ledger (Accounts Receivable Detail) - Customer Order & Sales Management Option

The Actual Shipping Results Entry reflects the sales amount in the Accounts Receivable Detail.

● Operating Calendar

You can register a calendar that has different holidays and operating time.

There's no limit to the number of calendars.

Managing shifts like day shift and night shift is also possible. (Max. 24 shifts)

You can specify the calendars to be used for factories, processes, suppliers, outsourcing companies, etc.

You can set up the settings with different particle sizes, such as by day shift and night shift for this month, in a unit of days for the next month and in a unit of weeks for the month after next, in one calendar, and create a production schedule in accordance with them.

● Interface Linked to Other Systems

Text Import & Export

You can import and export data of all the tables --- which are the master tables, the transaction data such as Schedule Detail and the already purchased data, the Inventory List and the summary data such as Cost Summary By Item and Cost Summary By Department --- in CSV text file format.

Transaction Data Text Import

The updates of related tables occur at the same time as you import the text file as well as you would operate the entry form such as Sales Order, Schedule Detail, Actual Work Results、Actual Shipping Results, Actual Issues Results and Inventory Transfer. In the case of importing the Sales Order data, the imported data will also be reflected in the production schedule table at the same time as the registration of the Sales Order data.

Transaction Automatic Import & Export (Transaction Interface Option)

If you assume frequent data imports on a text file basis, it will be difficult to deal with import errors because of data inconsistencies. In the Transaction Interface Option, if an import error occurs, the error description is written in the table and the status control is performed. So, cooperation becomes easy to do. Also, it's possible to automatically write transaction data you manipulated on the form of TPiCS to the write-out table. This allows you to perform the two-way cooperation with a third-party system.

● Automatic Execution Function

You can automatically do the same operations, for *example*, *for the* import of transaction data and the monthly processing, as you would do manually by preparing the commands for the fixed form processing as a script file.

For example, you could import the Sales Order data in the lunch break everyday followed by the automatic execution of the MRP calculations, the Schedule Detail creation, and the order creation.
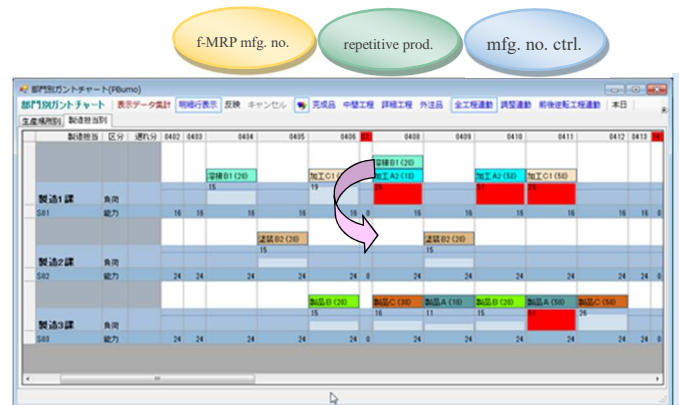
Option

Gantt Chart By Mfg. Sector

You can display the Gantt chart where the details are summarized by mfg. sector based on the production schedule that's been made by the MRP calculations and the mfg. no.

In the Gantt chart, you can tell an overloaded schedule, which has exceeded the production capacity of the mfg. sector, because it's displayed in red so that you can transfer the schedule to another mfg. sector with a drag-and-drop, adjust it forward and backward, split it, and adjust its quantity. Also, you can adjust with a drag-and-drop in conjunction with the intermediate process and the materials that have the parent-child relationship with the product.

As for the most recent schedule, you can summarize it from the Schedule Detail that has the detailed production location already set. When you register the machine for the production location, you will be able to assign the work to the machine and adjust the daily schedule.

Multiple Locations

In the Multiple Locations Option, you can make a production schedule for multiple mfg. locations to one item according to their own parameters of the mfg. lead-time, the purchasing lead-time and the lot size.

