



# VHDrawings™

## Technical Paper

## 1. Executive Summary

In the development of any construction project there are generally hundreds, if not thousands, of engineering drawings, covering every aspect of the construction. These drawings are modified from time to time during the course of the development. The modifications, regardless of whether they are minor, or major, require a further drawing to be created, thus adding to the already large number of drawings.

The proper and efficient management of such drawings in any project, including **Architectural Services Department**, is absolutely vital to enable the project to be completed efficiently and on-time. Thus it can be seen from this that proper drawing management is an essential tool in **building construction, maintenance & fitting-out industries**.

The conventional method of managing such engineering drawings has been doing manually or by inputting keywords necessary to identify a particular drawing into a computerized database. Both of these methods are extremely time-consuming, very inefficient, costly and subject to a large degree of error. A further disadvantage of the conventional drawing management systems is that if the engineering drawings are not properly catalogued, thus engineers may not realize that a drawing has been modified and eventually hard to locate it.

We are grateful to introduce **VHDrawings (Network Version)**, an intelligent client-server based drawing and document management system developed by **VHSoft Technologies Co., Ltd.** for automatically identifying engineering drawings in digital format, in accordance with predefined algorithms, to enable the compilation of a database of the said engineering drawings which allows ASD users to immediately locate and retrieve the engineering drawings from the said database in accordance with defined parameters such as date of creation, date of revision, and drawing number.

VHDrawings is built as a **3-layer SOCKET server-client based application** which can be installed in LAN, extranet and internet environment according to ASD's needs.

To actively manage drawing files, VHDrawings applies a unique artificial intelligence drawing pattern recognition technology to automatically extract text information from CAD drawing files and store in a database. Besides, multi searching methods and secured version control system is also available to assist ASD in managing drawing files during the whole life cycle from design, proof, audit, approve and publish.

All the drawing data will be stored in a centralized database server, with secured and comprehensive sharing and user management tools. With

the login name and password approved by ASD, different parties in a project are allowed to manage all the data in this database at ease.

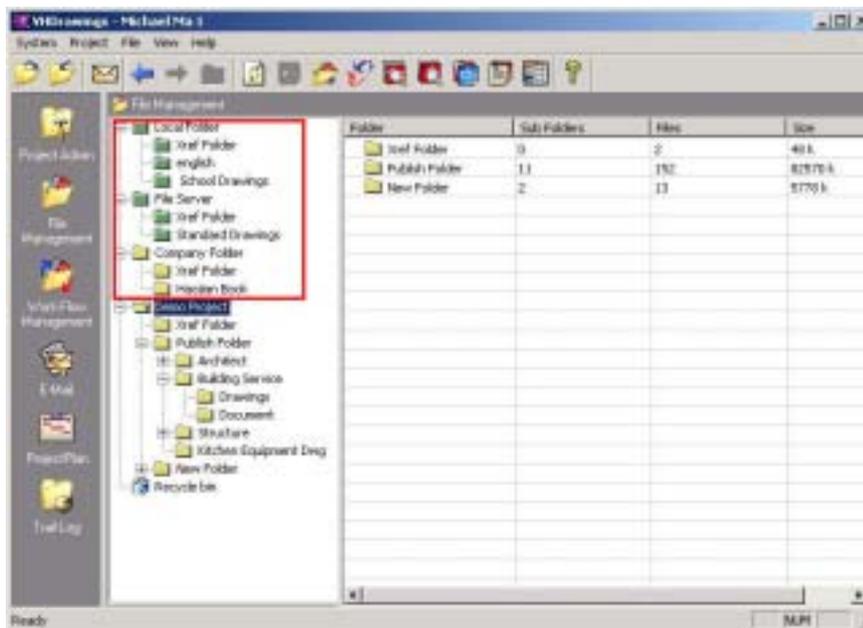
VHDrawings provides ASD with a comprehensive and flexible working platform, which is designed to particularly address the needs in managing the CAD design processes. With its network infrastructure and professional tools, ASD users are able to handle the circulation, approval and publish of CAD drawings. Moreover, VHDrawings helps to manage technical document files in a flexible way by facilitating workflow automation and easily collaborate with various work parties on design matters, as well as to exchange ideas and share information.

This system would also eliminate the disadvantages of the conventional method of indexing and storing drawings. A more efficient, cost-effective and fast method of managing engineering drawings can be achieved via VHDrawings as drawings can automatically be identified, indexed and stored for easy and fast retrieval without the need for each individual drawing to be entered manually into the database.

## 1. Key Features of VHDrawings

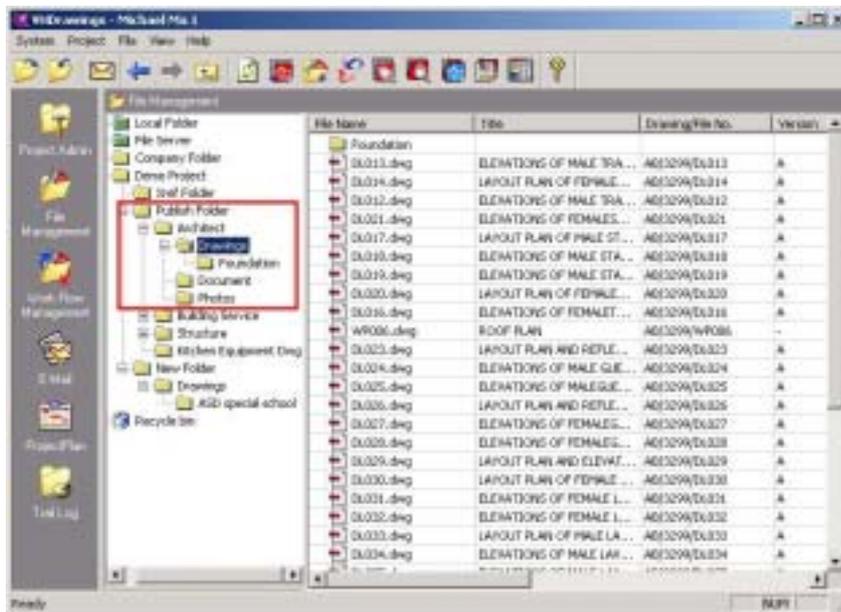
### 2. Folder Management

Users can manage files in "Local Folder" and manage them in the "File Server" at server, as well as share files with all team members by using "Company Folder" to enhance the working efficiency.



