

■ Design Concept of PLANTIA

Core services provided by PLANTIA

In accordance with the maintenance work cycle "PLAN → DO → CHECK → ACTION", each function of PLANTIA supports maintenance management work which consists of "regular maintenance", "irregular maintenance", "emergency maintenance", "daily maintenance" and "maintenance analysis".

PLANTIA also promotes the establishment of checkpoints in maintenance work, such as TPM activities and the proper designation of high-pressure gas equipment as required by pertinent regulations.

Solution services

In addition to optional services provided by PLANTIA, more integrated and efficient work execution is realized by linking PLANTIA with existing mainframe systems or related systems.

- Inventory Management
- Procurement Management
- Plant Asset Management
- Repair and Revamp Project Management
- Technical Document Management
- Production Information Management, MES, DCS
- Maintenance Management Portal

Optional Functions

In addition to core services provided by PLANTIA, more efficient and reliable work execution is made possible by taking advantage of the optional functions listed below, depending on the characteristics of the facilities and the nature of the maintenance work.

● PLANTIA-Navi

The target equipment for maintenance is located by a link operation with AutoCAD.

Simplified piping management is made possible.

● PLANTIA Schedule

Work plans prepared using PLANTIA are elaborately controlled by a link operation with Microsoft Project.

● PLANTIA Pocket

The situations of maintenance sites are reflected on a timely and secure basis by making use of PDA.

● PLANTIA Message Service

Maintenance information is indicated on the electronic board or sent by e-mail. Information sharing in the maintenance section is promoted.

● PLANTIA Template

Standard useful data classified by type of industry is available, which allows quick initialization of PLANTIA. Entrusting system operation to us results in lower running costs.

● PLANTIA Migrate

Data migration service is provided to transfer maintenance data from your existing system to PLANTIA when PLANTIA is introduced to your company.

■ Operating Environment

Database	Oracle 9.2/10g (Versions later than Oracle 10.2 are recommended)
Web Server	Apache Web Server, Tomcat Servlet Engine, Java 2 SDK (freeware) Acrobat Distiller J
Server	CPU: Xeon [®] Above 1 GHz, Memory: Above 1 GB HDD: Above 50 GB OS: Windows [®] 2003 Server
Client	Web browser: Internet Explorer version 6.0 or later versions are recommended

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A Field-Oriented Solution for the Systematization of Facility Maintenance Attains Stable Facility Operation and Productivity Enhancement



• A Facility Maintenance Management System



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J-SYS Information System Engineering Company
JGC Information Systems Co., Ltd.

PLANTIA Realizes Highly Efficient Maintenance and Cost Reduction

Creates a visualization of maintenance management using accumulated know-how



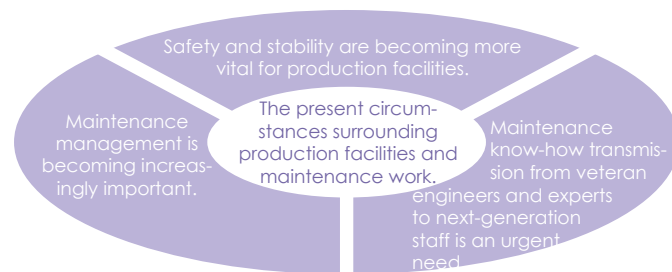
Production facility malfunctions can severely impact business activities. PLANTIA facilitates the efficient accumulation of maintenance know-how and the accurate analysis of maintenance data on a company-wide basis, thereby ensuring effective maintenance management.

Production Facility Maintenance is the Key to Success for Manufacturing Industries

The increasing importance of facility maintenance

Production trouble can give rise to serious situations, which could threaten the survival of a company. Corporate activities are premised on the safe and normal operation of production facilities and this capability is an indispensable lifeline for the success of an enterprise.

However, the collation and communication of accurate information, and the transmission and good use of maintenance know-how and tacitly accepted knowledge have become issues to be resolved in maintenance management, which is intended to prevent such trouble. Necessary information should be accumulated without omission, arranged properly, and shared among maintenance staff.