With this function, you can make a schedule that will meet more complex situations. For example, you could make a production schedule to entrust to outsourcing depending on the workload of the mfg. department although you normally produce internally, make a production schedule to distribute the production volume to 2 places in the mfg. department according to the ratio, and make separate schedules for supplies for multiple outsourcing companies. Also, you can simulate and adjust the bottleneck process from the journal that's been displayed because of the sales order with a short-term delivery date by changing it with a drag-and-drop in combination with the Gantt Chart By Mfg. Sector.
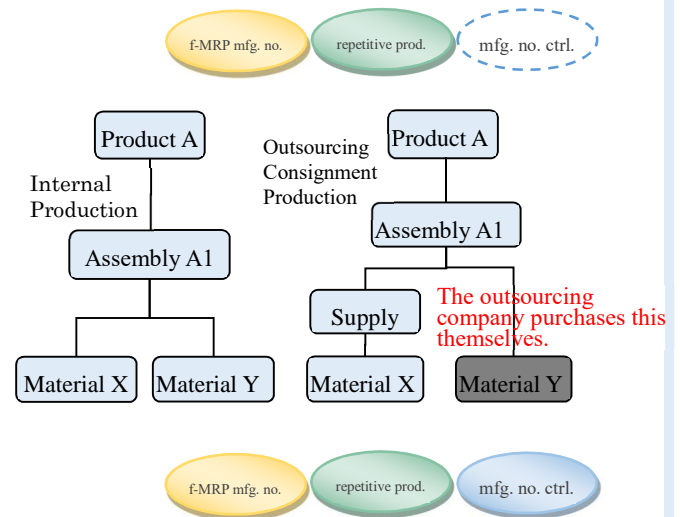
Issues

You can instruct issues (picking) from the warehouse to the factory floor.

The issues will be summarized by item, issue-from and issue-to. (For the mfg. no. controlled items, they will be summarized by mfg. no. in addition to the above.)

You can register the lot sizes for arrangements and issues separately.

If the current inventory doesn't satisfy the required quantity of the issue-to, some indication will be printed in the issues list so that you will know the insufficient quantity.

When a part you were unable to issue because of the stock insufficiency has been delivered, it will automatically be shown on the next issues list. Thus, you will be free from the extra, cumbersome management.

Process Control

You can manage the instructions and the actual results by exploding to the detailed process based on the Schedule Detail that was created from the production schedule made by the MRP calculations and the mfg. no. explosion.

By changing the routing code, you can re-do the explosion of the detailed process, as required, that was exploded according to the master tables at the time of creating the Schedule Detail. For example, you could register the routing when you used the old machine beforehand, changing the routing code of the original process when the load is high, and print the process order form where a setup is added to the regular order of operations.

The process is both possible for an operation for the use of only instructing work to the factory floor and for an operation where the actual results entry is required for working time and progress management of actual results. You can confirm and adjust the load by using the Gantt Chart By Mfg. Sector together.

Routing Code in the new machine	Routing Code in the old machine
Finish	Finish
Cutting	Rough Cutting
	Cutting
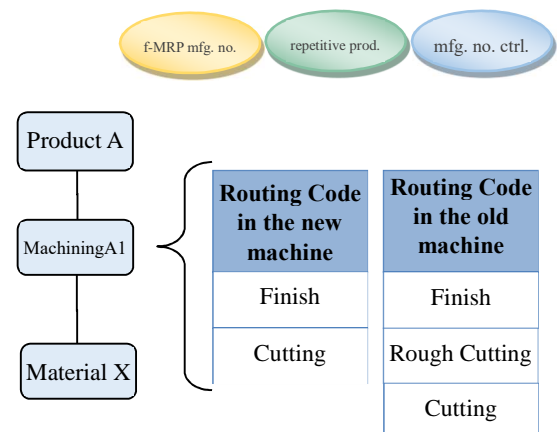
Option

● Customer Order & Sales Management

f-MRP mfg. no.   *repetitive prod.*   *mfg. no. ctrl.*

From The Sales And Forecasting Order Data To The Production Schedule

・You can create the shipping schedule of TPiCS from the Sales Order data and perform the MRP calculations right away.
・You can make arrangements for parts and materials based on the forecasting schedule by working together with the f-MRP function. Even if the forecasting schedule changes, you can advance to the next MRP calculations without doing anything since it's based on the f-MRP function.
・In receiving an order for the product that requires the mfg. no. control, you can create a Mfg. No. Schedule or allocate a sales order to the preceding Mfg. No. Schedule upon entry of the sales order. If the scheduled quantity to be allocated is insufficient, you can automatically create a Mfg. No. Schedule with as much as the insufficient quantity.
・It's possible to import the order and delivery instruction data that come from the Internet.
・The file to be imported is in CSV format.
・You can import sales orders from the system like EDI and ERP via the Transaction Interface Option.
・It completely supports the daily delivery instructions.
・You can reconcile and delete the forecasting data against the firm Sales Order data you are reading in.
・It's possible not to reflect them in the production schedule as backorders.
・It's possible to respond to the customer-order-receiving style of the Full Choice Option Production.
・You can enter whatever level of the product structure for the Sales Order data. By this function, you could manage the OEM shipments and the repair parts at the stage of the intermediate products and the parts. The MRP calculations would take into account those required quantities.