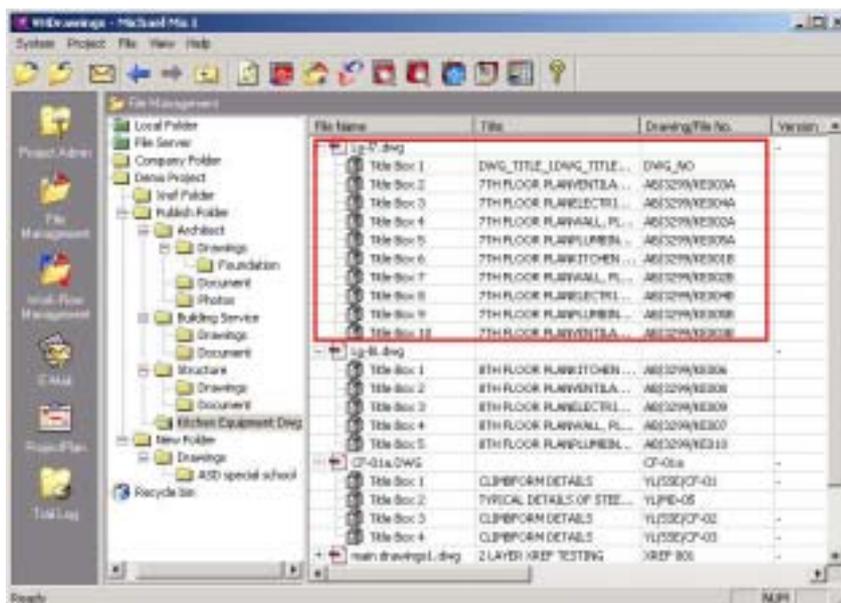
### 3. Folder Upload & Download

Upload or download folder without changing its folder structure can be achieved. If there are sub folders, the system will upload or download all the documents and sub folders inside that folder, keeping the complete content and folder structure.



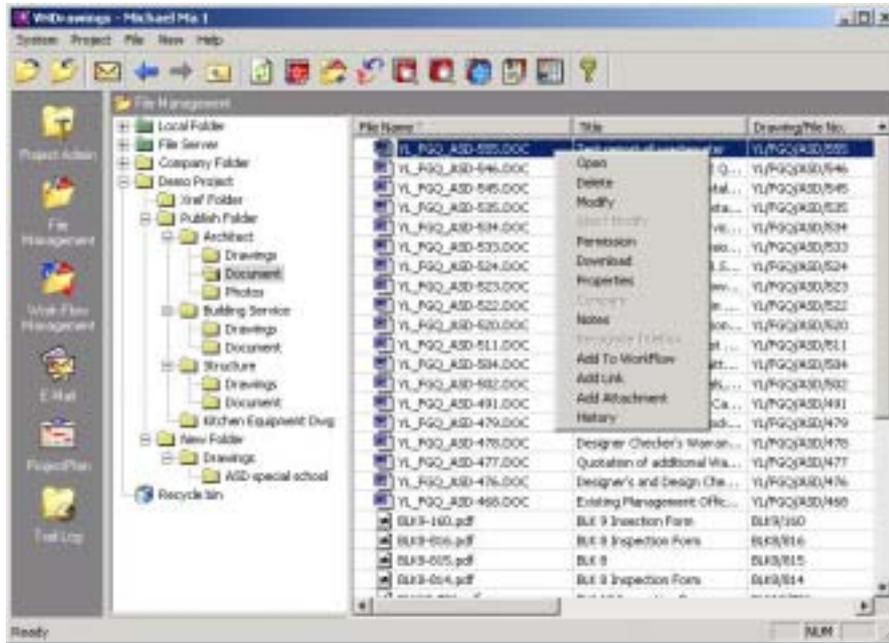
### 4. Recognize Multi-Titlebox

Drawing recognition template will automatically define all information in the drawing titlebox and list out these information below the drawing accordingly.



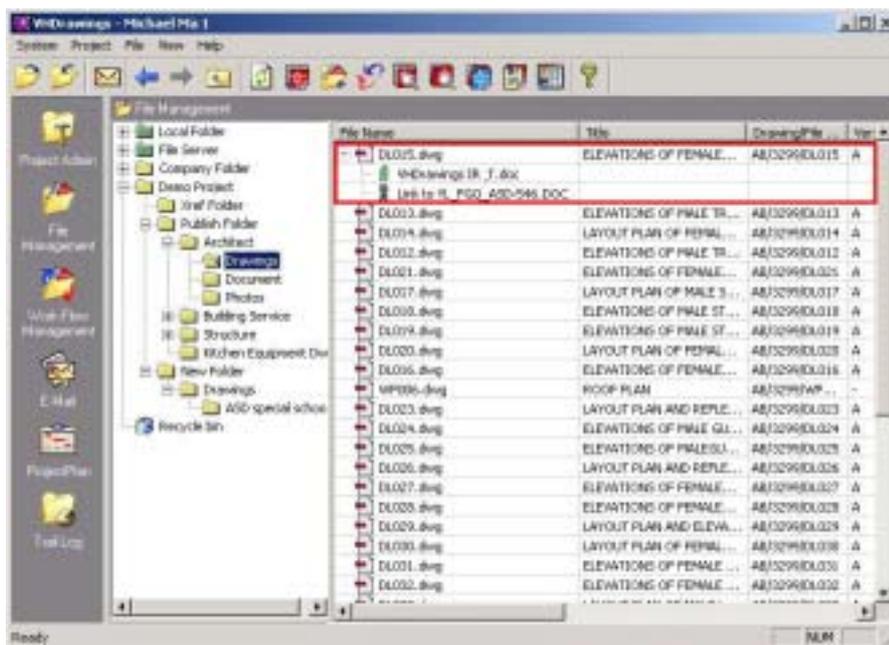
## 5. Document Management

Document management including version control, review trail log and export reports can be done at ease.



