Technical Overview

A reliable, flexible, high performance operations management solution

Vijeo Citect

Schneider Electric

Real-time Intelligence

Our products and solutions

> Vijeo Citect
> Vijeo Citect Lite
> Vijeo Historian
> Switch2Vijeo Citect
> Educational Services
> SCADA Global Support

For information on all of the above, visit www.schneider-electric.com

Solutions are not just about technology but about the expertise behind the technology.

At Schneider Electric, we have been delivering solutions for manufacturing and process industries for over 40 years and we understand what is needed to help you meet your goals.

Our experience is your advantage:

> Performance-tested architectures
> Seamless integration of components
> Open connectivity with business software

Microsoft® GOLD CERTIFIED *Partner*

"Microsoft is pleased to be working with Schneider Electric to deliver powerful and reliable control and monitoring solutions for industrial customers worldwide."

Chris Colyer,
Worldwide Director of Plant Operations Strategy for Microsoft

...We are an €18.3 bn company. We have 114,000 people in more than 100 countries worldwide. We are Schneider Electric and we help you make the most of your energy...

A system to meet your needs

In order to meet your challenges, you require a control system that is not only easy to engineer and simple to maintain, but that delivers a clear picture of what is happening in your process.

You need a control system that can easily integrate with third party devices and that provides added value in the form of historian and Manufacturing Execution System functionality.

In short, you need a system that drives increased return on assets and meets the needs of your application.

Meeting your operational needs

> Provide operators with clear information about the process.

> Alarm and trend information with operator comments in a single view in order to quickly identify when and where an incident occurred.

> Advanced alarming and trending with millisecond resolution.

> Access plant and process data from outside the plant via dedicated web clients, smart mobile devices such as PDAs, or even via SMS to your mobile phone.

Meeting your engineering needs

> The ability to engineer and modify your entire process control system from a single location.

> Flexible and targeted system engineering tools to support your efforts to be more efficient.

> Reusable and extensive object libraries with control configuration.

> Off-line simulation to reduce testing and commissioning.

Meeting your data management and reporting needs

> The historian assembles data from multiple information sources and, in association with MES systems, generates detailed reports and data to aid in decision-making.

> Utilises industry standard technologies, allowing a high level of data security to be applied to the historian data that restricts unauthorised viewing or tampering.

System Architecture Topologies : Scalable

Your SCADA system has unique requirements that change with time, so how can you choose the best architecture? Vijeo Citect gives you the ultimate system architecture scalable to any application size.

Scalable Architecture

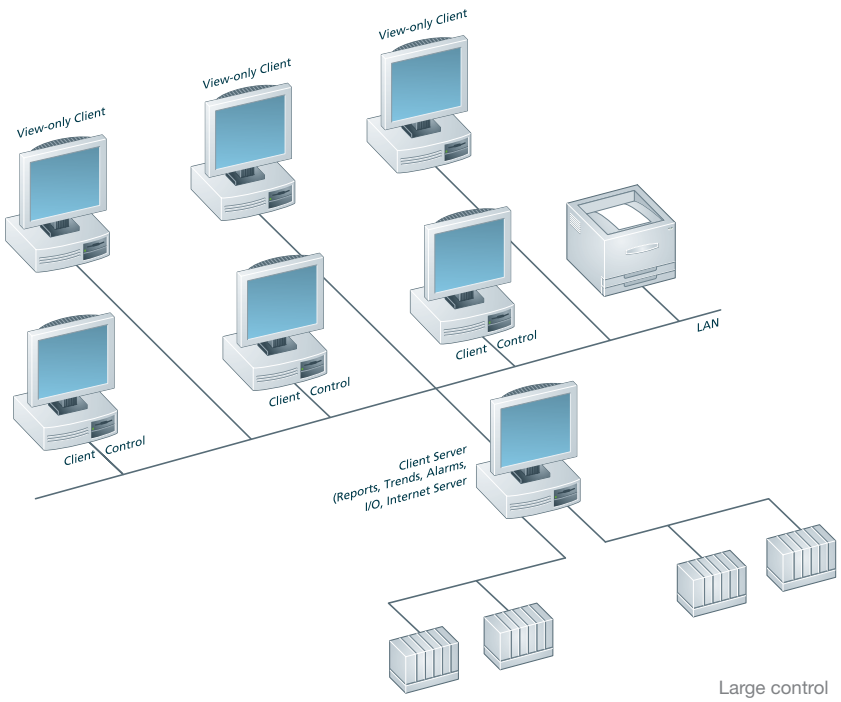
Scalability is the power to resize your system — up or down — without having to modify any of the existing system hardware or software. Vijeo Citect's innovative scalable architecture allows your system's architecture to grow with your requirements, while preserving your initial investment. If you require a second operator interface, just add a LAN and a new computer, and nominate it as a Control Client. The new computer can share the same configuration, and will receive I/O from the first Vijeo Citect computer.

Machine or Local Control

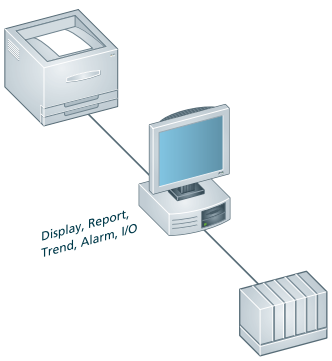
Running on Windows XP-embedded, Vijeo Citect provides users with a control system that has the power to match the requirements of advanced machines. Our embedded systems provide the same level of functionality of our full SCADA package and can be run as a stand-alone system or integrated as a local control panel within an integrated control system.

Standard Control

Many Vijeo Citect systems have grown from a single computer to large control systems. The ability for a single system to grow without changes being made to the configuration enables Vijeo Citect customers to be confident in the long term future of their control system.



Large control



Standard control

> "...there has never been any production downtime thanks to Schneider Electric's SCADA solution."
>
> Senior Process Control Engineer, Argyle Diamond Mines, 2000

Large Control

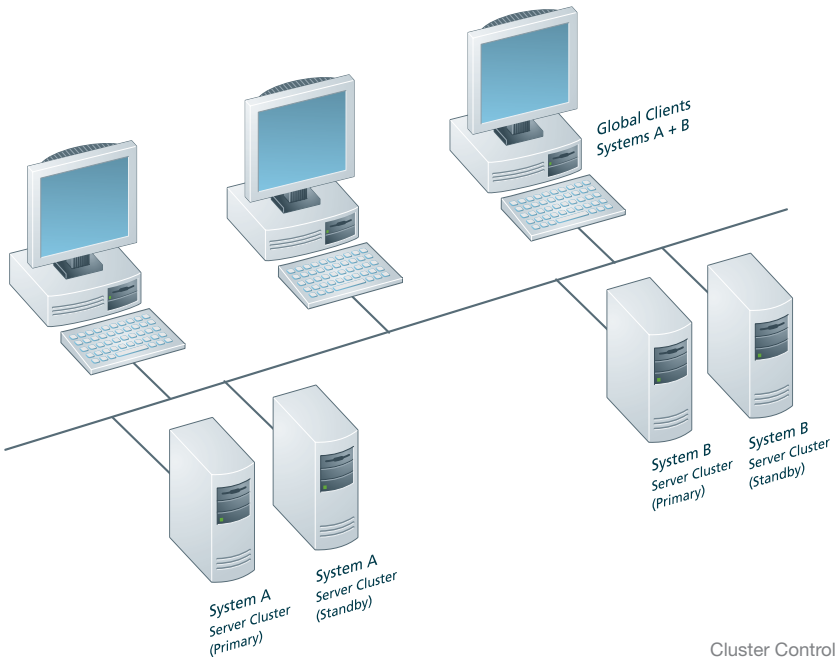
Vijeo Citect has a reputation for being the expert at large control systems. Our first SCADA system solution utilising in excess of 50,000 tags was implemented back in 1992. In order to complete projects on this scale, Vijeo Citect has developed advanced communications topologies and project structures than enable the design, implementation and maintenance of a larger control system.

Cluster Control

In the current economic climate of cost cutting and centralised control, Vijeo Citect's ability to unify any number of control systems into a single "clustered" system provides users with the ideal topology. While each local site can view its own control system, global control clients can be implemented to view across the entire system, complete with unified alarm lists and the ability to compare trended data across the multiple systems.

Large Systems

Vijeo Citect applications can scale easily to accomodate all company application sizes. Coverage is available for very small applications with only a few points, through to large applications that monitor and control over half a million points. This scalability is achieved by providing the option of using either centralised or distributed processing. Centralised processing has the benefit of keeping all the data and processing in one PC, which is a more economical solution. However, for very large applications, distributed processing allows you to share the processing over multiple computers.



Cluster Control

System Architecture Topologies : Flexible

Your SCADA system, like your business, must react to changing requirements. New production lines or pressures on costs can prove challenging. Vijeo Citect uses its client-server architecture to enable you to design and redesign your system as required.

Flexible Architecture

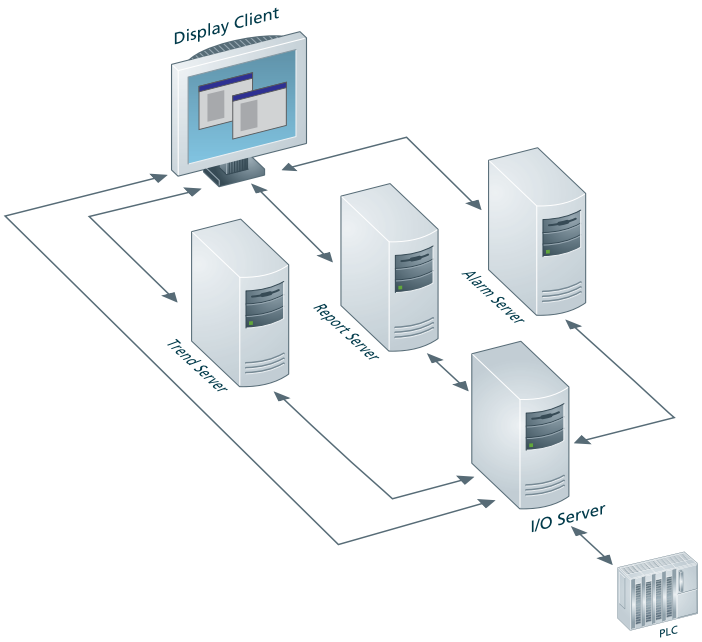
Designed from the start for true client-server architecture, Vijeo Citect is the real-time system that ensures high performance response and integrity of data.

To take full advantage of a client-server architecture, it must be utilised at the task level. Each task works as a distinct client and/or server module, performing its own role and interfacing with the other tasks through the client-server relationship. Vijeo Citect has five fundamental tasks which handle: communications with I/O devices; monitoring of alarm conditions; report type output; trending and user display.

Each of these tasks is independent, performing its own processing. Due to this unique architecture, you have control over which computers in your system perform which tasks. For example, you can nominate one computer to perform the display, and report tasks, while your second computer performs display, I/O and trends.

The initial design step for your control system places I/O servers as required to access the data. The ability to support up to 255 I/O servers, each with licences for the large number of protocols included with Vijeo Citect, provides the control system with access to your data wherever it likes. Once the data is available with the I/O servers, the source of the data becomes irrelevant to the control system designer. This allows the communications and the control system design to be completely separated and provides more flexibility when changing I/O server locations or system connections in the future.

Between the I/O severs and the other tasks within Vijeo Citect, a publish/subscribe interfaces exists. The interface ensures that the bandwidth requirements between the clients and servers are driven by the activity or number of changes of a specific variable rather than the size of the system. Vijeo Citect servers can be separated from the I/O servers via shared bandwidth communications, increasing the options for server locations and the flexibility of the control system.



With the tags available, Vijeo Citect tasks can now be located to meet the requirements of the system. Often Vijeo Citect systems are built around a central pair of servers, each acting as the primary or standby server for all the Vijeo Citect tasks. This design will optimise its performance by executing each Vijeo Citect task individually.