Forecasting Data

・In the case that the firm delivery instruction data are coming on a daily basis like the automobile industry, you can read them in while you had the forecasting data reconciled and deleted in the order of their delivery date for the same item and delivery location.
・The processing of forecasting orders is available, separately from that of firm orders.
・You can delete the forecasting data periodically and read in new data again.

Shipping Instructions

・You can issue the shipping instructions up to the set number of days ahead from today based on the scheduled shipping date of the Sales Order data.
・You can issue the shipping slip by narrowing down to only the products of which stock was available at the time of issuing the shipping instructions.

Actual Shipping Results

・A warning message is displayed if the current inventory of the product falls below 0 at the time of entering the actual shipping results.
・For shipping schedule, you can enter the actual shipping results and the actual results of acceptance completion after an arrival at customer's site with the separate statuses. In the Inventory List, product inventory is withdrawn and you can confirm it as the quantity of non-acceptance at customer's site. You can reflect an event in the Accounts Receivable Detail at the time of shipment, or at the time of acceptance at customer's site.
・When combined with the Traceability option, it's possible to associate up to the intermediate process and the actual shipping results with the lot numbers of raw materials that were used, and to retrieve the used lot from the actual shipping results and the ship-to from the lot number.

0Slip, List

・The shipping slip, the packing slip, the invoice and the accounts receivable ledger are available.
・The order list, and the scheduled shipments and the delayed shipments with a date specified are available.

Selling Price Registration

・The system operation where the selling price varies depending on the ordered quantity or period is supported.

Cash Receipt Management

・The cash receipt management where you reconcile individual invoices is possible.
・Registering and displaying the overseas customer information in the native language is possible.
・You can export the accounts receivable details for some accounting systems.

● Pull Production

f-MRP mfg. no.   *repetitive prod.*   *mfg. no. ctrl.*
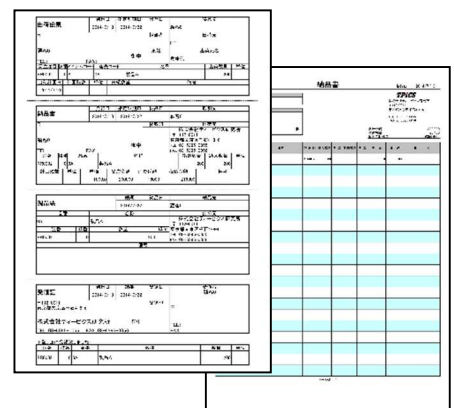
The mfg. lead-time is taken into consideration for internal processes to make a schedule for products in the MRP calculations, but you make arrangements for the required quantity of parts and materials using the MRP calculations, and for the instructions for internal processes, the work instruction can be given to the preceding process step according the timing of a group leader on the factory floor who's responsible for producing products.

The process step to follow brings the required quantity from the stock of the preceding process step, which in turn produces the portion that has been used and become insufficient. Thus, you can achieve a behavior like so called "kanban."

Use the Schedule Detail Manual Entry form or the Shop Floor Control Option for the instruction to the preceding process step.

Option

One-item Production

(f-MRP mfg. no. | repetitive prod. | mfg. no. ctrl.)

In the case of the discrete production, since they make a different product for each customer's order, their application is not the kind like they would put the master tables in order beforehand and perform the uniform processing like the repetitive production. Because of that, the systems for the production control, where you had to put the master tables in order beforehand, used to be very hard to use. In TPiCS, we tried to think about the functions so as to be able to respond to various ways of operating the system and enhanced them in order to solve those problems. Since you can use the repetitive production and the common functions described later to meet your system operation, it's possible to respond to more fine-grained management as well.

This is a function with the assumption of a case where you will operate the system without predefining any master tables due to the "one-time-only production" because the product specification will change in each customer order.

・By a very high operability, you can arrange while registering work and parts to be used each time.
・You can copy a similar mfg. no. in the past and change it to make a new one for use.
・The drawings get released like an early summer rain and you can arrange things, starting with what you need and it's possible among them.
・If patterning is possible to some degree, you can use it as the base to which you can add some modifications.
・You can perform addition, modification and deletion seamlessly due to the engineering change by working together with the "Structure Information Conversion Option" and reflect them in the arrangements promptly.
・You can use the general-purpose units and parts that have repeatability.
・You can issue the "Quotation" to your customer.
・You can issue the "Quotation Request Slip" to your supplier and a transaction that conforms to the Subcontract Act is possible. (The competitive quotations are also possible.)
・You can manage a part that has become unnecessary because of the engineering change or something, and let other projects use it.
・This option requires that you purchase the "Mfg. No. Control system."