PLANTIA Promotes Safety through the Standardization of Maintenance Work

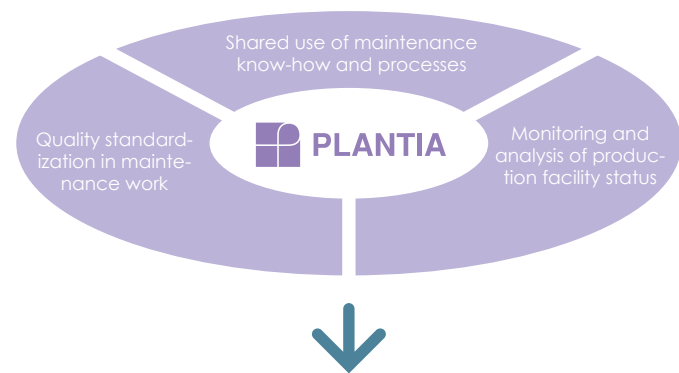
Safety promotion in maintenance work

To promote safety in maintenance work, it is essential to establish a company-wide maintenance management system, that enables the sharing and management of accumulated maintenance techniques and know-how, by transforming individually-acquired information into shared knowledge. PLANTIA makes possible the establishment of such a company-wide maintenance management system.

PLANTIA enables the shared use of maintenance information by supporting the establishment of a database containing all maintenance know-how and processes, and helps attain quality enhancement, company-wide standardization, and visualization of maintenance work.

Through the standardization and visualization of maintenance work, trouble in production facilities due to omissions in inspection or maintenance work, or insufficiently skilled maintenance staff can be prevented, and therefore, safer and more stable operation of production facilities is achieved by preventive maintenance under planned management.

Standardized and visualized maintenance will also make it possible to monitor whether the maintenance and production organizations comply with applicable laws and regulations. PLANTIA also supports sound corporate management by helping establish regulatory compliance for the organization.



Standardization and improved quality of maintenance work enhances production facility safety

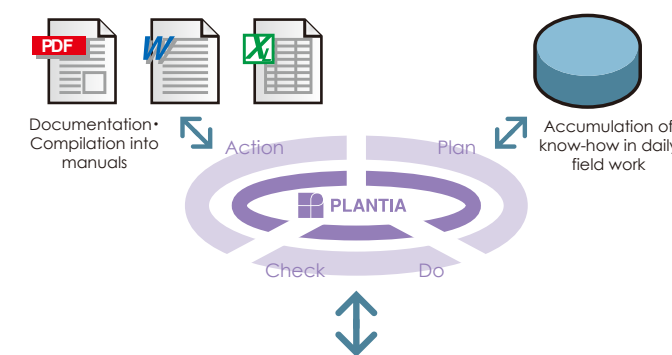
Features

- Developed by integrating the know-how acquired by JGC as a leading contractor in the engineering industry
- A "de facto" standard that has the proud record of having been adopted at more than 230 locations, belonging to 110 companies in Japan
- Received the "PM Excellent Product Award" from the Japan Plant Maintenance Association
- A wide range of optional functions are available, including PDA and drawing navigation.
- Easy to link with mainframe systems, ERP such as SAP, and dedicated maintenance systems
- Multi-language compatible
- A full support system covering program development, customization, installation support, and maintenance services

Merits of Introducing PLANTIA

Shared access to maintenance know-how and its transmission to next-generation staff

Maintenance know-how is difficult-to-transmit information, which is cultivated through the ingenuity, experience, and spirit of challenge of maintenance staff. PLANTIA makes practical the smooth accumulation and shared use of such information, and also supports the normalization and standardization of maintenance information. Effective use of PLANTIA creates the maintenance cycle of "Plan→Do→Check→Action" and leads to the performance of reliable maintenance work even when there are personnel changes in maintenance staff.