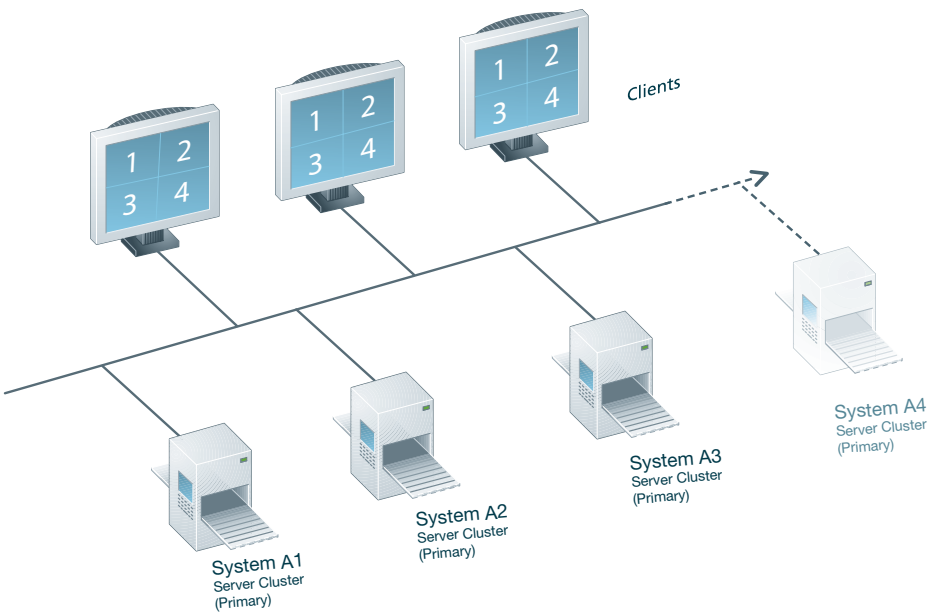
In doing so, the Vijeo Citect system can create separate server and client components across all available CPUs, resulting in improved performance and stability. A system with individual task processes can either remain on the central server or have each task distributed as required to meet system needs.

As well as relocating system tasks to meet growing requirements, Vijeo Citect can also duplicate system tasks by adding clusters to enable system expansion. Additional clusters enable the SCADA system to expand by either using more of the existing resources or by adding new resources. For example, a system may reach a point where the number of trends being recorded needs to be enhanced. Without clusters, a larger, more expensive computer must be purchased. With clusters, the system can add an additional trend task and progressively add trends on this new server without incurring the added hardware cost.

SCENARIO

You have four identical machines with identical projects. Vijeo Citect allows you, with a single Vijeo Citect project, to view all the alarms, trends, I/O and reports, Vijeo Citect also enables you to use the same displays to display information from each of the systems, greatly reducing the level of testing that is required within the project.

In the case of a windmill project, for instance, just one Vijeo Citect project, is sufficient to monitor the entire windfarm with N turbines.



System Architecture Topologies : Reliable

Reliable Architecture

In factory automation and other mission critical applications, hardware failure leads to production loss, and can result in potentially hazardous situations. Vijeo Citect's redundancy will tolerate failure anywhere in your system with no loss of functionality, or performance.

Vijeo Citect supports full, hot standby configurations, providing complete I/O device redundancy. By nominating one device as primary, and the other as standby, Vijeo Citect will automatically switch from one to the other in the event of failure. Using Vijeo Citect's ability to write setpoint changes to both primary and standby I/O devices, even devices that were not designed for redundancy can be used in a redundant configuration.

A broken communication cable and unpredictable electrical noise are common communication problems. In response, Vijeo Citect allows the use of two separate communication cables (run separately) for each I/O device. By using data path redundancy, you minimise the chance of communication loss affecting your operation.

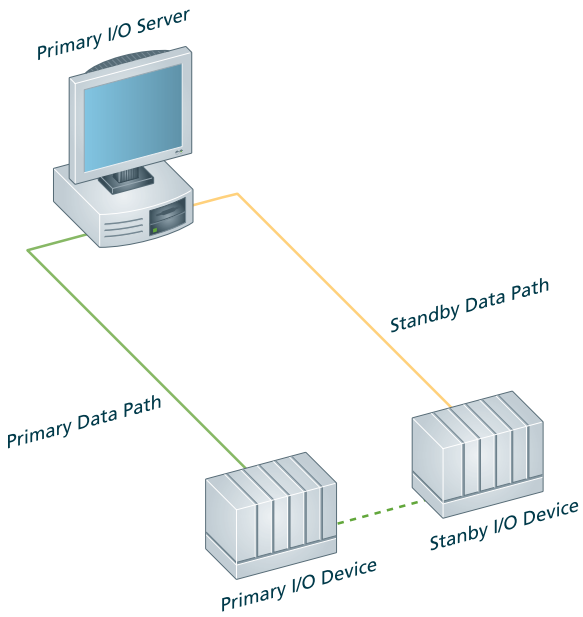
When communicating with an I/O device, many systems demand redundant I/O server configurations. To avoid conflict of data, and to maximise communication bandwidth, only the primary I/O server communicates with the I/O device.

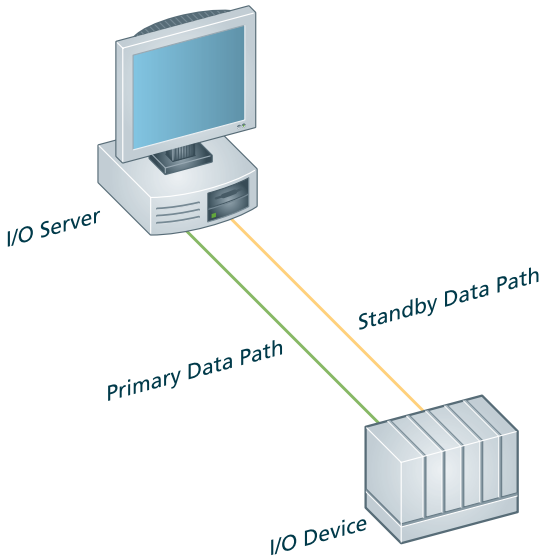
Many SCADA systems use LANs to connect the elements, but something as simple as a faulty network card can destroy communication. Vijeo Citect's built-in multiple network support provides full LAN redundancy. You simply need to install two networks (or more if you like). If the primary LAN fails, Vijeo Citect will automatically try to connect on the other available LANs with no configuration required.

The fallibility of file servers is often forgotten. Vijeo Citect supports redundant file locations so that even if your file server fails, your SCADA system will be unaffected. Vijeo Citect's redundancy features are integrated and easy to configure. In fact, LAN redundancy requires no setup, and task redundancy setup is configured in a few seconds using a simple wizard.

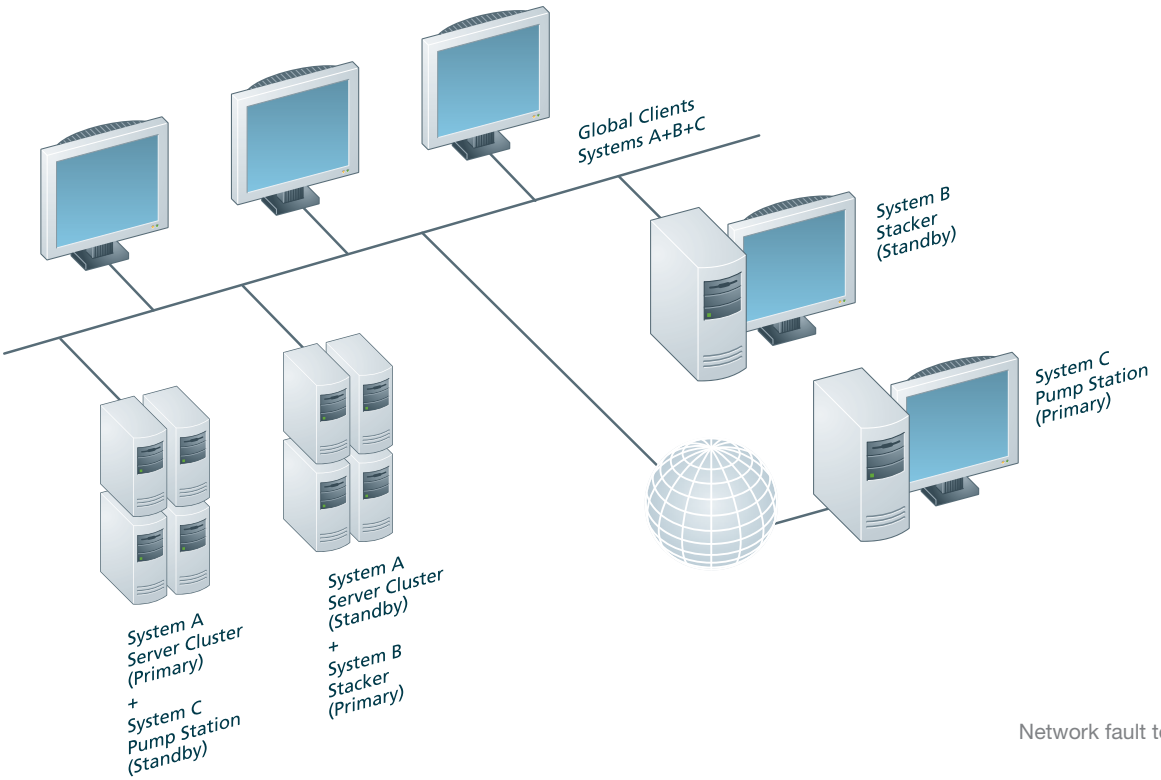
Impressively, all of Vijeo Citect's redundancy features can be used together, providing you with maximum protection. Because of Vijeo Citect's task based architecture, you get an unrivalled level of SCADA redundancy. Each of the tasks in Vijeo Citect, (I/O, trends, alarms, reports, display), can be shared by other computers in your system. This allows you to allocate a server task to two computers at one time; one as the primary and the other as the standby. If a primary server fails, the standby will automatically assume its role without loss of data. When the primary is absent, the clients will automatically access the standby server. When the primary server is brought back online, it will be resynchronised automatically, minimising gaps in your history files.

Since all tasks are different in nature, Vijeo Citect offers you a separate redundancy strategy for each. If you need to upgrade or make configuration changes, you can load a new project onto the standby server. Once loaded, switch from the primary server and run the new project on the standby server. Should it not work as expected, you can switch back to the primary server without disturbing production.





I/O device redundancy; data path redundancy



Network fault tolerance

System Architecture: Clients

Vijeo Citect provides the flexibility to access data from anywhere via its range of client interfaces and delivery systems.

Add Flexibility

Web Clients add flexibility and convenience to managing plant operations.

Current Vijeo Citect users can now monitor the operation from an Internet/Intranet supported location.

It is economical to provide access for users (maintenance and quality assurance) because server based licensing means you only pay for concurrent users.

Applications are numerous:

- Mobile users
- Remote users
- Suppliers
- Remote plants
- Special users

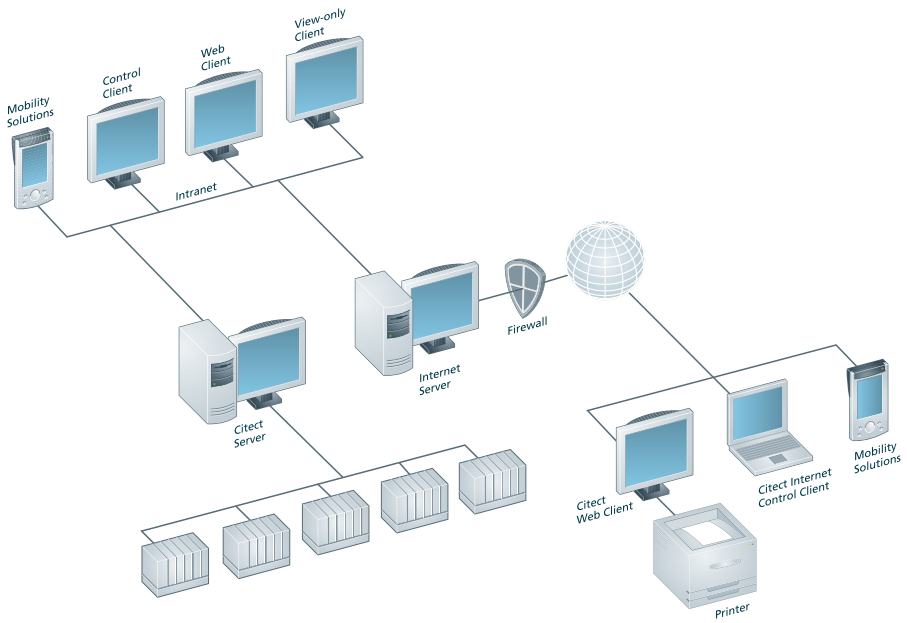
Vijeo Citect provides two levels of clients. A Control Client has the complete functionality of the application to view any screen and read and write any variable controlled through the SCADA system. This makes the Control Client the perfect tool for operators. A View-only Client is able to view all information within the SCADA system but is unable to write to any variable or execute code to communicate with another server. This makes the View-only Client perfect for upper management, process optimisation or causal users of the control system. Read-only access is also available via a Control Client using project security.