Structure Information Conversion

(f-MRP mfg. no. | repetitive prod. | mfg. no. ctrl.)

This option obtains the "product structure information" and the "engineering change information" for the design in the CSV file from CAD and Microsoft Excel and reflects them in the production information of TPiCS. Since you can do the linkage processing only with one data, the engineering change will be reflected in the production promptly and without omission.

・You can register the work, such as supply and outsourcing processing, that doesn't exist in the engineering BOM in the manufacturing BOM.
・You can reflect the engineering change in the arrangements promptly even after it is separated into the engineering BOM and the manufacturing BOM.
・This option displays a portion of engineering change with the status or in color so that any omission of the processing can be protected.
・If you use this option in combination with the One-item Production Option, you can reflect the engineering change in the arrangement data seamlessly.

Taking advantage of the CAD data

Because the customer's needs have diversified and the life cycle of the merchandise has also shortened, it has become more important than ever even for the discrete production to shorten the cycle of customer order, design and production.

So, in order to make things in rapid cycle, you've come up with an idea to make arrangements for the production using the engineering information. But the structure information of the products the engineers think of (E-BOM) and the structure information the people of the mfg. department think of (M-BOM) are different often times, and it is general that the E-BOM gets changed to the structure information for the production with an interpretation of human being added. Then, if there's an engineering change, it becomes impossible to change it directly in the system and reflect it in the arrangements. That's why the human being has reflected engineering changes by comparing the E-BOM and the M-BOM one by one with his eyes.

But if there's an engineering change and you use the "Structure Information Conversion Option" of TPiCS, it will be possible by just clicking the button a several times to find out something unnecessary or something that needs an additional arrangement from the data that have already been arranged (purchased) to create a cancel order and to make an order for additional arrangement even if there's a difference between the two of the structure information. With this function, the production control business for the discrete production should be very easy.

Engineering Change

EBOM   MBOM

Master: Reflected in the one-item production schedule.
Changes the arrangements.

TPiCS

Option

Set Production

f-MRP mfg. no. · *repetitive prod.* · *mfg. no. ctrl.*

This adjusts the schedules of multiple parts or products that are designated as the same group so that they will always be made at the same time.

・ If you were to process a part the right side of which is different from the left and both are made at the same time in one mold, for example, you would always have to produce each of them with the same quantity at the same time regardless of the ordered quantity. In this case, you will be able to make a schedule for them with the same quantity each at the same time in the MRP calculations.
・ In the case of having a by-product generated, you can let the schedules of multiple products created at the same time according to a specified ratio.
・ When you change a daily schedule with a drag-and-drop to the production schedule table, you will always be able to change daily schedules all together for the items that are designated as the set production group, and reflect the results in the Gantt Chart By Mfg. Sector at the same time.

Automatic Leveling

f-MRP mfg. no. · *repetitive prod.* · *mfg. no. ctrl.*

With this option, you can produce things for sales orders to be shipped at the end of the month ahead of schedule, and make a production schedule taking into account the load on the ability of the bottleneck process.
You can perform the leveling process that represents the "equally-allocated production" where the daily production is equally allocated with respect to the total number of one week.

・ The amount of work and the load factor are aggregated based on the calculation results of the parent hierarchy for each hierarchical level of the structure in the MRP calculations. If there is something where the load factor is more than the set value, the appropriate schedule will be moved to the front and rear.
  The move will target only the undetermined schedule.
  The MRP calculations will continue based on the schedule after leveling for child parts under it.
・ The processing of "front-loading" and "back-loading" is possible.
・ For each production line, you can set the necessity and the reference load factor of leveling.
・ You will be able to set the items of interest in the "leveling priority" of the Item Master.
・ The processing of "equally-allocated production" will also be calculated for each parent-child level.
A schedule to produce evenly will be created for each week and item after the inventory allocation and the going-back calculation of lead-times. The calculation will be performed for the items of low-volume production so that as much schedule as possible will be made at the beginning of the week.