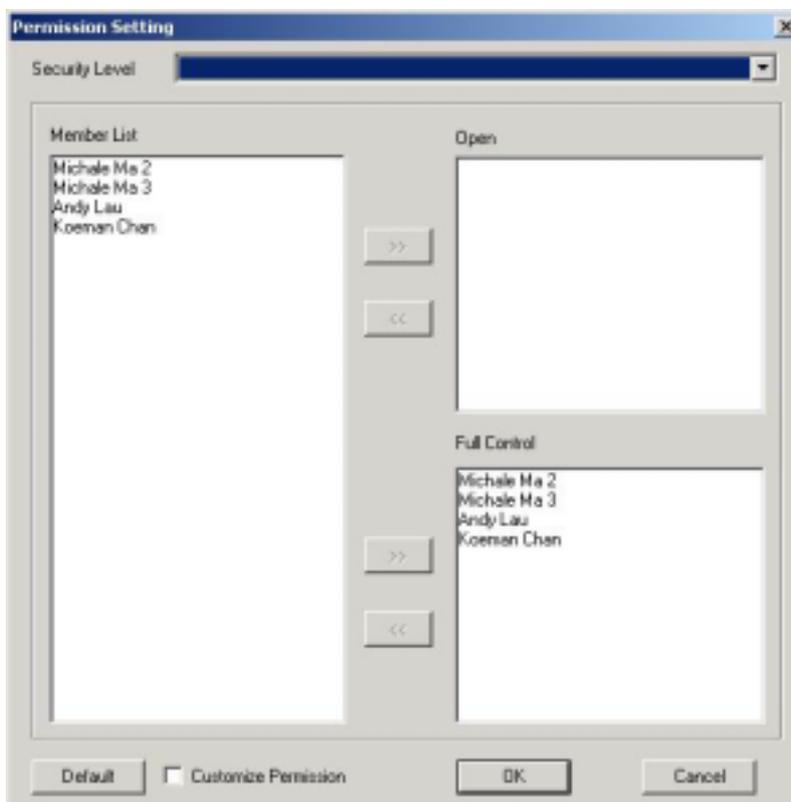
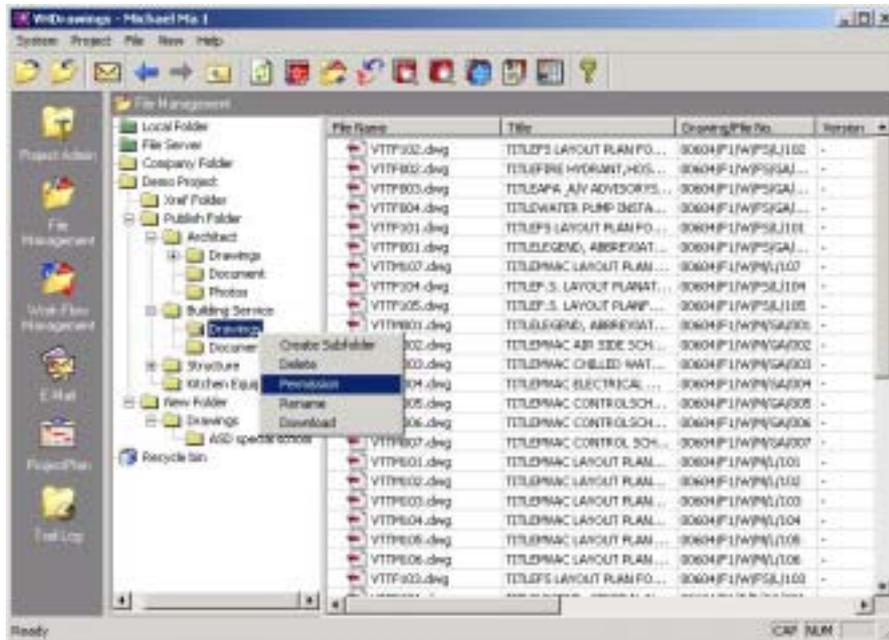
## 6. Link & Attachment

To supplement the main document, links or attachments can be enclosed, which users can open anytime they want, or send out together with the main document. This facilitates users to check all related information at one time.



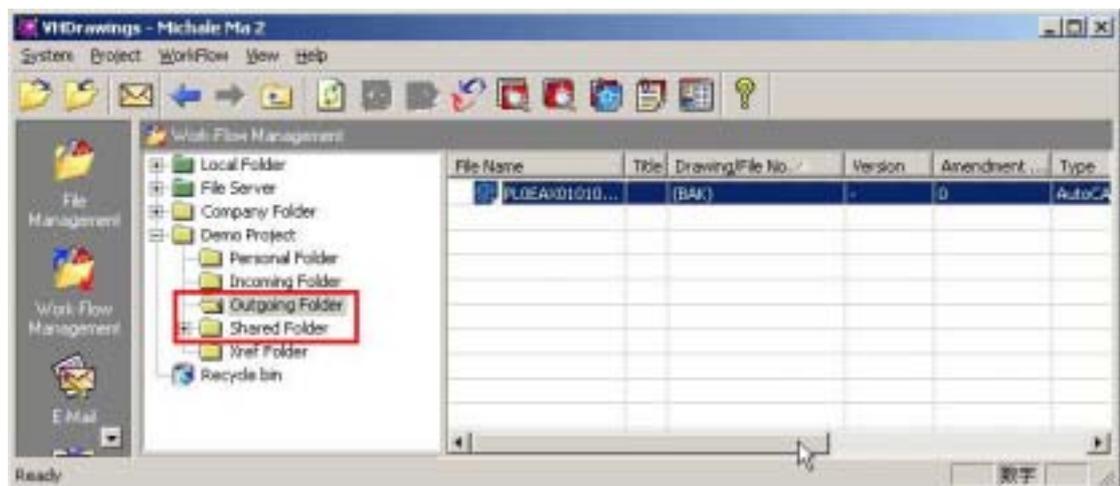
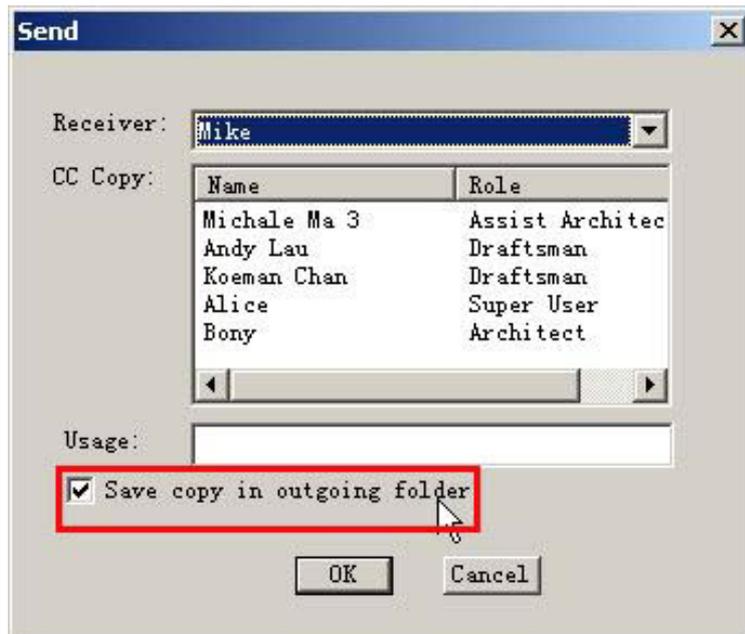
## 7. Permission

Users can assign folder and document permission right to every single user, making the access right control more rigorous and flexible.