Clients

Both levels of Vijeo Citect clients can be used to display control system information. Within the control room, it is typical to install the complete Vijeo Citect client application onto a machine. These machines are typically dedicated to running the control system and an application interface provides the maximum viewable space for visualisation and the fastest possible response. The user is able to select to have a license key located on each client or locate the license keys on the servers and have the client licenses “float” between clients.

Web Clients

Vijeo Citect Web Clients allow users outside the control room to access control system data in real time. The Web Client is a completely functional client with an identical interface to the dedicated Control Clients (displayed within a web page), which requires zero maintenance. The client controls and project are downloaded from the website and project updates will automatically be synchronised with the Web Clients.



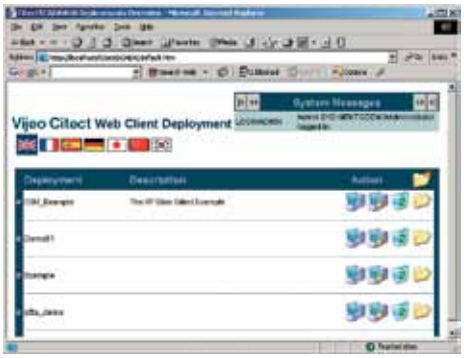
Typical Internet Client Architecture

Security

Security of Web Clients is controlled by the web server's advanced firewall and encrypted password protection technologies to ensure secure operation. Access to the Web Clients are controlled or denied based on Windows user name and password, or when the number of available Web Clients has been exceeded. Additionally, the Vijeo Citect project configuration requires a local user name and password, making it secure for enterprise and remote access.

Licensing

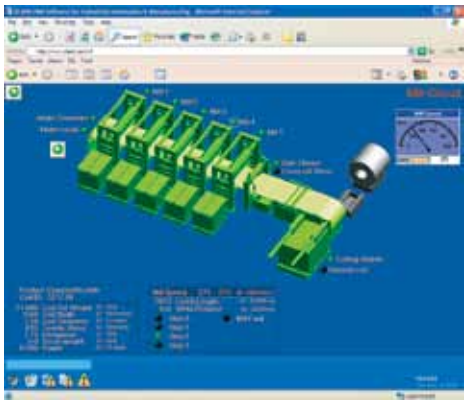
Vijeo Citect's licensing is calculated on the number of Vijeo Citect clients connected to the server, not on the number of computers with Vijeo Citect software installed, making it one of the most cost efficient SCADAs available.

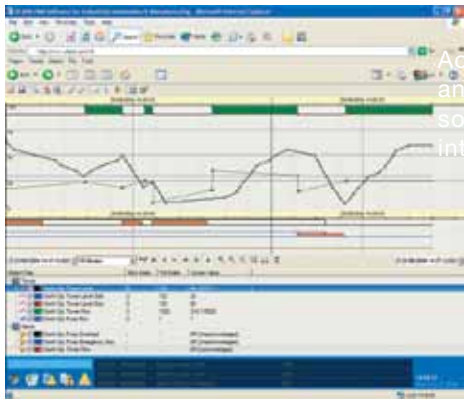


Example of the Web Client Deployment page

At a glance

- > Full system functionality
- > Impressive runtime performance
- > Simple installation
- > No emulation
- > Zero-maintenance Web Client
- > No rebuilding of graphics
- > No Client Side Protection keys





Web Client in action

For simultaneous viewing of two or three different projects, Vijeo Citect supports multiple Web Clients running on the same computer.

Site-wide Web View-only Clients

Site licenses for Web View-only Clients are available, making your control system visible to everyone within your organisation.

Communication

OFS (OPC Factory Server)Transparent Communications

Traditional communications between the controllers and the SCADA system were based on large tables of PLC memory being made available for the SCADA system to request values by address. While this communication structure delivered high performance in communication, it also required an additional level of configuration and resulted in many limitations in PLC design as memory block allocations filled or changed over time.

Communication between Vijeo Citect and Schneider Electric hardware has overcome these limitations through the use of the industry standard OPC protocol. This protocol removes the hard coded addressing from the SCADA configuration and allows the SCADA user to use the same object-based names as in the controllers. To simplify, the configuration and synchronisation of your Vijeo Citect system enables the tag database to automatically link to the OFS configuration, with changes in the OFS reflected in the SCADA system tag database.

By providing an unrestricted and automatically maintained communication link between the controllers and the SCADA system, Schneider Electric frees your system to be built and grow as required.

The OFS is a multi-controller data server that enables communications with all your new and legacy Schneider Electric hardware using any combination of supported protocols. OFS provides simple, real-time access to Modicon Quantum, Premium, TSX Micro, Twido and Momentum controllers, as well as all Modbus devices.

OFS guarantees:

- Access to all the data within the controllers (allocated and non-allocated)
- Fast communication to your PLC
- Synchronisation of the PLC tag data directly with the SCADA system (to reduce configuration)

Access to key information, an open interface and a transparent architecture are just some of the advantages providing seamless interoperability at the heart of your process.

Open to anyone

While using Schneider Electric controllers will provide the best possible results with your Vijeo Citect system, we recognise that communication to a wide range of controllers is the key to ensuring a complete view of your control system. To accommodate communication with these controllers, a collection of over 150 protocol drivers are included within Vijeo Citect.

Vijeo Citect's open connectivity from various information systems allows seamless dataflow, promising real-time and rich process information. Vijeo Citect has the flexibility to operate with open standards supported by hundreds of hardware and software vendors.

Maximise data transfer

Vijeo Citect recognises that many I/O devices can be slow and inefficient when responding to requests for data. The following strategies allow Vijeo Citect to maximise data transfer.

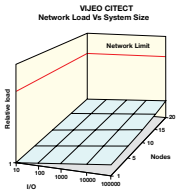
Vijeo Citect's communication is demand based — reading only those points which are requested by the clients. More importantly, the I/O server rationalises requests from clients, for example, combining them into one request where possible. This reduces needless communication, giving screen update times of up to eight times faster than without it.

Only a restricted volume of data can be returned in one request. If all requested data is grouped together, then fewer requests are required and the response is faster. By compiling a list of the registers that must be read in one scan, Vijeo Citect automatically calculates the most efficient way of reading the data.

Vijeo Citect's client-server processing allows further performance increases, through the use of a cache on the I/O server. When an I/O server reads registers, their values are retained in its memory for a user defined period (typically 300ms). If a client requests data that is stored in the cache, the data is provided without the register being re-read. In a typical two-client system, this usually occurs 30% of the time, resulting in a potential 30% increase in performance.

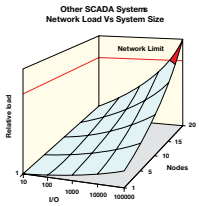
Reliable Performance

Vijeo Citect's distributed processing and network optimisation give you excellent network performance, even when you have over 450,000 I/O and 60 Vijeo Citect computer stations:



IDEAL

Without Vijeo Citect's network optimisation, you can expect network load to increase dramatically, 'choking' as you add more I/O and computer stations:



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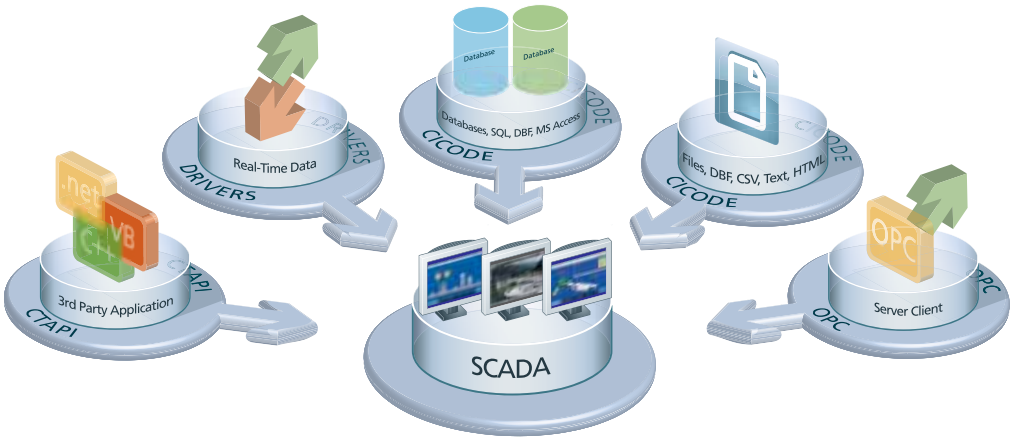


Seamless dataflow: Our open connectivity to various information systems.

Communication: RTUs

Using standard wide-area communication technologies, Vijeo Citect provides an effective method of communicating with remote telemetry units (RTU) for a fraction of traditional operating costs.

PSTN Monitoring

Vijeo Citect's Remote Device Monitoring supports scheduled Dial-Out and unsolicited Dial-In, making it easy and economical for Vijeo Citect to monitor devices and sites over the Public Switched Telephone Network.

This feature has been employed in a wide range of applications:

- Cellular networks, GPRS
- Rail systems
- Water supplies
- Power transmission and distribution
- Pipelines

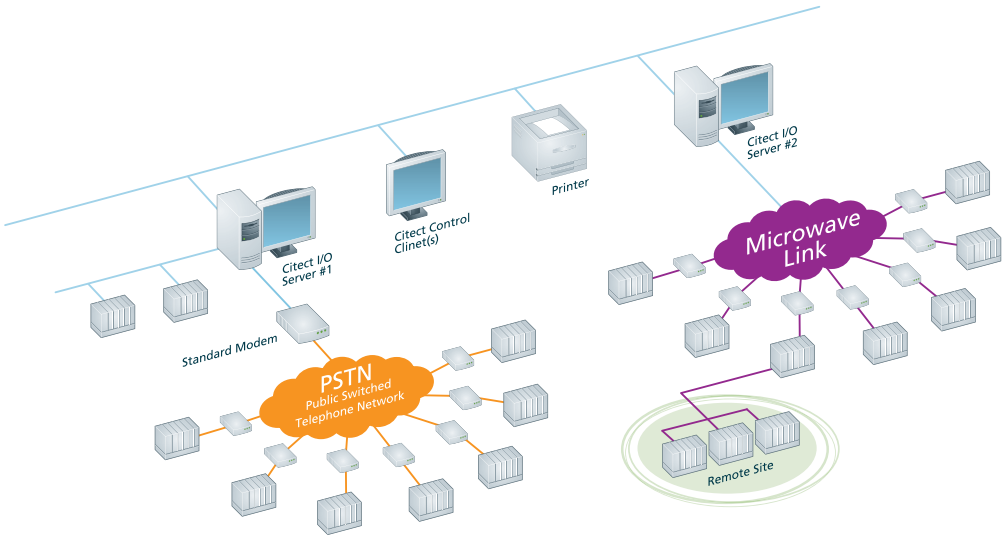
Vijeo Citect can schedule connections to RTUs (for example, via modems or microwave links). To minimise data communication costs, Vijeo Citect can call up the I/O device as per a user defined schedule, or when needed to exchange data, and then automatically disconnect.

By working with most serial protocols provided with Vijeo Citect, Remote I/O device monitoring provides the user with flexibility in selecting a wide range of PLCs or RTUs.

Built-in Management

Vijeo Citect's comprehensive features for managing remote devices are built-in:

- Easy-to-use Express Communications Wizard.
- A single modem can be used to communicate with multiple I/O devices.
- Vijeo Citect can use a modem pool to simultaneously connect to multiple devices.
- Dial-In feature for remote devices: If remote alarms occur outside of scheduled dial-out times, the devices can dial-in to Vijeo Citect and transfer the alarm information.
- Dial-Out I/O has full redundancy support. If the primary server fails, the standby server will dial the remote devices. The non-volatile data cache is replicated automatically between servers so the latest data is always maintained on the standby and is available to the primary on restart. Vijeo Citect keeps a local record of the last values read from each device.
- If Vijeo Citect cannot connect to the remote device after a user-defined number of retries, that I/O device will be flagged as off-line and the values marked accordingly.
- Each modem can be configured to define its purpose Dial-Out, Dial-In, or both, and can be dedicated for Vijeo Citect only, if desired.
- Vijeo Citect supports connection to devices which communicate using different data frames.