Manufacturing Traceability

f-MRP mfg. no. · *repetitive prod.* · *mfg. no. ctrl.*

This option provides a tracing function that consists of such as the lot control and the traceability for raw materials ISO9000, the Product Liability Act and the Pharmaceutical Affairs Act require.
You can enter the lot numbers from the manufacturers at the time of receiving the raw materials, and register the raw materials or in-process inventory to be used as the internal process advances.
Also, you can manage the expiration date.

・ You are going to enter the lot numbers for raw materials if necessary (setting) at the time of receiving them. (Can be designated as mandatory.)
・ You can register the internal lot numbers and their association with the lot numbers for the raw materials that have been used at the time of entering the actual results for internal processing.
  If there's something that needs the traceability control among the raw materials to be used, TPiCS automatically allocates that in "FIFO" first. Afterward, since a window that lets you confirm the allocated raw materials opens automatically, you can correct them there as needed.
・ One product or process can use a raw material that contains multiple lots and one raw material can be used by multiple products or processes. That is, handling many-to-many relationship is possible.
・ You can also manage all the moves within the factory such as issuing partially and returning to the warehouse after raw materials in stock.
・ Since you get to know the price purchased of the raw materials that have been used, and the operator and the hours worked when there was work, you can figure out the net cost of each of the lots produced using the "Cost By Lot" form.
・ You can print a list of raw materials and in-process goods that need the "expiration date management" and of which expiration date is approaching, and put them in the disposal processing in block. And you can also reflect the situation where there may be a disposal in the future in the MRP calculations.
・ You can instruct about the "raw materials to be used" on the work order form. The instructed raw materials are temporarily allocated and then withdrawn automatically at the Actual Completion Results Entry for the parent. You can also change them halfway.

Internal Control

f-MRP mfg. no. · *repetitive prod.* · *mfg. no. ctrl.*

This is a function to protect the business rule and to ensure that risk management can be achieved by preventing illegal or unauthorized use in the production control business.

・ You can have a correction history for all tables written out to the dedicated table.
・ You can target only the data a "person wih the purchasing approval authority" has approved in the issuance of the purchase order form.
A "person wih the purchasing approval authority" can be discriminated by a special setting.
The "Approver," the "Date and Time of Approval" and the "Approval Key (cipher)" are written in the approved data, and when you change the content of purchase order after approval, the approval will be invalid.
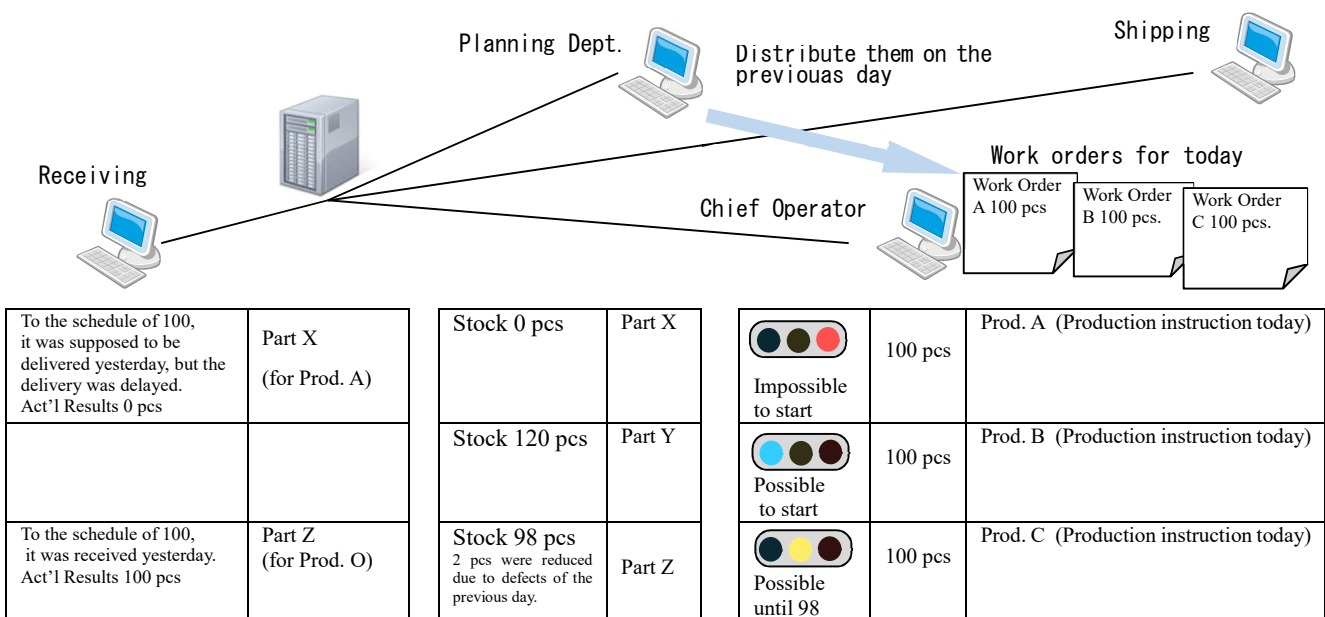
Option