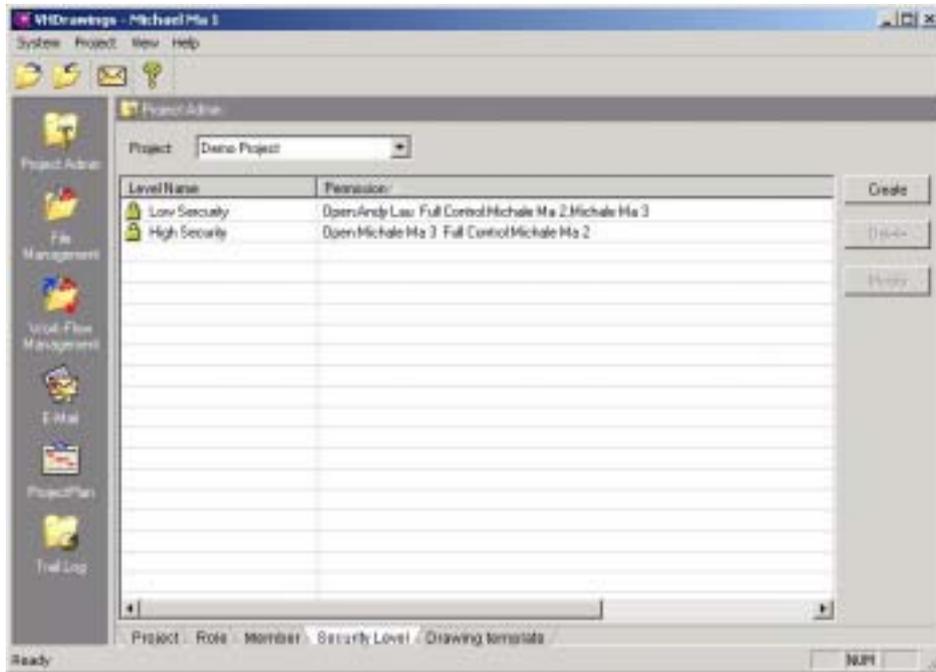
## 8. Outgoing Folder

Version control of drawings in VHDrawings is strictly implemented. No drawing number, version number and revised number of drawings are the same in all folders of the system. Therefore, there will be no drawing in the folder after users have sent out as that has already been sent to the receiver. To facilitate users to manage files, select "save copy in outgoing folder", and make a backup copy of the drawing. The drawing number will be indicated as backup, avoid mix up of drawings.



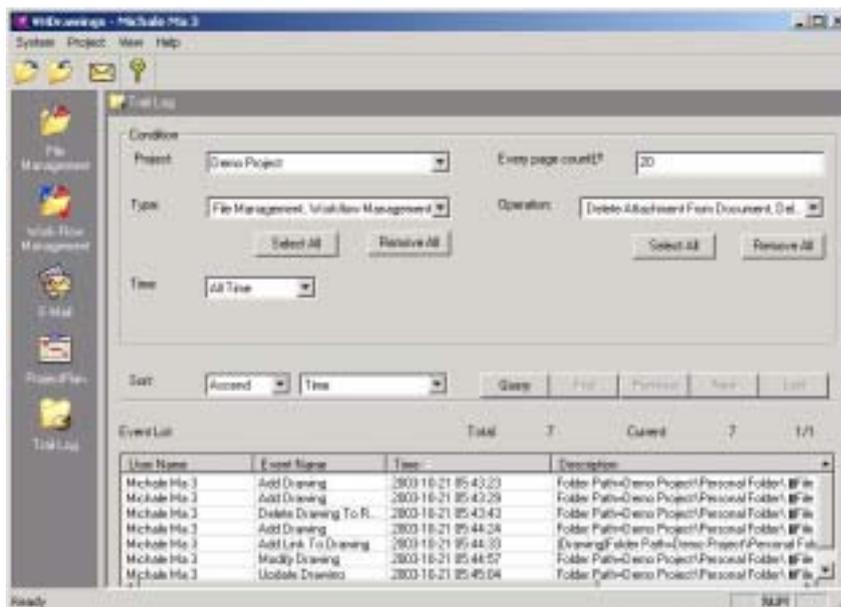
## 9. Security Level

In order to facilitate permission setting, VHDrawings provides "Security Level" tool for users to pre-define a certain templates for future use which will reduce repetitive works.



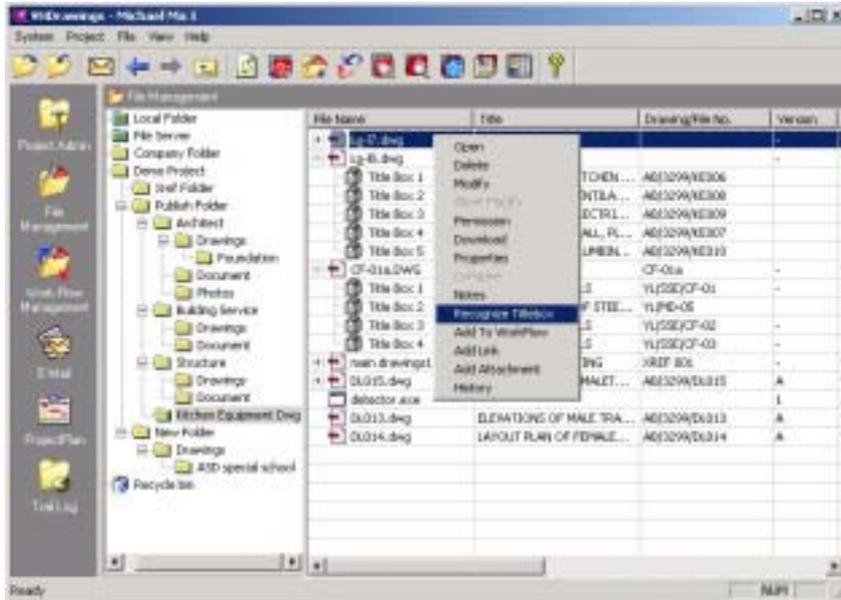
## 10. Personalized Trail Log

Personalized Trail Log will allow ALL USERS to check their own operations history.