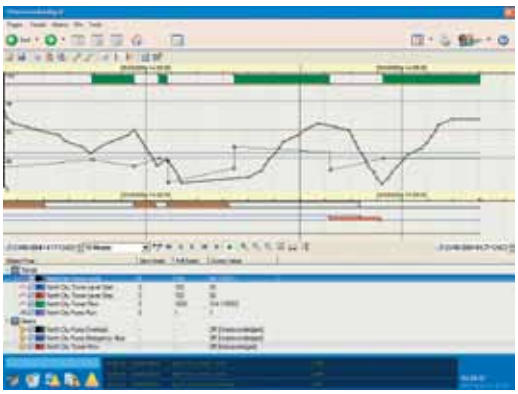
Remote Device Monitoring can be used in conjunction with up to 255 I/O servers to support applications with hundreds of thousands of points.

Easy to configure and use

Based on a user-selected schedule, Vijeo Citect's Remote I/O device monitoring feature can automatically connect to remote devices to retrieve data. Conversely, it can accept unsolicited connections and data uploads from remote devices. Remote I/O device monitoring is more than a remote monitoring feature, it can also be used to implement Cicode functions on connection or disconnection.

The Express Communications Wizard includes telephone number and call schedule fields. Set it up and let Vijeo Citect look after the call schedules, data transfers and disconnections. It's automatic!

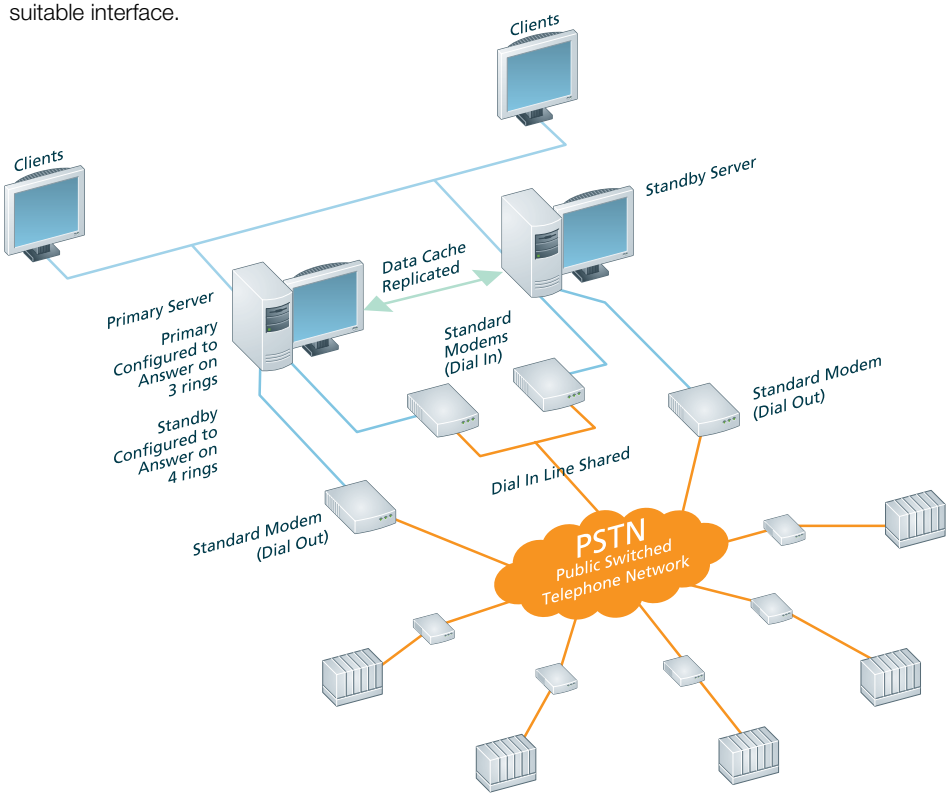
Implementing the Dial-In feature requires a remote device or modem capable of sending an identification string (ID string). Vijeo Citect uses the ID string to identify the remote caller along with the appropriate communications protocol. If the device cannot support an ID string (for example, the serial port may be limited to a native protocol), industrial modems produced by Sixnet and others can provide a suitable interface.



Vijeo Citect accurately represents time-stamped data in Process Analyst

Time-stamped Data

Vijeo Citect enables time-stamped data from RTU event logs to be easily uploaded and back-filled into historical records. Any alarms configured for this data will trigger new alarms based on the original time-stamp.



Example of Remote I/O device monitoring configured for both redundant Dial-Out and Dial-Back for secure monitoring of remote sites and devices.

At a Glance

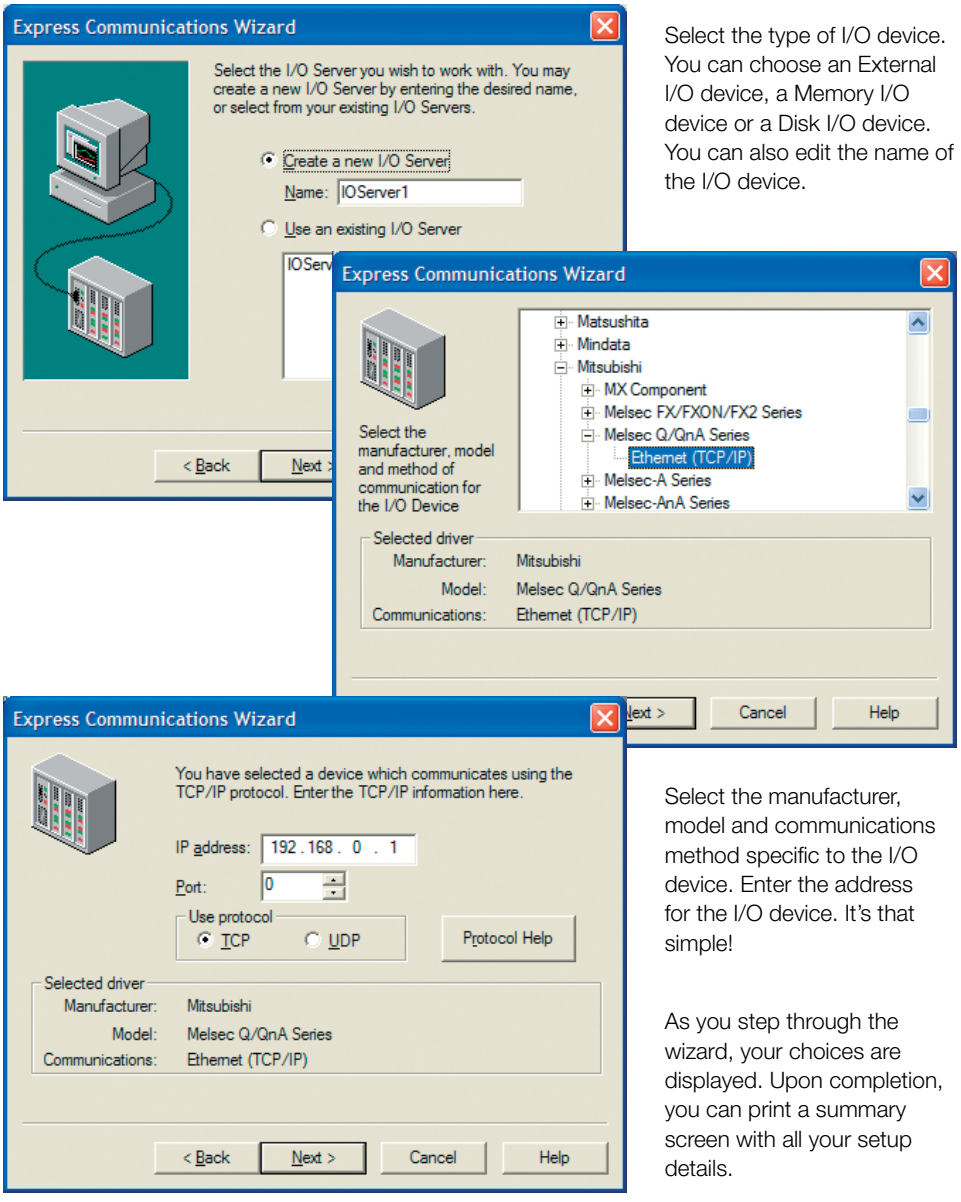
- Economical solution for monitoring remote trend, alarm and tag information
- Easy to configure
- Dial-in for alarms
- Full redundancy support

Communication: Wizard

Vijeo Citect's I/O device communication wizard will have you communicating in less than 60 seconds.

The Express Communications Wizard configures your I/O devices quickly and easily, getting your system up and running fast.

All communication protocols are included with your Vijeo Citect package.



Select the type of I/O device. You can choose an External I/O device, a Memory I/O device or a Disk I/O device. You can also edit the name of the I/O device.

Select the manufacturer, model and communications method specific to the I/O device. Enter the address for the I/O device. It's that simple!

As you step through the wizard, your choices are displayed. Upon completion, you can print a summary screen with all your setup details.

Vijeo Citect allows you to develop and test your project without the need to physically connect to the I/O device. Simply define the I/O device as Disk I/O (non-volatile) and Vijeo Citect will behave as if it were communicating with a real I/O device. You can specify any protocol and Vijeo Citect will use that device driver to communicate, ensuring a very thorough test.

Security: Configuration

We recommend addressing security at all levels within your control system. While the components themselves need to be secured, your control system infrastructure and, in particular, your network need to be secured from attack.

Read-only Projects

Within a secure network, Vijeo Citect can be configured by any user from within the business. For these users, Windows security provides a simple and secure method of control over project configuration. Each project can be secured so that it is only accessible to a subset of users. For larger projects, this can control access by different users to different parts of the process for security. For an OEM style customer, this feature enables them to secure a sub component within a project to ensure included projects cannot be changed while the OEM is not present. Utilising Windows security also ensures that regardless of the editor used for configuring your projects, they will always be secure.

In the past, SCADA networks were separate from other networks and physical penetration of the system was needed to perpetrate an attack. As corporate networks became electronically linked via the Internet or wireless technology, physical access was no longer necessary for a cyber attack to occur. One solution is to isolate the SCADA network; however, this is not a practical solution in a world where control systems are being controlled more directly by the business system or where the data required for that control and monitoring is coming from increasingly remote data sources such as remote terminal units (RTUs).

To aid in the development of strict control system security, we have produced a SCADA Security white paper that is available from your local Schneider Electric office. In this document, we detail the design considerations that you require in order to keep your control system secure as a whole, rather than focusing on each specific part. The core elements covered within this document are:

- Keep your network design simple (reducing contact points).
- Use firewalls to protect each part of your system and, in particular, wherever your system passes outside your control (wireless or radio communications).
- Utilise the power of VPNs to enable users anywhere within the world to access your control system securely.
- Use IPsec to ensure that only the right devices are connected to the network.

While there are core security elements that are required for every network, additional security is required for wireless networks. The two most common ways of gaining unauthorised access to a wireless network are by using an unauthorised wireless client, such as a laptop or PDA,, or by creating a clone of a wireless access point. If no measures have been taken to secure the wireless network, either of these methods can provide full access to it.

When implementing a wireless network, a couple of standard security measures can be taken to minimise the chance of an attacker gaining access to the wireless network:

- Utilise the ability to restrict MAC addresses.
- Require WPA/WPA-2 protols to be available.
- VPNs for the wireless clients.

Security: Runtime

Vijeo Citect's comprehensive security features are integrated into all interface elements, ensuring a secure runtime system.

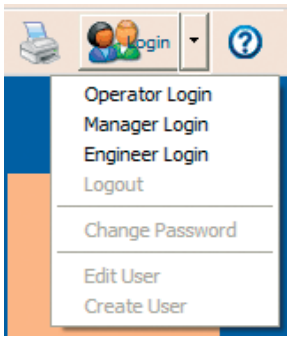
All control systems need to be secured against unauthorised access, and most applications have operations that only qualified people should perform. Your system must provide some form of security to prevent accidental or deliberate tampering to protect personnel, the environment and equipment.