Shop Floor Control

This is the system to perform the process control for the factory floor and we'd like those who wish in the following way to use:

"I want to put out the sound schedule with a pile of load since the people on the factory floor complain if I cannot manage the load when I give instructions to them."

"I have no control over the people on the fatory floor because they are doing their way. I want to manage them somehow using the computer."

"Time of setup is different by the order in which to produce. I want to make a schedule where time-consuming setup is as little as possible."

"There are multiple machines at each process step and the ability is a little different from machine to another. We have things we can make and we can't make depending on the product we are going to make. In the situation like this, I want to make a plan that is as efficient as possible."

"Each time an inquiry about the delivery date comes from our customers, I can't give them an answer without going to the factory floor. I wish I could tell that by looking at the screen of the computer."

"The part arrangements are done by the MRP system, but we cannot improve this and that, and so cannot respond to the demand fluctuation. In order for our company to correspond to the violent era of change, I want the system with which I can quickly make a schedule between processes that is backed up by parts."

・ You will see a list of work for today and tomorrow on the screen of the foreman or group leader of the factory floor, or the person in charge of the shipping field. (It's important to limit the list to 2 to 3 days worth of work.)

・ When the office changes the schedule, the change is reflected in everybody's screen instantly. Through the screen, something where necessary parts have not been prepared, something where the preceding process step has not been completed, and something that can be started at any time will be displayed in such a way that you can understand them at a glance.
Since you can display the screen by sorting data by priority order, you can begin with a rush work.
When you press the Preceding Process button in the data of possible-to-start, child parts of what are missing at which step and what's happening to that schedule will be displayed in the window.

・ You can demonstrate the daily production level (quota) apart from the results of the MRP calculations. This allows you to hold the required level of leveling of production schedule.

・ Press the Start button after determining the work to do next from that screen. When you are finished, press the Register button to be able to register the actual results.

・ When you press the Start button, you can even tell from the process step to follow what time the preceding process step started.

・ When you register the actual results, that work will be gone from the Instruct A Schedule screen.
In other words, it will stay on the screen until you register the actual results.

・ Since it's possible to use different colors by the work and working methods when you display the work that must be done, you can think of the order of efficient work in consideration of the setup by choosing the work with a similar color.

・ When you register the actual results in the screen of the Shop Floor Control, it will be reflected in the stock quantity, etc. of TPiCS in the office at the same time.

・ The actual results entered at the preceding process step will be reflected in the Signal To Start screen of the process step to follow right away and the display in red on the screen will be gone.

・ In the evening you can print the daily report and the not-yet-done list for today using a PC in the office without bothering anybody.

> The Shop Floor Control Option is not for directly responding to the needs that emerge on the surface like this, but is intended to achieve the "true management" soil improvement-wise, and is the system for the factory floor to be able to make correct judgments, not to enter the actual results for the purpose of collecting them, by solving the problem that exists behind it or removing clutter on the way to that problem.

To the schedule of 100, it was supposed to be delivered yesterday, but the delivery was delayed. Act'l Results 0 pcs	Part X (for Prod. A)	Stock 0 pcs	Part X	●●● Impossible to start	100 pcs	Prod. A (Production instruction today)
		Stock 120 pcs	Part Y	●●● Possible to start	100 pcs	Prod. B (Production instruction today)
To the schedule of 100, it was received yesterday. Act'l Results 100 pcs	Part Z (for Prod. O)	Stock 98 pcs 2 pcs were reduced due to defects of the previous day.	Part Z	●●● Possible until 98	100 pcs	Prod. C (Production instruction today)