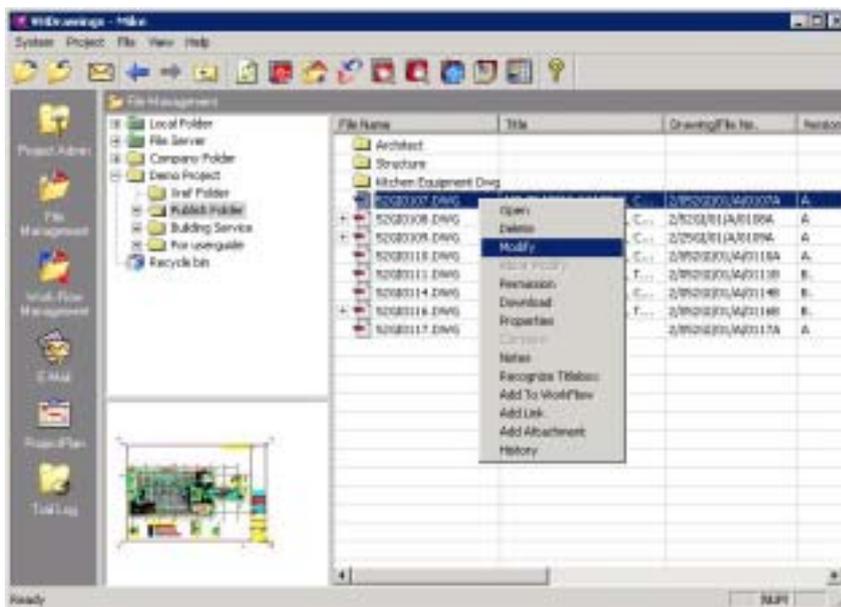
## 11. Recognize Drawing Titlebox

If users want to re-recognize the drawing titles of those drawings that are already in the system, users do not have to delete and insert them again. Simply re-define the recognition template and then select "Recognize Titlebox" in the browser or right click the file, the system will update them automatically.



## 12. Modify File

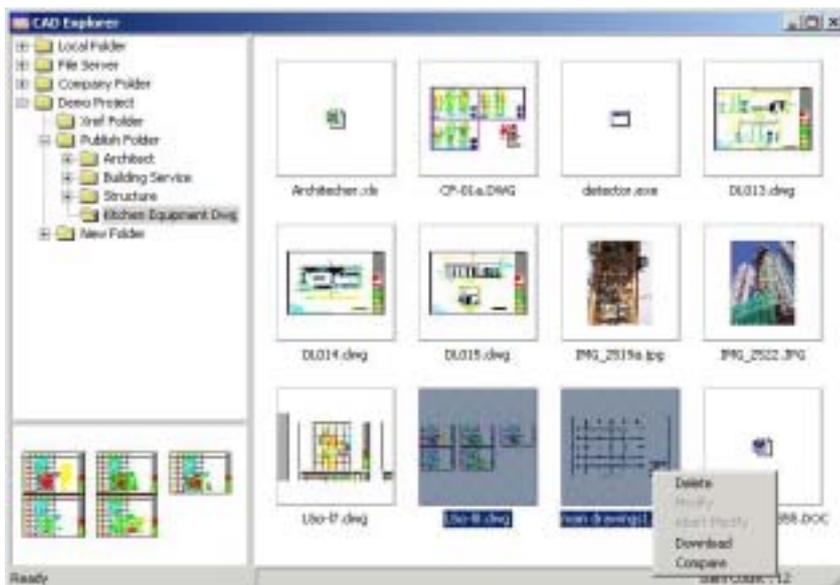
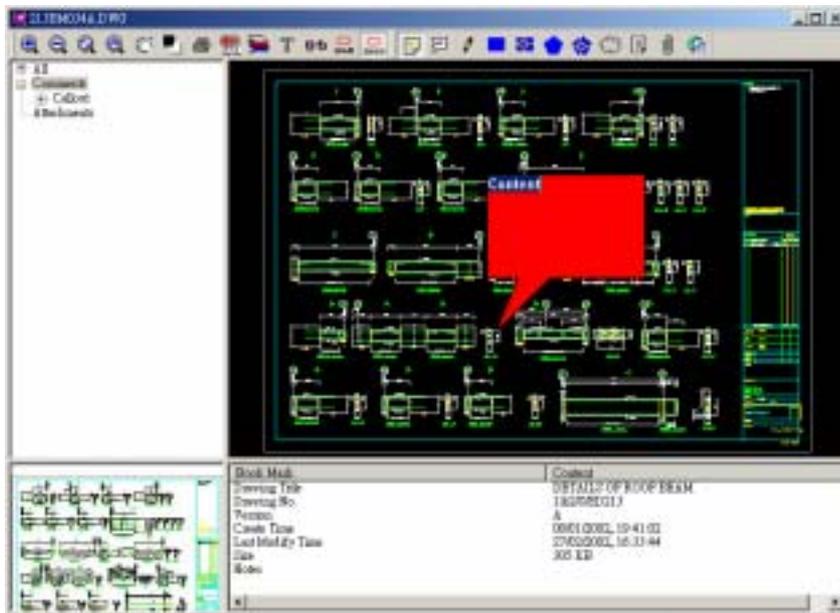
Users may stop editing a file before it is completely finished that will be saved in PC and recorded in red. After that, users can finish the unfinished parts anytime. The completed file will be saved as a new version in the system.



### 13. CAD Explorer

The enhanced CAD Explorer of VHDrawings not only allows users to browse drawings and photos but also assists in managing document at ease. Users can directly open, delete, modify or download the file, or select drawings to compare, the process facilitate better working operations.