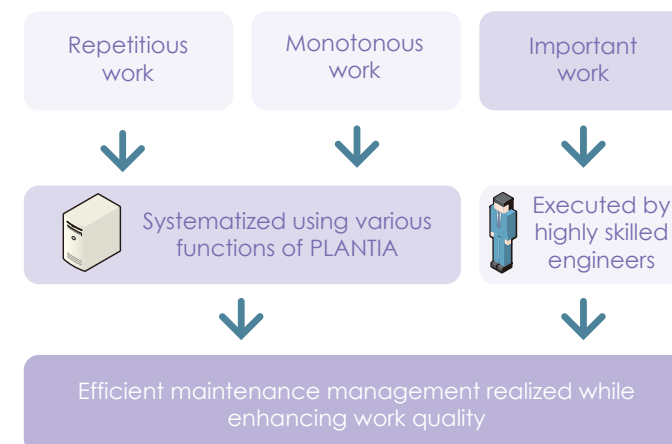


The effects of the generation gap between old and new staff will be resolved by the transmission of know-how.

Ideally balanced maintenance work

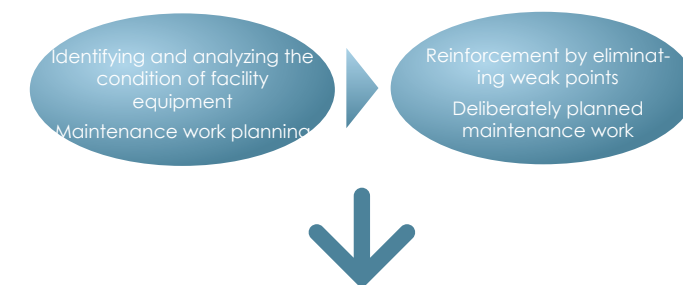
Maintenance work is very important in securing the safety of production facilities, and it is required that the philosophy of "Quality First" should be maintained, even in promoting work improvement aimed toward efficiency enhancement and cost savings.

By using each function of PLANTIA effectively, repeated or monotonous tasks can be carried out under the guidance of the system, while engineers, having a high level of skills, can direct their energies to more important work. As a result, maintenance management can be optimized in terms of cost and efficiency, resulting in the enhancement of the quality, accuracy, and reliability of maintenance work.



Attaining Facility Maintenance Management reflecting the Facility's Life Cycles

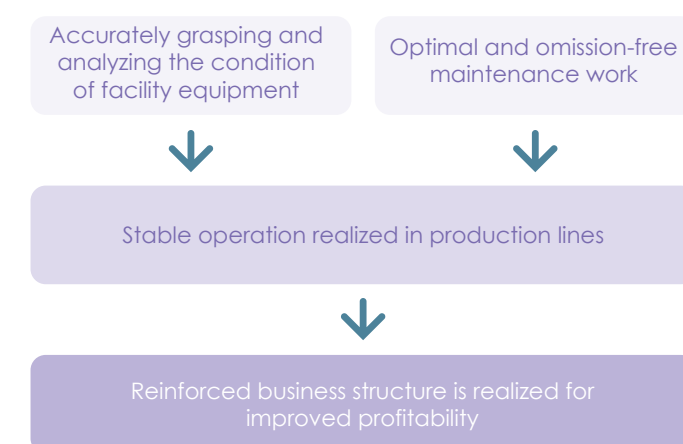
To maintain production facilities in optimum condition, it is essential to plan maintenance work deliberately from the long-term point of view. PLANTIA is able to accumulate all life-long maintenance records of each facility, including repair, inspection, and trouble records. PLANTIA also supports maintenance planning so that maintenance staff can prepare maintenance plans with proper consideration given to facility life cycles while identifying and analyzing facility conditions, such as the service life of problem equipment.



- Stable facility operation maintained under appropriate plans for reinforcement and maintenance
- Optimized maintenance costs and investments

Achieving stable facility operation and productivity enhancement

A fall in productivity due to trouble in the production line, such as sudden equipment failures and line shutdown, is so serious an issue as to affect the profitability of a company. PLANTIA supports maintenance planning so that maintenance staff can prepare optimal and omission-free maintenance plans while identifying and analyzing the condition of facility equipment. It enables production facilities to be maintained in good condition and reduces losses due to trouble. The philosophy of "stable operation of production facilities = productivity enhancement" will reinforce the profitability of the company.