Price

Price

f-MRP Mfg. No. System	1,300,000 yen
Repetitive Production System	800,000 yen
Mfg. No. Control System	800,000 yen
Multiple Locations Option	200,000 yen
Pull Production Option	100,000 yen
Automatic Leveling Option	200,000 yen
Set Production Option	100,000 yen
Gantt Chart By Mfg. Sector Option	300,000 yen
Customer Order & Sales Mgmt. Option	500,000 yen
One-item Production Option	200,000 yen
Structure Info. Conversion Option	200,000 yen
Process Control Option	100,000 yen
Issues Option	100,000 yen
Shop Floor Control Option	300,000 yen
Internal Control Option	300,000 yen
Mfg. Traceability Option	300,000 yen
Transaction Interface Option	300,000 yen
Operating License	100,000 yen
MRP Calculations Additional License	500,000 yen
Additional Deployment License for Mfg. No./One-item Production	300,000 yen
Multiple Business Facilities License	300,000 yen
English License	200,000 yen
Simplified Chinese License	200,000 yen
Traditional Chinese License	200,000 yen
Vietnamese License	200,000 yen

(Tax excluded)

Each System Is Selectable Option

Option/System	f-MRP Mfg.No.	Repetitive Pro	Mfg.No. Ctrl
Multiple Locations	O	O	
Pull Production	O	O	
Automatic Leveling	O	O	
Set Production	O	O	
Gantt Chart By Mfg. Sector	O	O	O
Customer Order & Sales Management	O	O	O
One-item Production	O		O
Structure Info. Conversion	O	O	O
Process Control	O	O	O
Issues	O	O	O
Shop Floor Control	O	O	O
Internal Control	O	O	O
Mfg. Traceability	O	O	O
Transaction Interface	O	O	O

Version Upgrade

30% of the base price (= main system + option + one-fifth of the operating license.)

License

Operating License

Of all the users you registered in TPiCS, they can operate TPiCS concurrently up to the number of licenses you purchased.

License for Multiple Facilities

In the case that you manage the master tables, the schedule data and the actual results data for multiple factories and facilities in separate databases, and manage the users and the authorities together at one database, you will need a license for multiple facilities for each additional facility. Plus, if you need the MRP calculations or mfg. no. explosion to be done concurrently at multiple facilities, you will need an additional license below.

Additional License for the MRP Calculations

When you are using the license for multiple facilities and need to concurrently perform the MRP calculations at each facility, you will need this license.
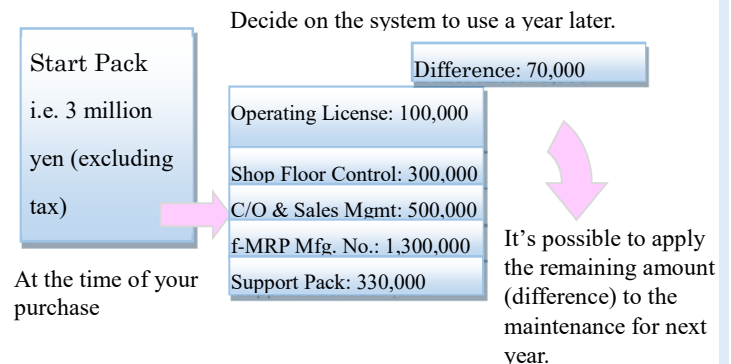
Additional License for the Mfg. No. Explosion & the One-item Production Deployment

A license in which the mfg. no. explosion is concurrently possible at two clients comes with the f-MRP Mfg. No. System and the Mfg. No. Control System. If you need to do the mfg. no. explosion concurrently at more than 2 clients, you will need an additional license for the mfg. No. explosion & the one-item production deployment.

Start Pack

It's a difficult work to understand all functions of TPiCS and decide what kind of control will be suitable before purchasing it. Because of that, there's sometimes a case where you get to know a function you should have needed when you decide on how to operate the system, but you keep operating the system in a time-consuming way because you feel uncomfortable to submit an additional request although you know an option of TPiCS can support that function.

If you purchase TPiCS as the Start Pack, you will be able to use all the options for one year and there will be no upper limit about the number of client licenses. Take your time in trying TPiCS thoroughly for one year and decide on the options to use and the number of licenses in a year. If they fall below the amount of Start Pack purchased then, you will be able to assign the difference to the maintenance service for the next year.
The Support Pack of 15% of the amount purchased will be required at the time of your purchase.

Decide on the system to use a year later.

Start Pack i.e. 3 million yen (excluding tax)	Difference: 70,000
At the time of your purchase	Operating License: 100,000
	Shop Floor Control: 300,000
	C/O & Sales Mgmt: 500,000
	f-MRP Mfg. No.: 1,300,000
	Support Pack: 330,000

It's possible to apply the remaining amount (difference) to the maintenance for next year.