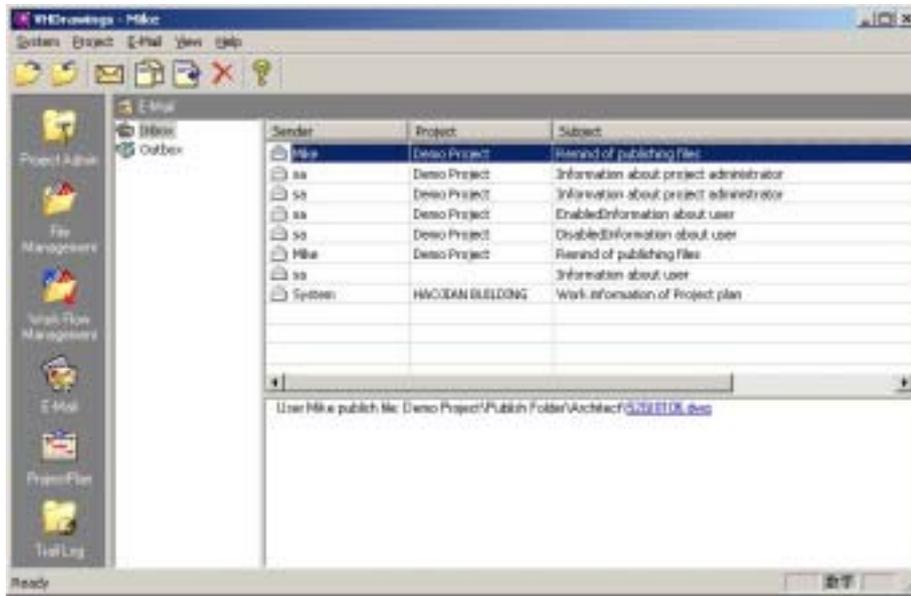
VHDrawings incorporates a native CAD viewer into the application so that users can directly load and view CAD drawing file conveniently as well as performing numerous redlining and markup functions for communication purpose without the need to purchase third party software.





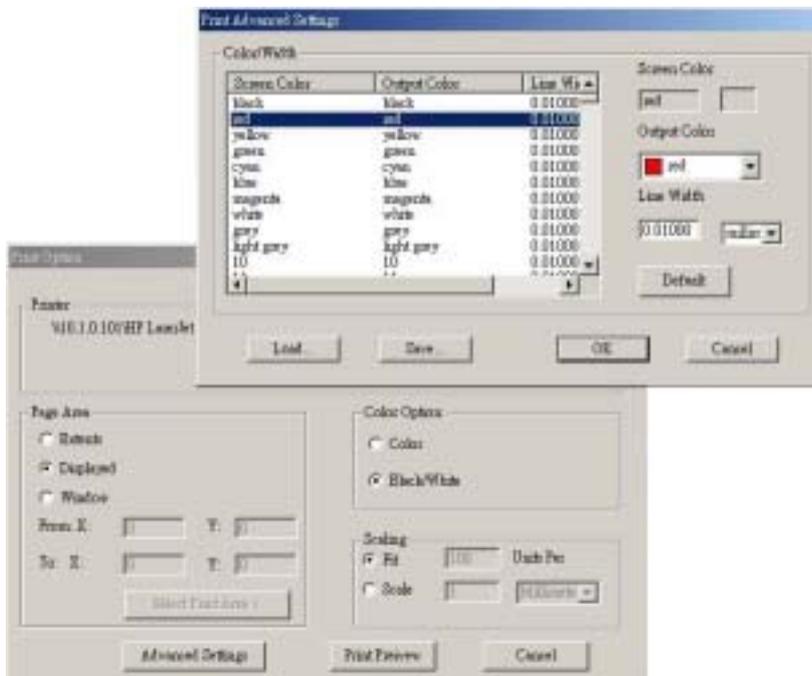
## 16. Email

When users email or publish drawings, just click on the file name to directly open the file and the system will move the interface to where the file is.



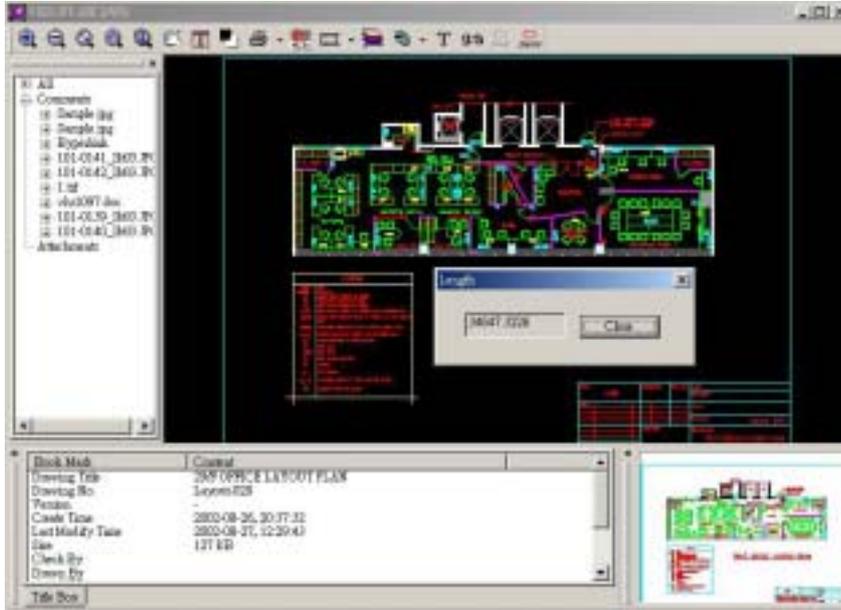
## 17. On Scale Printing

Users are allowed to do proportional printing with color & line width setting directly from the browser at ease.



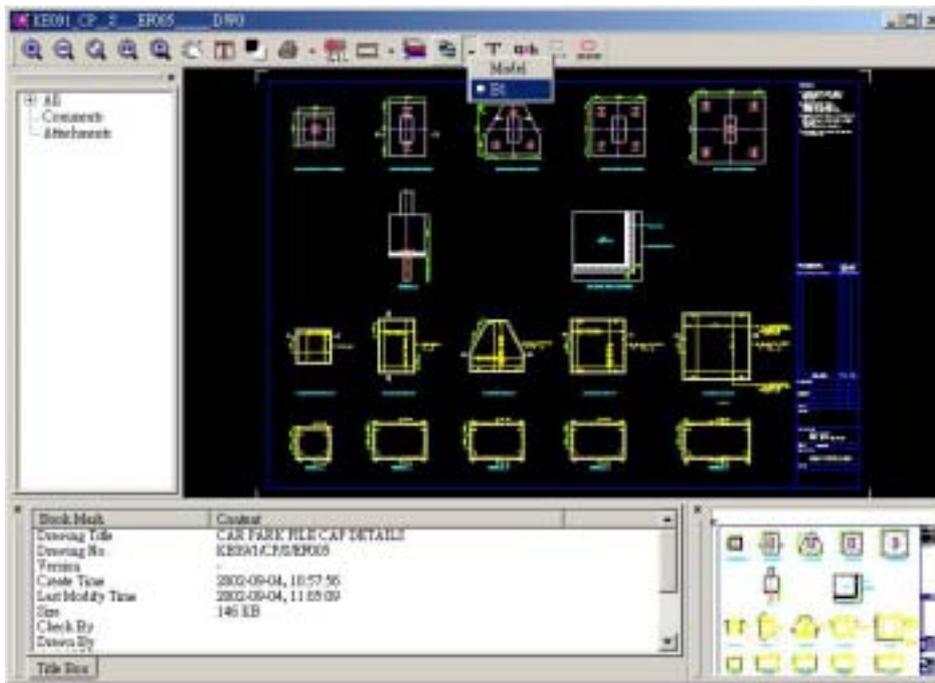
## 18. Measurement Tools

Accurately measure the lengths, angles & areas directly from the browser in seconds.