Vijeo Citect's runtime security system is user based, meaning that each user of the runtime system (operators, maintenance personnel etc.) have their own username and password. This username can be managed in Vijeo Citect's native security model or integrated with corporate domain-based security (Windows Integrated Security). Regardless of the model you choose to implement, access to the systems is controlled by granting users the ability to view different areas. If allowed to view an area, the user may also need to have the correct privilege level to perform actions or view objects. For each graphical object, page, trend and report, you are able to define the area to which it belongs and what privilege levels are required to make it visible or usable. Since users can use any Vijeo Citect computer. Access is granted or denied by the server, not by the client – providing additional security for WAN applications.

To stop unknown people from tampering with your plant when the operator station is unmanned, you can direct Vijeo Citect to automatically log people out of the system (for example, if the mouse is idle for five minutes). Without an appropriate user name and password, no authorised users can access the system.

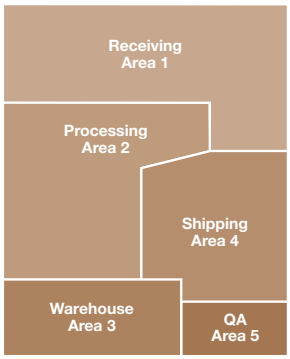
Support for read-only projects allows you to secure your Vijeo Citect configuration from unauthorised changes. CIPs and OEMs can deploy a project safe in the knowledge that it is read-only secured.

Cicode commands are protected in the Kernel, preventing unauthorised access. A user is required to log into the Kernel before Cicode commands will execute in the Kernel window, regardless of whether they are logged into Vijeo Citect.



Securing the Environment

In most applications, the operator should not be allowed to exit the control system. You can secure the Vijeo Citect runtime environment, itself, by preventing users from switching to the Windows operating system or other Windows programs.



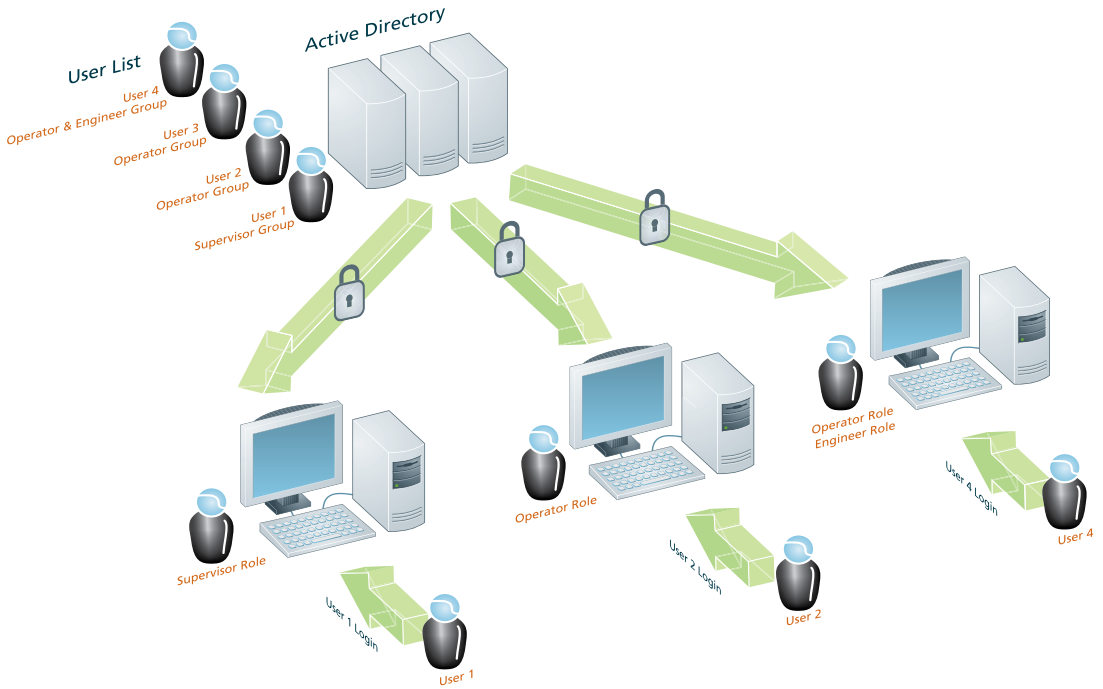
Operator 1:
Viewable Areas: 1, 3, 5
Global Privileges: 3, 5
Additional Privileges in Areas: 1, 2, 4

Operator 2:
Viewable Areas: 1, 3
Global Privileges: 3, 5
Additional Privileges in Areas: 1, 4

Supervisor:
Viewable Areas: Plantwide
Global Privileges: 1, 2, 3, 4, 5
Additional Privileges in Area: 1

View-only Access

Vijeo Citect View-only Clients are a cost-effective way of providing view-only access, and the clients can be shared amongst many users anywhere on the network. Simply allow sufficient View-only Client licenses to satisfy the maximum number of users that are required to be logged in at any one time.



Vijeo Citect Windows Integrated User Authentication

Windows Integrated Security

Integration with Windows security provides the additional benefit of ensuring that the same corporate security standards apply to the control system as to other applications.

In Vijeo Citect, you now have the ability to use the Vijeo Citect native security model or to integrate it with the Microsoft Windows security model. Using the integrated Windows security model, the operator logs on to Vijeo Citect runtime and is authenticated by the company's Windows domain controller. With Vijeo Citect's native security model, the operator is authenticated by Vijeo Citect, itself. In both models, the runtime privileges conveyed to the operator are configured within the project.

Integration with Windows security allows corporate security standards to be applied to the system production and creates a single location for the management of user accounts. For example, when an operator leaves and their access to the company's domain is removed, so will their access to Vijeo Citect.

Similarly, when the operator is replaced, there is no need for additional Vijeo Citect configuration in order to grant the new user access to the control system. It can all be achieved when the new user is granted an account on the domain.

Windows integrated security login support has been added to provide the SCADA system full runtime without requiring 24/7 uptime of the domain controller. When users are authenticated at SCADA nodes, Vijeo Citect will utilise the standard Windows login user cache if the domain controller is unreachable. The current Windows logged-in user can be selected to be automatically logged into Vijeo Citect. This saves desktop SCADA users from having to re-login to Vijeo Citect directly.

Vijeo Citect Graphics

Show different states

Graphics allow you to create a realistic, intuitive operator interface. For example, you could configure a tank that can be…

filled,

heated

or rotated.

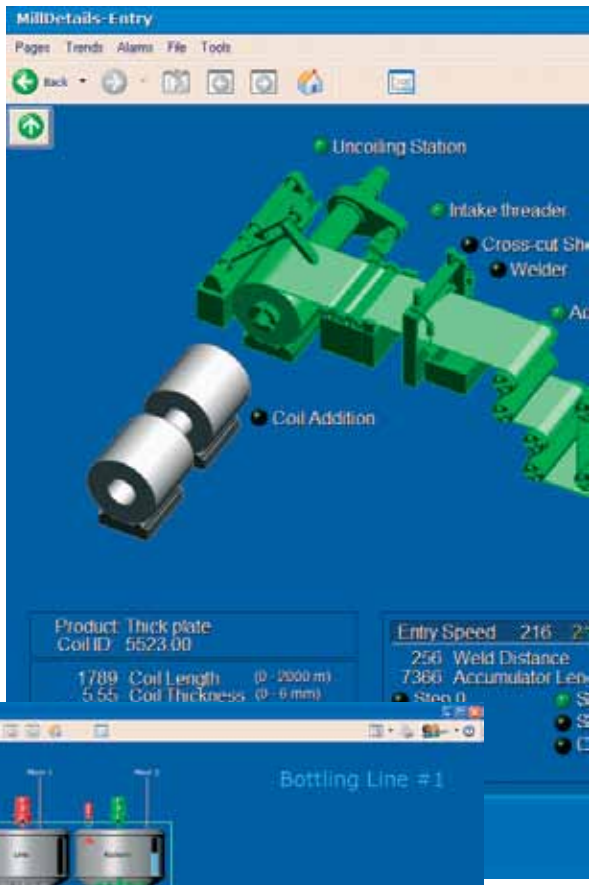
Just by using graphics, you will find yourself developing new ideas for your interface.

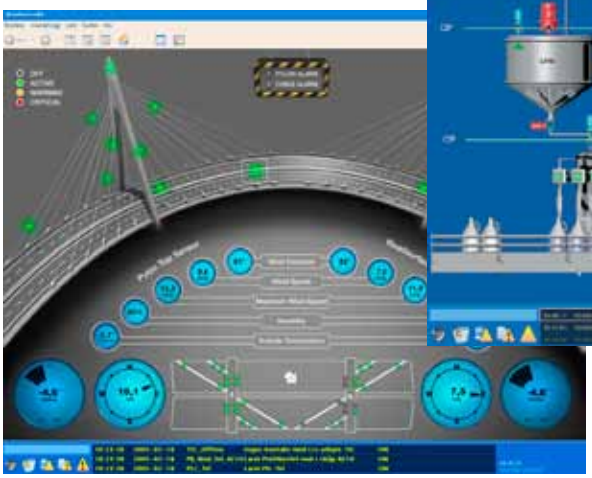
The graphics capabilities of your SCADA system are a critical factor in its overall usability. Vijeo Citect's graphics allow you to quickly develop true colour, easy-to-use displays that provide the operator with an intuitive, consistent user interface.

Vijeo Citect's graphics are based on a simple set of objects, namely rectangles, ellipses, bitmaps, straight lines, freelines, polylines, text, symbols and pipes. Associated with all these objects is a common set of object properties. These properties allow an object's behaviour to be directly linked to your plant variables. The movement, rotation, size, colour, fill and visibility of any object can be used to realistically mimic plant floor conditions, and commands and touch properties can be assigned so that the object can accept a variety of operator inputs.

This approach quickly delivers impressive results — even for the most demanding applications. All objects are interactive, so your operator interface will be simple, intuitive and flexible. And because the

graphics were developed with optimisation in mind, you can expect excellent runtime performance.





Vijeo Citect utilises screen resolutions of up to 4096 x 4096, which you can select to suit the application. With these resolution capabilities, you can even use high quality images (scanned photos, etc.) to provide instant recognition of plant equipment.

At a Glance

> Complete flexibility

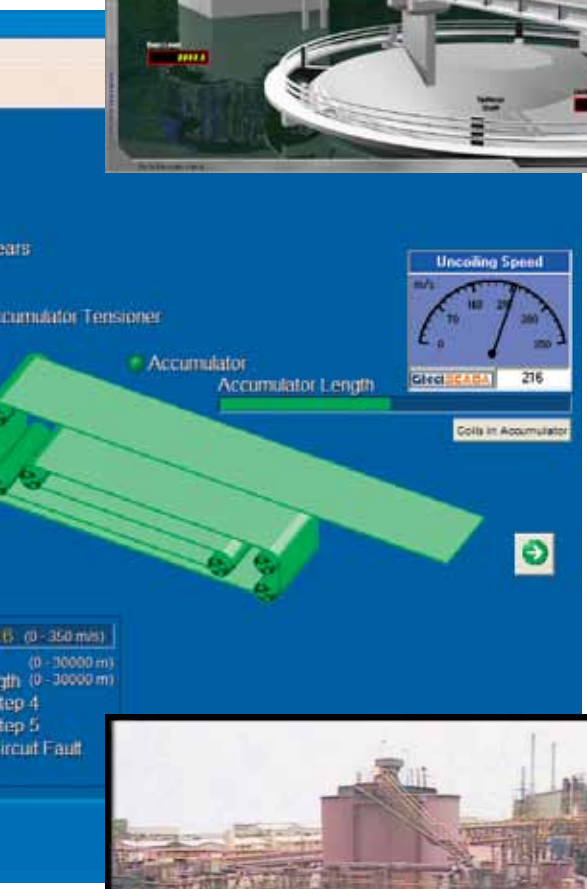
> Intuitive graphics reduce operator error

> Minimum operator keystrokes

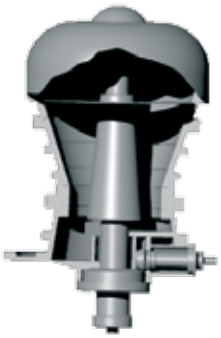
> Increase learnability through clarity

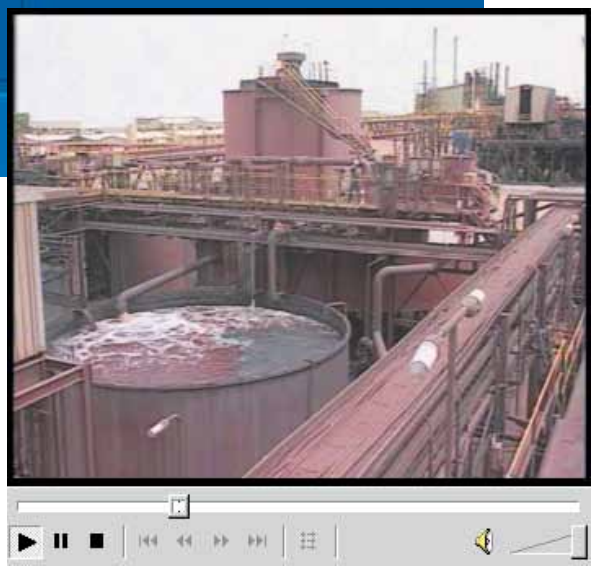
> Blend control and display functionality into one object

> Efficient use of screen space



Vijeo Citect comes with rich Symbol Libraries, loaded with commonly used graphics – pumps, tanks, valves, motors and crushers. These graphics will instantly add consistency and functionality to your screens.