Support, Operating Environment

Support

Support by telephone and e-mail is available as follows: (Visit our homepage for details.)

・ Regular inquiry .... 10,000 yen/inq.
・ Remote support .... 30,000 yen/once
 (We'll share the screens using the Internet. Within 30 minutes.)
・ Analysis & verification using your data ... 50,000 yen/once

(Tax excluded)

TEL:　03-5395-4228
E-mail:　support@tpics.co.jp

Maintenance

There are three courses to meet your needs:
① Annual Standard Maintenance
　Free of charge for a version upgrade.
　Free of charge for inquiries by TEL, FAX & e-mail.
　Free of charge for remote support using the Internet.
　Free of charge for analysis & verification using your data.
　40% off of your workshop & on-site support fees.
　We'll handle your improvement requirements for the system preferentially. (Charge involved)
　Maintenance Fee: 15% of the base price/year.
② Annual Program Maintenance
The charge gets involved each time we handle an inquiry from you.
　30% off for a version upgrade.
　Maintenance Fee: 10% of the base price/year.
③Annual Ease-Of-Mind Maintenance (as opposed to the above Standard Maintenance)
　Our staff visits your company 4 times a year.
　Discount percentage goes up for our workshop and on-site support (50% off.)
　Maintenance Fee: 30% of the base price/year.

Workshop

Holding a workshop

　(below is the fee when you don't have a maintenance service.)
Our company (Sugamo in Tokyo) holds a paid workshop every month. Also, some advanced or general SI's hold paid or free workshops and introductory seminars as required. Feel free to participate in those.
(Refer to the TPiCS homepage for scheduled dates to be held on.)

　　Workshop Curriculum in Sugamo Classroom (tax excluded)
Application Course (3 days)................................50,000 yen
　1st day: How to operate, Practical training, Detailed presentation of each function of TPiCS.
　2nd day: Detailed presentation of each function of TPiCS, Practical technique of master creation.
　3rd day: Management at initial implementation, Explanation of optional functions of TPiCS, How to master TPiCS.

Discrete Production Course (1 day).....................20,000 yen
　　　Mfg. No. Control, One-item Production, One-item Production linked with the Structure Info. Conversion, Display on the Gantt chart and the schedule/workload adjustments, Linkage with the Due Date Adjustment Option.
System Course (1 day).......................................20,000 yen

Details of how to operate, System operation, Custom settings
The discount applies if you take advantage of your Maintenance Service.

Operating Environment

OS
　Windows 8.1 64/32bit, Windows 8 64/32bit, Windows 7 64/32bit, Vista 64/32bit, XP 64/32bit.
　Windows Server 2012, 2008 R2, 2008, 2003.
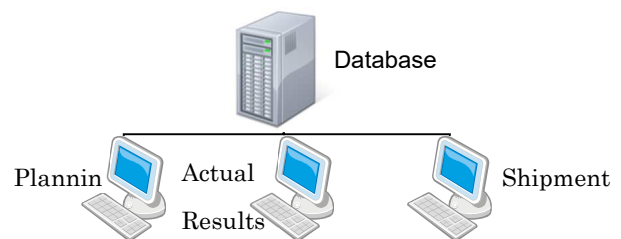　It operates in the environment supported by Microsoft.Net 4.0.
Supported Database
　Microsoft SQL Server 2012 64/32bit, 2008/R2 64/32bit, 2008 64/32bit.
　Oracle 12c, 11gR2.
　*You can use SQL Server 2008R2 Express Edition for evaluation, but you will have to purchase one of the above databases separately in live mode.

① Client Server Environment

② Application Server Environment
　Server OS: Windows Server 2012, 2008R2, 2008 or 2003.
　(It operates in the environment supported by Microsoft.Net 4.0.)
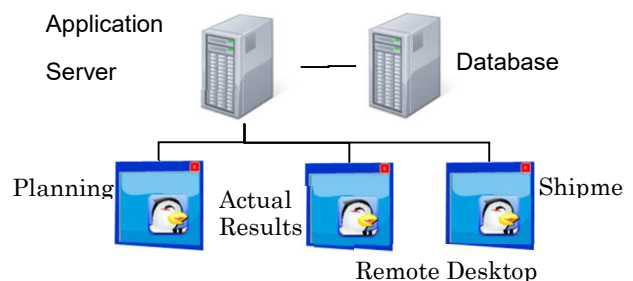
③ Cloud Environment
　You can use this in the cloud environment using the Windows application server.