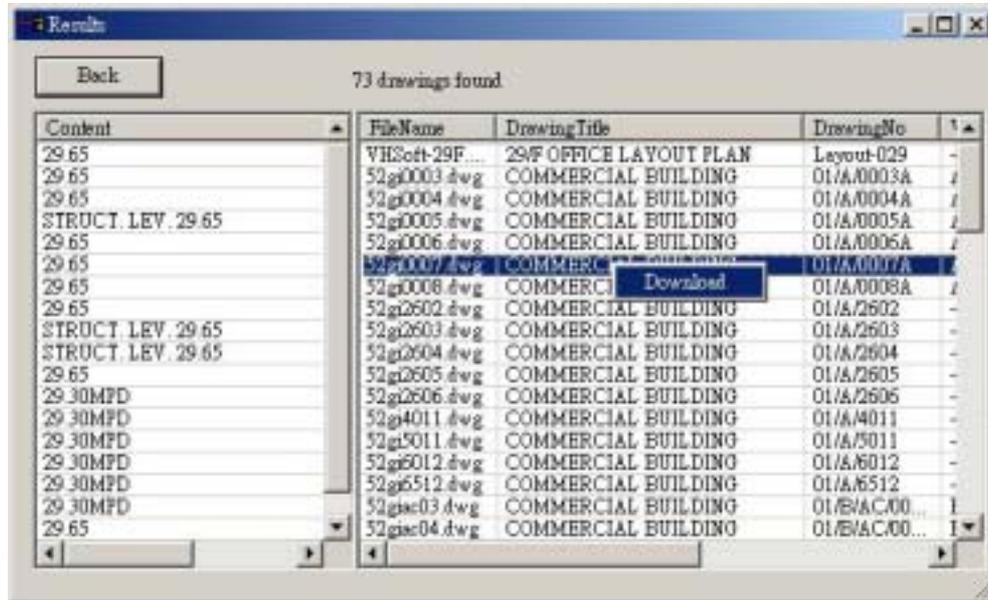
## 19. Exchange Working Space

Model & drawing working spaces can be switched from the browser and drawings that contain multi-drawing working space in AutoCAD version 2000 or above are also supported.



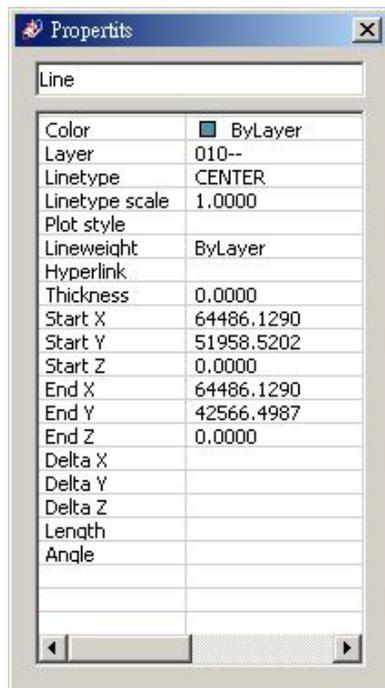
## 20. Direct Retrieval

Direct retrieval of a particular drawing from downloaded documents is possible which makes searching quick and easy.



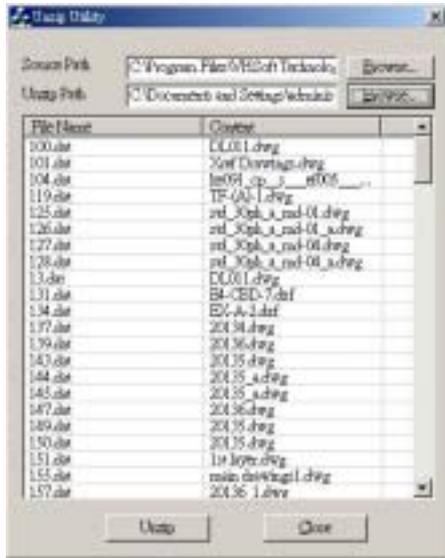
## 21. Access Drawings Properties

Drawing properties details are displayed in the "Compare-Properties" whereby differences can be traced easily.



## 22. Independent File Extraction

Files in "dat" format can be extracted into "dwg" format directly in a safe and easy manner.