ActiveX objects can be used to add custom features onto your Vijeo Citect graphics.

Graphics Builder

Graphics Import

Vijeo Citect can import a wide variety of different file types including:

- Windows Bitmap (BMP, RLE, DIB)
- AutoCAD (DXF) — both 2D and binary
- Windows Meta File (WMF)
- Tagged Image Format (TIF)
- JPEG (JPG, JIF, JFF, JGE)
- Encapsulated Postscript (EPS)
- Fax Image (FAX)
- Ventura (IMG)
- Photo CD (PCD)
- Paintbrush (PCX)
- Portable Network Graphic (PNG)
- Targa (TGA)
- WordPerfect (WPG)
- ActiveX objects

So if the picture you want is already drawn, just import it!

The import process is simple. If the source application supports click and drag, then do just that: click on the file, and drag and drop it onto a page in the Graphics Builder. Once the object has been imported, Vijeo Citect sees it as a Graphics object, with all the associated configuration features and flexibility.

The Graphics Builder allows you to quickly and easily design an intuitive operator interface for your Vijeo Citect system. Drawing the graphical elements of your graphics pages couldn't be simpler — just select a tool, then click and drag. Once drawn, objects can be moved, reshaped, copied, pasted, aligned, grouped, rotated...

Because objects can be placed precisely using guidelines or the grid, your graphics pages will look professional and precise.

Objects can be locked onto a page so they cannot be accidentally moved or deleted.

Objects can also be rotated, mirrored, grouped, ungrouped, aligned etc.

Windows XP-style buttons are available to provide users with a familiar Windows XP environment.

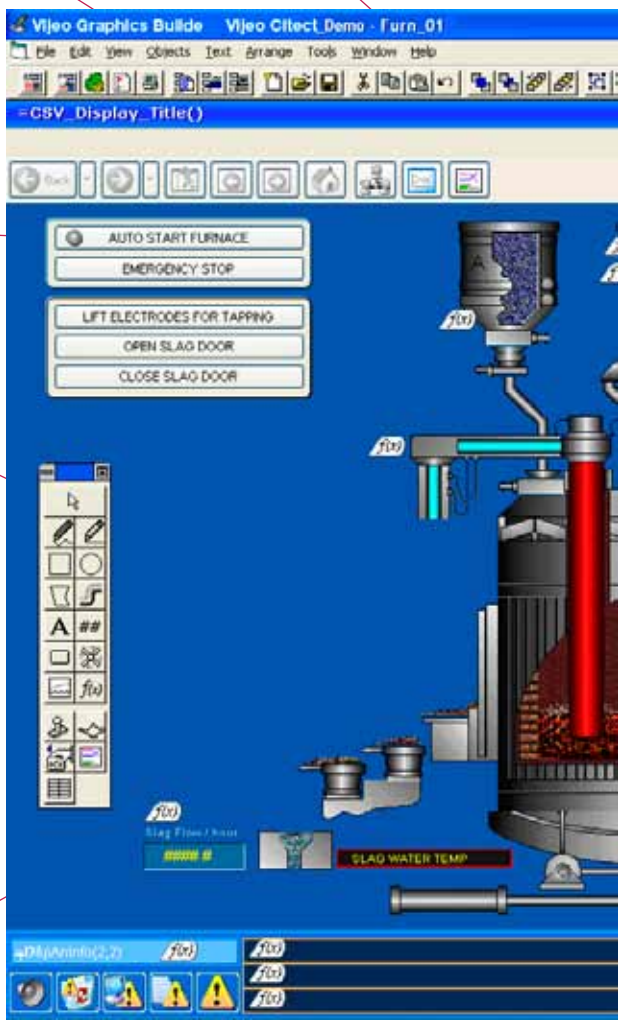
The Toolbox contains the drawing tools to draw your graphics objects.

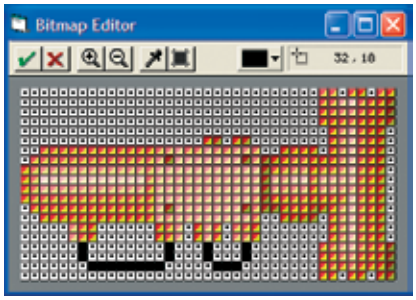
All the graphics tools have their own tool tips and each is fully explained in the Online Help.

The Toolbox can be moved to any part of your screen, allowing you to take full advantage of the entire drawing area. If the Toolbox is to go unused for a short period of time, you can "roll it up" (so that only its title bar displays), or hide it altogether.

Nodes of lines, polylines and pipes can be moved, added or deleted.

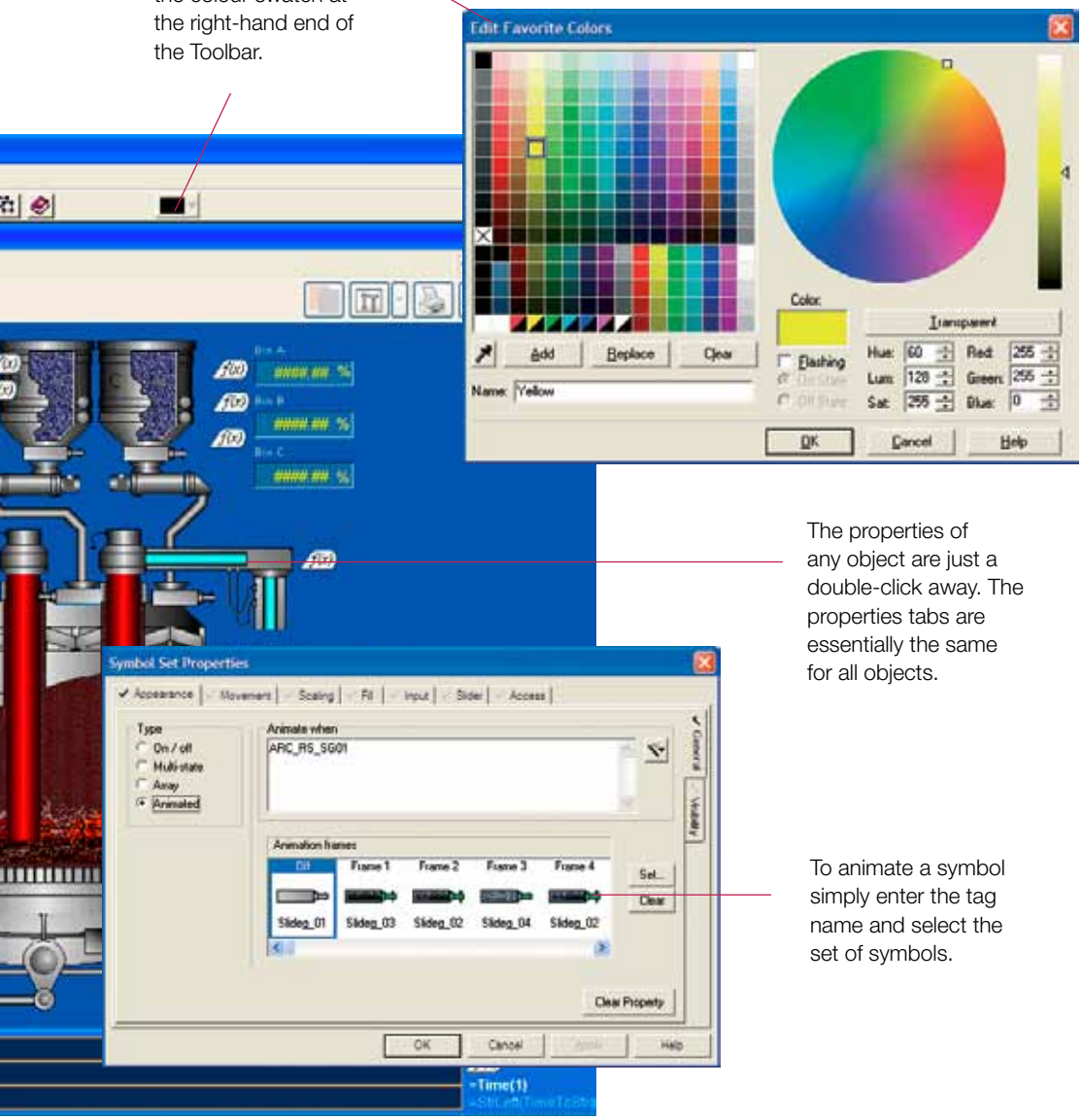
Select Graphics Builder Help to learn more about the Graphics Builder, using the interactive click-and-learn facility.





Vijeo Citect enables any number of flashing colours on a single page, allowing users to display flashing 3D symbols.

To display the true colour palette, click on the colour swatch at the right-hand end of the Toolbar.



The properties of any object are just a double-click away. The properties tabs are essentially the same for all objects.

To animate a symbol simply enter the tag name and select the set of symbols.

Bitmap Editor

Any graphics object (or group of objects) can be converted into a bitmap in one simple step.

Bitmaps are edited using the Bitmap Editor. The Bitmap Editor is a tool that allows you to edit your bitmap pixel by pixel. Because you can zoom in and out, even the smallest details can be edited precisely. You can even change the size of the bitmap.

Colour Swapping

The colours in a graphics object can be changed automatically. This is particularly useful for 3D object manipulation. For example, a 3D green ball can be made blue at the press of a button, yet the quality and illusion of depth remain unchanged.

Gradient Fill

Gradient colour and direction for objects, including ellipses, rectangles and polygons, can be defined with the gradient fill feature.

OLE Automation

Graphics can be automatically generated from a database using the OLE Automation interface for the Graphics Editor. This allows an application to be created to interact with the configuration graphics objects.

Page Templates

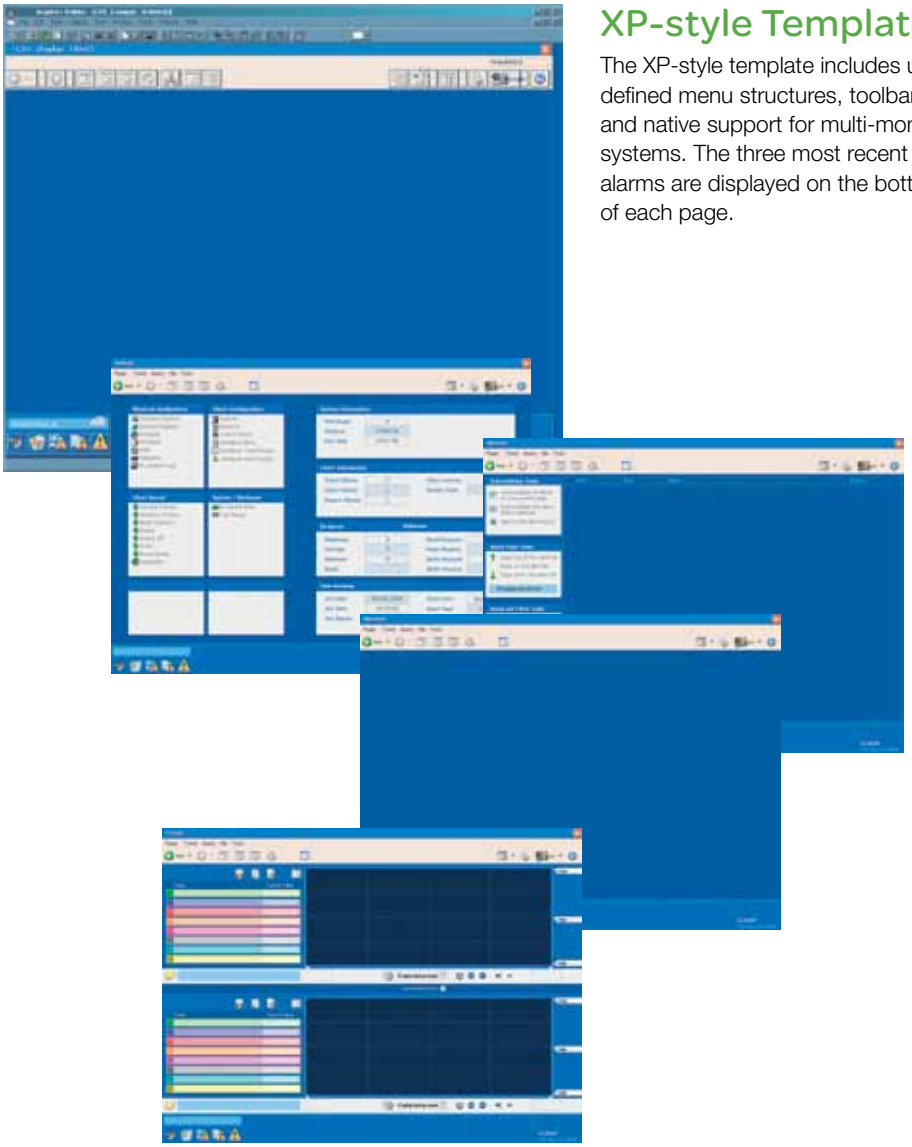
Page templates save you time and effort because you don't have to draw each page from scratch. When you base a new page on a template, the page design is already complete. All you do is enter the information that is unique to the new page.