A Wide Variety of Functions Provided by PLANTIA

Attaining a high level of usability, irrespective of industrial classifications

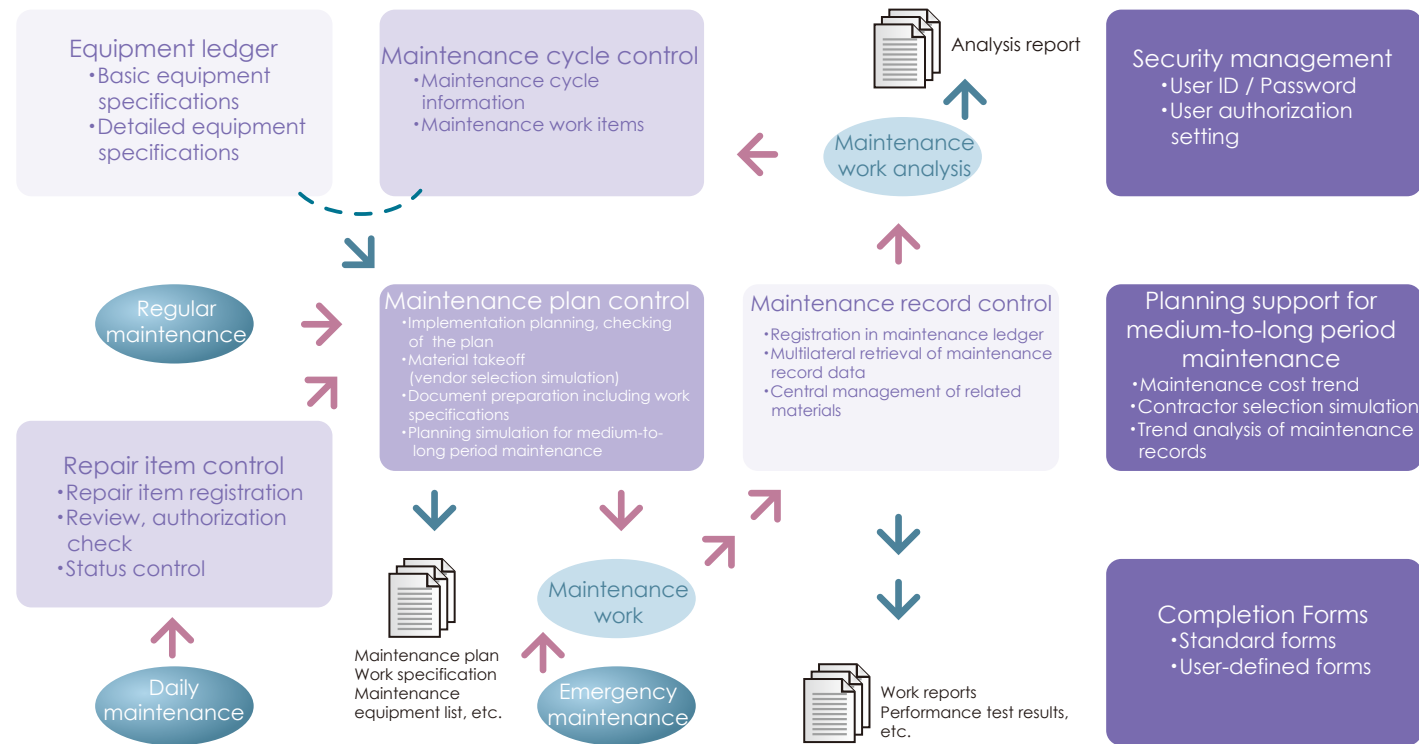


In the pursuit of usability in maintenance fields

Simple architecture design widely applicable to various industries

The PLANTIA system has been developed based on our expert knowledge of equipment maintenance and its associated needs that we have accumulated over the past twenty years. PLANTIA consists of five subsystems provided for "equipment ledger management", "maintenance cycle control", "maintenance plan control", "maintenance work", and "repair item control".