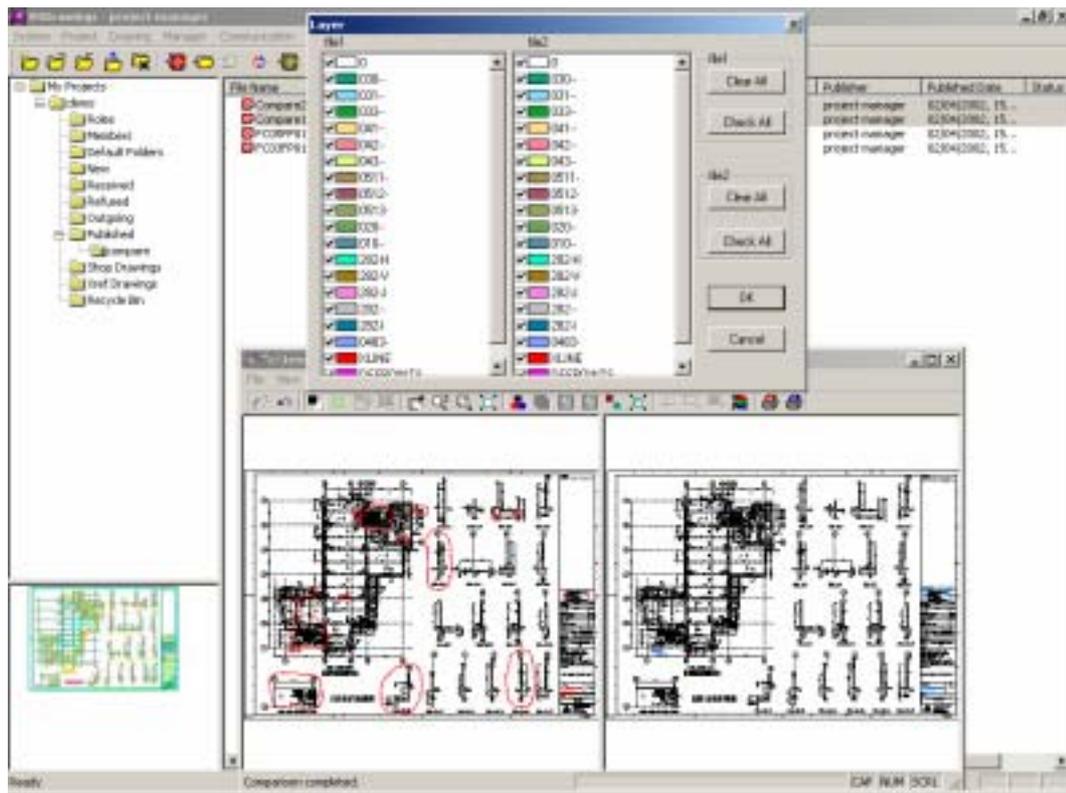
## 23. Quick search

Using the database generated by drawing recognition process, VHDrawings' search engine is capable of identify and locate any text information or drawing elements from a large engineering drawing archive, so that engineers can find a requested drawing almost immediately. Production efficiency can be increase significantly. The search engine even supports external reference search and traditional and simplified Chinese text search.

## 24. Full Comparison

VHDrawings incorporates an advanced drawing comparison module. This module can quickly compare all entities drawn on two different versions of DWG/DXF files based on their properties. It can also compare entities that are drawn on different areas and coordination systems, even the external reference files of the drawing versions. Differences between drawing versions can be accurately identified and mix-up of drawing versions eliminated.

This drawing comparison module, **VHCompare™**, can perform multi-zone & multi-layers comparison of digital engineering drawings in a side by side or overlay comparison manner. It can simultaneously locate and check 2 drawings by locking them on the same scale.



## 25. Network Management

VHDrawings is a full-scale network management system with powerful information management capacity and high performance communication channel. Team members are seamlessly linked to each other. Project administrators can closely monitor work progress in real-time and adjust human resource and workload accordingly, so that productivity can be significantly improved.

## 26. Drawing Browser

VHDrawings comes with a built-in CAD drawing browser so that users can open and view details of drawings without installing any CAD system. The browser can also be used as a direct redlining tool for conveniently mark-up instructions on the drawing files.

## 27. Easy Modification

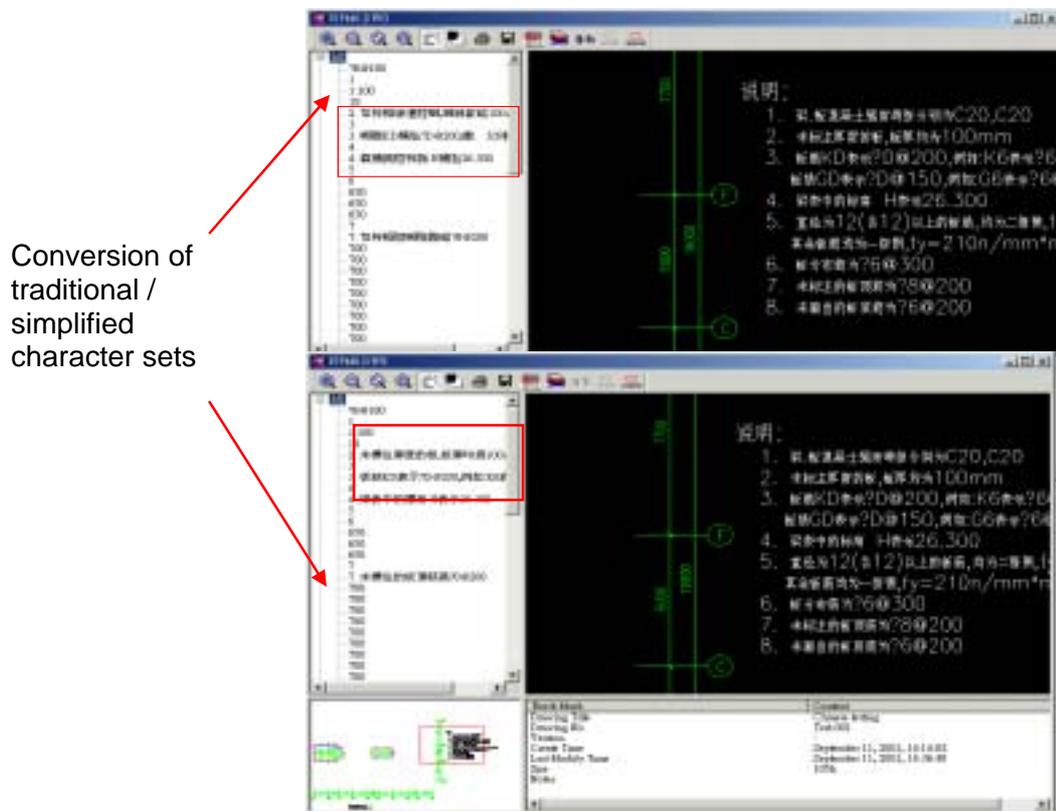
VHDrawings' drawing browser is directly linked to a specific CAD system. Once a drawing file needs to be modified, users can load the CAD system with a mouse click, without leaving VHDrawings system. After finishing modification, the system will prompt the users to store the new version back to system database with a new version number.

## 28. File Compression

VHDrawings can automatically compress the drawing files before storing them to system database to save hard disk storage space.

## 29. Chinese Support

In order to cater for users that possess drawings in both traditional Chinese and simplified Chinese characters, a conversion engine is equipped in VHDrawings, so that it can manage and search drawings with any Chinese character sets.



### 30. Major Benefits of VHDrawings

Emerging as breakthrough approach on engineering drawing management, VHDrawings creates value for customers in various aspects as below:

- **Saving time** in engineering drawing management process with tools which facilitates fast identification and accessing to any drawing files across multiple projects via a fast and accurate search engine.
- The networked platform of VHDrawings with powerful drawing managing tools can help to **control the circulation process and version updates**, assign specific roles to team members, streamline design process and accountability of team members.
- Enhanced **inter-project communication** through various interactive collaboration tools such as redlining markup tools.
- Better **quality control** can be achieved through the drawings comparison tool which allow users to pinpoint any version changes immediately and alert any version update in short time.
- The audit trial log and secure authorization process can monitor and control team member activities and performance to achieve higher traceability.