Templates are also useful when you need to make the same modification to a group of pages. If all the pages are based on the same template, you can just change the template. The pages will be updated automatically.

If you take advantage of Vijeo Citect's page templates, you will notice your project developing a consistent look and feel. Consistency reduces both operator learning times and operator error.

Vijeo Citect provides templates for all common page types, so graphics pages are easy to create. Templates are tried and tested page designs that you can adapt to your own environment.

Vijeo Citect provides a comprehensive selection of templates. Specialty pages, such as Alarm, Trend and SPC displays, come pre-built — all you have to do is add the relevant tag names etc. More unique pages can be based on generic templates, such as the Normal template. No matter which template you use, the basic elements, including borders, status bars and navigation tools, are already configured.



XP-style Template

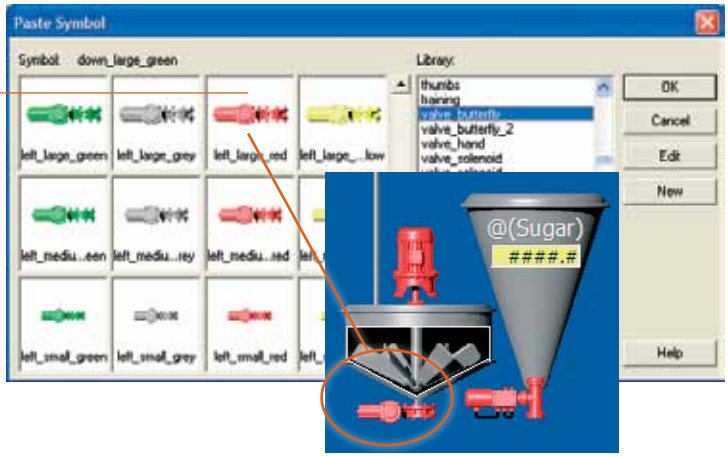
The XP-style template includes user defined menu structures, toolbars and native support for multi-monitor systems. The three most recent alarms are displayed on the bottom of each page.

Symbols

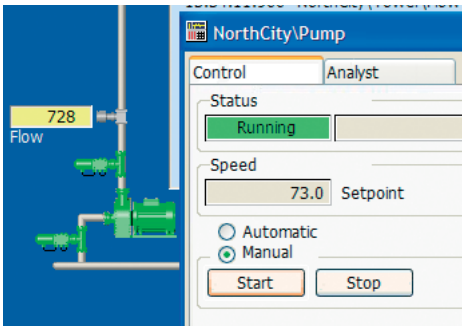
If you use a particular graphic regularly, you can store it in a library as a symbol. Rather than constantly redrawing the graphic, you can then just paste the symbol from the library.

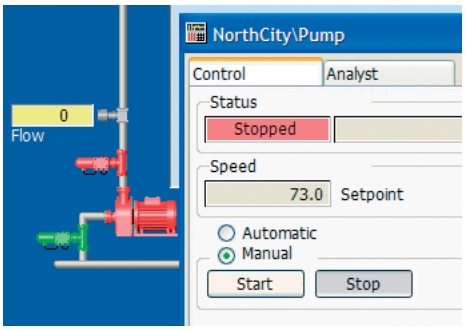
For example, if you want to use the same valve graphic on multiple pages as a static background picture, draw the valve and copy it to the symbol library — it is now a symbol.

First check the standard symbol library shipped with Vijeo Citect. If the symbol exists then simply paste it onto the page. If not, draw the required symbol directly into the symbol library.



Symbols can change dynamically based on the state of a device. For example, you could assign two pump symbols to a device using different coloured symbols for running and stopped indications.





Vijeo Citect comes with several pre-defined symbol libraries, with more libraries available from the Vijeo Citect toolbox and website. Also supplied standard with Vijeo Citect are a range of pre-defined symbol sets which can be used as real animations. When the individual symbols in the set are displayed in quick succession, a simple animation is formed. Animations can be used at runtime to indicate moving equipment, active processes etc.

At a Glance

> Pre-defined and custom libraries
> Ongoing library development
> Changes to library automatically updated on all pages
> Over 500 symbols included

Symbols have many benefits

You only need to draw an object once. You can then save it to a library (as a symbol) and use the symbol on any of your graphics pages.

When you change a symbol, all occurrences of the symbol are updated automatically on all pages. A symbol remains linked to its library unless you deliberately break the link.

By storing common objects in a library, you reduce the amount of disk space required to store your project, and reduce the amount of memory required by the runtime system.

Object-based Configuration

Typical examples of Genies include:

> Pumps
> Valves
> Values (with input)
> Tanks
> Conveyors
> Faceplates (on graphics screens)
> Any repeated configuration

Typical examples of Super Genies include:

> Device Popups
> Loop Control
> Sequence Control
> Duty/Standby
> PLC/RTW Status
> Identical Machine Control
> Any repeated popup or page

SCADA systems comprise objects or devices which range from simple pushbuttons through pumps and valves to complex loop controllers, sequencers or motor control centres. When building your control system, you should use a common standard for the operator interface.

Vijeo Citect enables you to quickly and easily develop your control system by providing object-based configuration tools for development. In addition, the use of object-based configuration reduces maintenance and ensures a consistent operator interaction. Vijeo Citect provides existing libraries that can be extended and customised or enhanced to suit the requirements for your project, or you can simply build your own.

These tools are optimised by the use of a tagging standard within the device tags. A good tag naming convention reduces the amount of configuration entry and hence lowers the risk of errors.

Both internal and user-defined libraries are able to be transferred easily between projects to leverage development or maintain a consistent corporate standard. In all cases, modifications made to enhance these libraries can be seamlessly retrofitted within the previous Vijeo Citect systems.

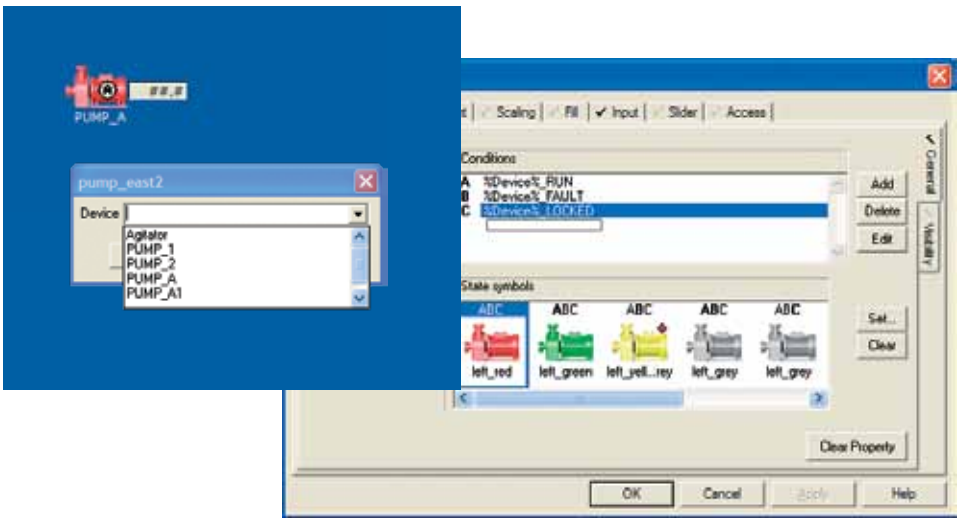
Genies

Vijeo Citect Genies act as a macro within project development. The Genie is built to combine any number of individual graphics objects together. A pump may consist of the pump display plus an auto/manual indication and an alarm indication. All of these configurations are grouped together in a Genie.

The configuration is made by combining fixed text with parameters. The parameters can represent a whole field alone or be combined with other parameters or fixed text to represent the contents of a field.

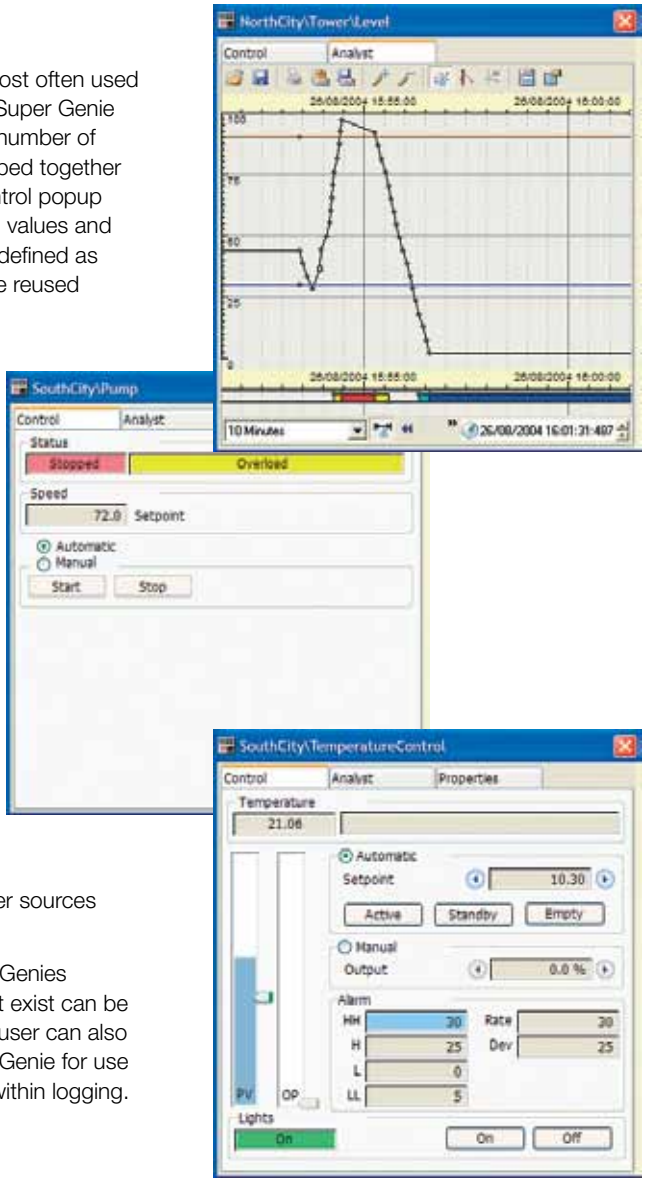
Optional parameters can be provided to enable a reduction in the number of Genies, resulting in reduced maintenance and testing costs. The optional parameters enable pumps without auto/manual control to hide this indication based on the fact that the auto/manual tag has not been defined.

Each parameter is exposed when the Genie is added to the graphics page. The form used to display the parameters can be tailored to include additional help information for the user or to provide a drop down list from the devices within the database.



Super Genies

Vijeo Citect Super Genies are most often used for device control popups. The Super Genie is built as a combination of any number of individual graphics objects grouped together on a page or popup. A loop control popup may have trend sliders, buttons, values and other configurations. These are defined as a single Super Genie and can be reused throughout the project.