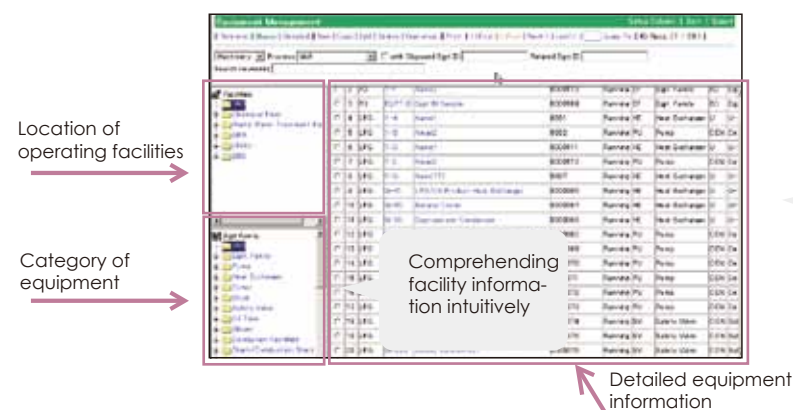
Maintenance Work Flow



Interface Design That Answers the Needs of Maintenance Fields

A screen design similar to Internet Explorer has been adopted for PLANTIA so that anyone can easily register, retrieve, and browse maintenance information. This makes it possible to intuitively grasp facility information such as "locations (areas) of operating

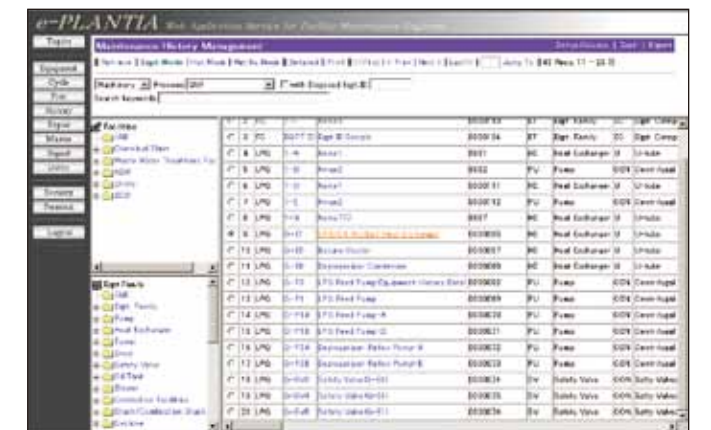
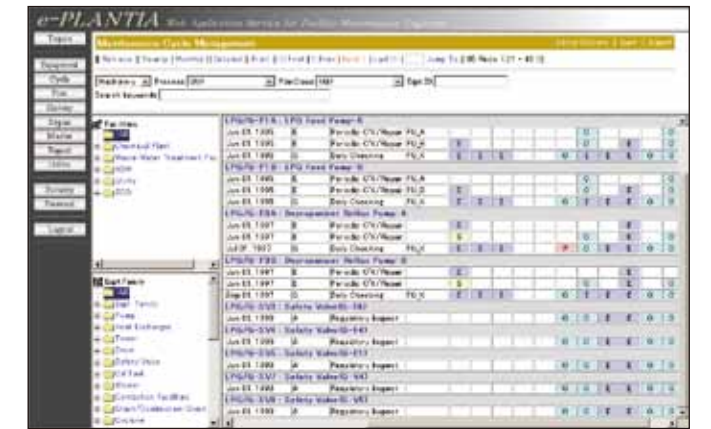
facilities", "category of equipment (pumps, heat exchangers, etc.)", and "detailed equipment information (specifications, etc.)". The enhanced field usability of PLANTIA ensures more efficient maintenance management.



Attaining Smart and Effective Use of Maintenance Records and Information

A wide range of support covering multilateral information analysis and maintenance planning

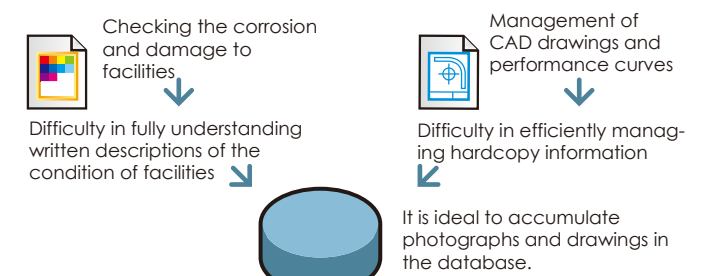
An enormous amount of accumulated maintenance information can be retrieved accurately and analyzed multilaterally. Maintenance work extending over a medium-to-long period is supported totally, including the preparation of maintenance calendars based on past maintenance records and maintenance cycles, maintenance planning, and cost control.



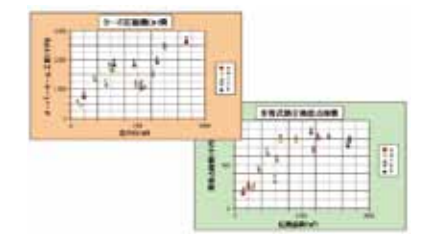
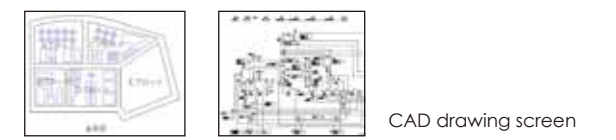
Visualized Maintenance Management

Information accumulation in the database, including photographs and drawings

Photographs are more effective than documents in understanding the extent of corrosion and damage in facility equipment. PLANTIA is capable of not only storing photographs and CAD drawings in its database but also of having link operations with graphic data such as CAD data and performance curves. This enables identification of the actual condition of equipment and smooth control of documents such as facility specifications. All maintenance information can be integrally controlled and effectively used by converting various hardcopy documents into electronic data stored in the database.



Visualized management of maintenance information
Visual and efficient information management



A Wide Variety of Functions Provided by PLANTIA and Records of its Extensive Use in Various Industries

As demonstrated by its extensive record of system introduction, PLANTIA can serve as part of any information management system.



Improved Work Efficiency in Preparing Maintenance Reports

Quick and efficient preparation of smart reports

Necessary drawings and daily maintenance information can be accumulated in PLANTIA. In establishing such a database, it is necessary to prepare the formats of maintenance reports and other necessary documents. Those formats can be prepared and incorporated into the PLANTIA system by the users themselves. PLANTIA ensures that maintenance reports can be prepared smoothly without requiring time-consuming work, such as information collection and data analysis and transcription.



Example of a maintenance report

Highly Extendable Systems which can be Interfaced with Peripheral Systems

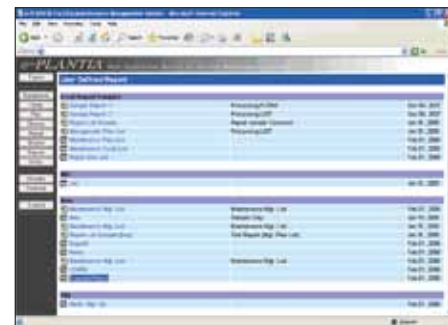
Interface with mainframe systems and dedicated maintenance systems

PLANTIA can be easily interfaced with corporate mainframe systems and ERP, material purchasing, warehouse management, maintenance, and other systems.

It can be seamlessly linked with corporate management data such as accounting data and order receiving/issuing data and is also effective in avoiding data duplication problems. This will lead to more efficient, more reliable maintenance work and will further broaden its possibilities as an information management system.



Example of a repair request form
This form is used to record incidences of suspension of work and requests for equipment repair.

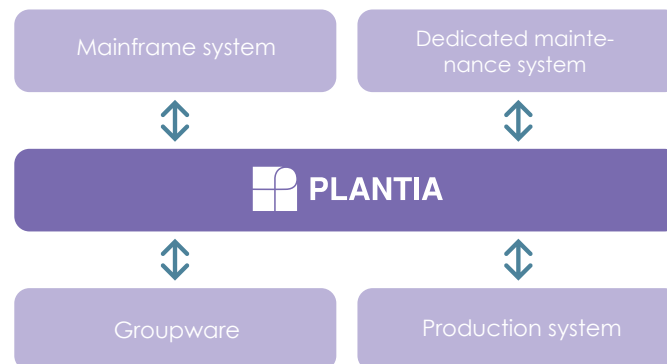


Report preparation screen



Various drawings and information can be retrieved easily. As a result, report preparation is smooth.

Seamless integration with peripheral systems



Equipment-related information

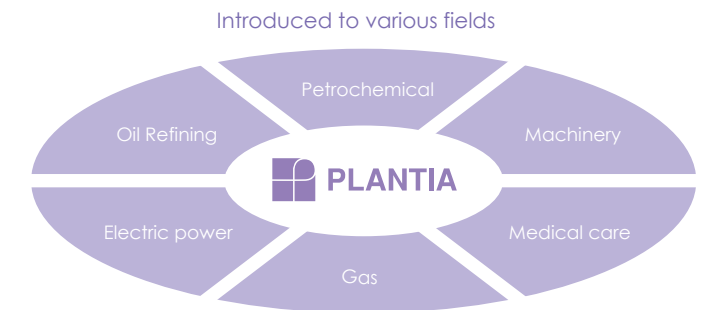
Maintenance information (specifications, maintenance cycle, maintenance records, and requests for repair) on a single item of equipment can be checked at a glance, and the selected information screen is opened by a simple click of the mouse.

Wide Usage in a Large Number of Installations

Function improvement efforts continuing over 20 years

The creation of the original PLANTIA system took place more than twenty years ago.

Since then, we have been engaged in maintenance service for a large number of facilities in various industrial fields such as oil refining, medical care, machinery, electricity and gas utilities, including facilities for JGC Corporation, a global engineering company. PLANTIA's functions have been steadily improved by making good use of extensive experience and accumulated know-how in facility maintenance. Now, PLANTIA has become a "de facto" standard for maintenance management systems, which must meet a wide range of maintenance needs.



Examples of the System in Action

PLANTIA has been introduced in more than 230 plant and facility sites of a total of 110 companies and has been used effectively in a wide range of industrial fields, such as medical care, machinery, and electricity and gas, including oil refining and petrochemical plants.

IHI Compressor and Machinery Co., Ltd.
IHI Turbo Co., Ltd.

Used for maintenance record and measuring equipment management.

Osaka Gas Co., Ltd.

Extensively used, including for budget control. To be used on a full-scale basis in the future.

Kaneka Corporation

Used in total operations, including interface processing for form completion.

Kawasaki Kasei Chemicals Ltd.

Used chiefly for management of shutdown maintenance and related files.

Kansai Coke And Chemicals Co., Ltd.

Used chiefly for making requests for daily maintenance work.

Kyowa Hakko Chemical Co., Ltd.

Used over a long period of time. The scope of application has been enlarged through several version upgrades.

Sankyu Inc.

Used to collect raw data from maintenance sites in various parts of Japan.

Taisho Pharmaceutical Co., Ltd.

Used for facility maintenance information management, calculation of the overall facility efficiency based on daily facility operation data, and other purposes.

Takeda Chemical Industries Ltd.

Linked with Notes, EDMICS, and other systems, and now completely incorporated into systems for corporate operations. Helping execute maintenance work reliably and efficiently.

Chisso Petrochemical Corporation

Using PLANTIA effectively for many years since the host computer version was issued.

Tec-Tokai Co., Ltd.

Generally applied to equipment in their paper manufacturing process.

Toagosei Co., Ltd.

Used by linking PLANTIA with TSFrame-PM (system for routine maintenance) systematically.

Tosoh Corp.

Maintenance work has been fully supported by linking PLANTIA with TSFrame-PM (system for routine maintenance).

Nippon Soda Co., Ltd.

Following on from PLANTIA operation at the Takaoka plant, maintenance information about all domestic plants is planned to be centrally managed at the head office.

Hitachi Home & Life Solutions Inc.

As part of promoting "TPM", effectively used for assembly facility management.

Mitsubishi Chemical Corp.

Used as a standard system for maintenance work at many of their plants. Helping promote the standardization and efficient execution of maintenance work.