To enable reuse, the configuration is made in terms of assignments (or parameters) passed to the Super Genie when it is displayed. Each parameter represents a tag, value or string. The configuration can access both the values and the attributes of the tags passed to the Super Genies.

A Super Genie can be provided with a fixed set of assignments from a Genie or use a tagging convention to turn a single device name into a set of assignments. Code can also enable these parameters to be read from other sources (databases, files..,).

To reduce the number of Super Genies within a project, tags that do not exist can be replaced by default values. The user can also pass text strings into the Super Genie for use as titles, display information or within logging.

Genies and Super Genies have many benefits

You need only draw and configure an object once. You can then save it to a library and use it over and over again.

When you change a Genie or Super Genie from the library, it will automatically be changed wherever you have used it throughout your project. (A Genie remains linked to its library unless you deliberately break the link).

As with Symbols, Genies and Super Genies save you disk space because you only save one copy of the actual configured object. They also reduce the amount of memory required by the runtime system.

Vijeo Citect has a library of pre-configured Genies and Super Genies that you can use in your Vijeo Citect system.

Connect your PLC and SCADA system with ease

> Vijeo Citect's unique SpeedLink feature provides a quick and simple link between your PLC and SCADA system and ensures rapid configuration as it detects what is available within the control system and prepares the base for configuration.

> SpeedLink allows the PLC configuration to be linked to the SCADA configuration for tags, alarms, trends and accumulators.

> SpeedLink-enabled changes to any device type will automatically be reflected across all instances of that device, reducing duplication of effort and ensuring system consistency.

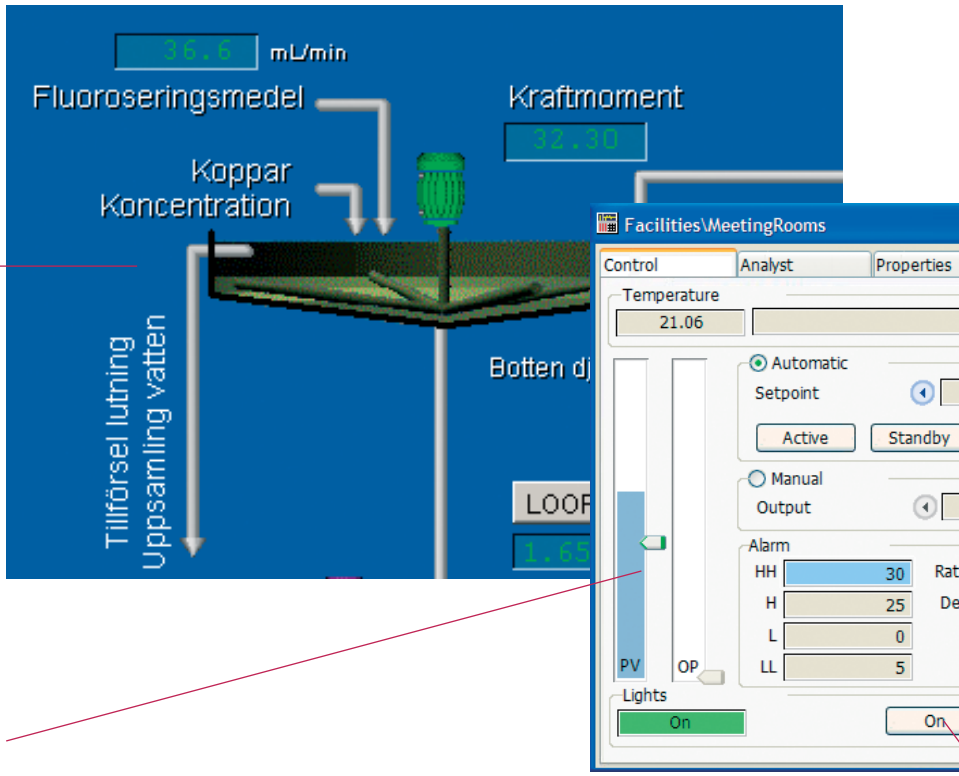
> With the database synchronised to the PLC configuration, the object linking continues onto the operator graphics screens.

Operator Actions

At a Glance

- > Tool tips
- > Sliders
- > Keyboard commands
- > Mouse touch commands
- > Screen target regions
- > Popup menus
- > XP-style buttons

Vijeo Citect provides users with a range of pre-defined system pages and templates to get you up and running fast. System pages for trends, alarms, administration tools and Process Analyst, which are included in a variety of templates. Both system pages and custom graphics utilise a variety of user-friendly commands and controls for operators to interact with the Vijeo Citect runtime. You can assign privileges to the different commands and controls, as well as send a message to the command log each time an operator issues a command.



Touch Commands

Touch Commands can be assigned to any graphics object, including button objects. They are activated when the operator clicks on the object.

Separate commands can be activated when the mouse button is pressed (down), released (up) and held (repeat).

Sliders

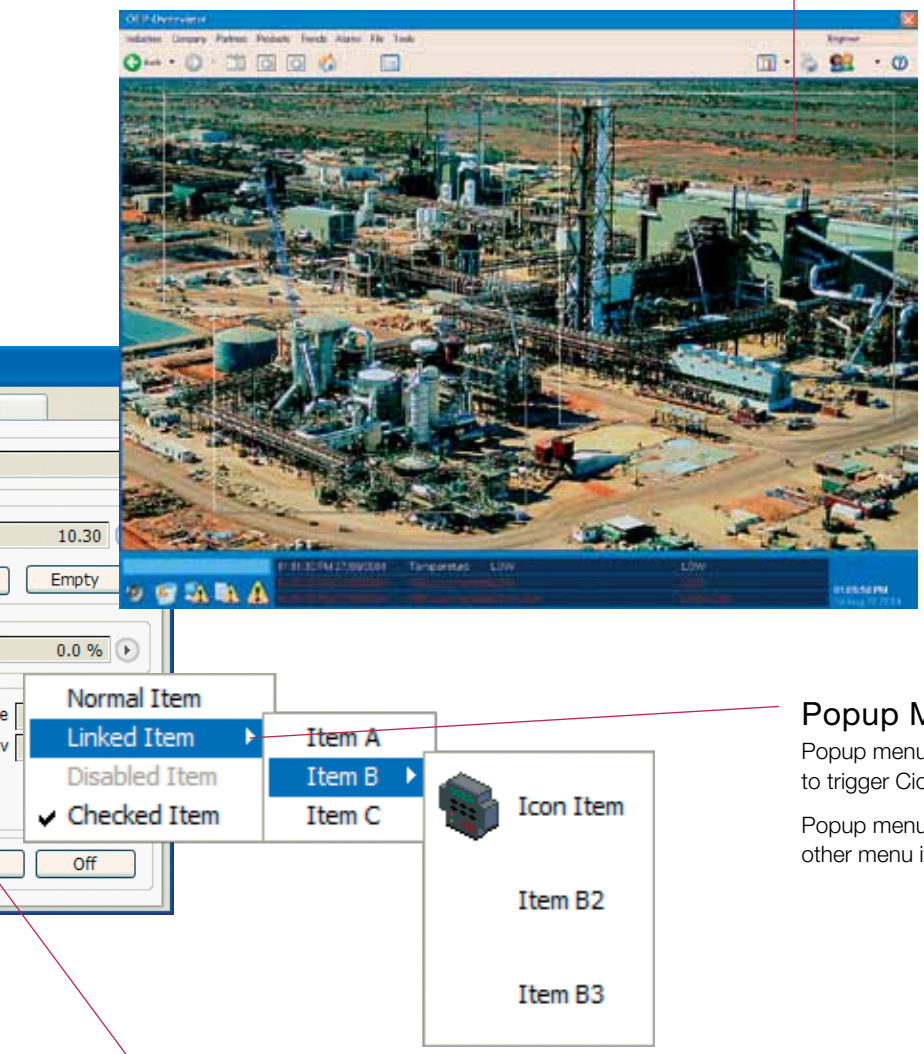
All graphics objects (rectangles, ellipses, etc.) can be defined as sliders. Sliders allow operators to change the value of analogue variables by changing the position of the slider object. For instance, a setpoint value might increase as you move a slider up, and decrease as you move it down. Sliders can move left to right, up and down, and even rotate. If runtime conditions change the value of the variable, the slider will automatically move to reflect the new value.

Keyboard Commands

Global (or system) keyboard commands can be issued from anywhere in the runtime system. Page keyboard commands can be issued only from the page for which they are configured. Object keyboard commands can only be issued when the mouse pointer is positioned over the object.

Screen Targets

Screen targets are a hot-spot region on the background screen which the operator can click on (like a button). These invisible buttons allow for greater flexibility in operator interface design.



Popup Menus

Popup menus simplify navigation and can also be used to trigger Cicode or CitectVBA functions.

Popup menus can be disabled, checked or linked to other menu items.

XP-style Buttons

There is an option to create buttons in XP-style with dynamic property support, further saving time in training operators already familiar with the XP environment.

Get a unified view of your plant with Web Gate

The Web Gate control object within Vijeo Citect allows you to remotely view HMI displays, and read and write data from your Magelis terminals and Schneider Electric PLCs and devices. View all the panels from across your plant at one centralised and truly unified operator interface.

By using Vijeo Designer's Web Gate feature, your device acts as a web server allowing you to view, closely monitor and control it from Vijeo Citect's runtime HMI environment. Moreover, Web Gate and XBTGT Web Client also allow the Vijeo Citect screens to be available within the HMI displays.

Integration of video surveillance

Pelco is a world leader in the design, development and manufacture of video and security systems and equipment for any industry. With a long and prestigious history of offering high-quality products and exceptional customer service, Pelco has become the most sought-after product supplier in the security industry. The integration of Pelco cameras allows live video to be viewed within Vijeo Citect. Operators can control cameras from a Web Client, thereby integrating facilities management and remote security monitoring.

Security is a growing concern for most industries. Water and waste water, critical mining and oil and gas industries in particular are longing for first level security monitoring functions.

On large applications, the integration of different security functions from the process control system brings added value to the users. For instance, an intrusion event can trigger an automatic response such as video feed appearing on the operator workstation. If predefined alarm conditions occur, the cameras can pan to the re-programmed positions to display the areas of interest.

For smaller applications that do not have complete security management or permanent 24/7 video monitoring security personnel, Vijeo Citect can provide distinct advantages:

- Integration of video display on operators SCADA screen from camera or DVR on demand.
- User friendly controls like Pan, Tilt, Zoom (PTZ), Brightness and Contrast brings operator efficiency.
- Additional features such as pop up display for motion/ intrusion detection and linking of events with video functions (playback and record functions) for effective security monitoring.

On remote sites with no permanent staff or remote monitoring functions, the integration of Pelco cameras with Vijeo Citect provides a cost effective security solution:

- Access control for restricted areas of the facility
- Intrusion detection
- Video surveillance
- Interface with the site fire alarm system

Pelco Video Viewer

- The Pelco Camera streaming interface is designed to be an easy-to-use and bandwidth-sensitive streaming camera interface.
- The Pelco device values are bound to the ActiveX controls properties and the Pelco Stream Viewer automatically makes a connection once it has detected that an IP address has been specified. No engineering cost and effort are required.

Pelco Camera Manager

- Add / edit / remove cameras and DVRs in runtime environment
- Camera configuration stored in DBF files
- Pre-built displays: 1 Up / 2 Up / 4 Up / 8 Up

Pelco camera manager: Effective remote monitoring functions via preprogrammed positions of the camera pans.

Improve operations with Process Analyst

Process Analyst is the next generation in historical visualisation tools.

> "Process Analyst is a vast improvement on existing SCADA systems, and enables processes to be optimised by making it easier for operators to analyse disturbances."
>
> Paul Donald, Telemetry Officer, Central Highlands Water

Process Analyst allows operators and process engineers to analyse the cause of process disturbances by bringing together trend and alarm data, which are traditionally stored separately. With Process Analyst, users can simply view them all on a single integrated display.

The user has total control over how the pens are displayed. For example they can be overlaid or stacked, and any pen can be moved to different panes to reduce clutter and make the display easier to read.

Process Analyst includes many unique features including true Daylight Savings Time support, accuracy to millisecond resolution, individual time axis per pen, customisable toolbars, rich printing and saving of all display settings for easy recall.

Root Cause Analysis

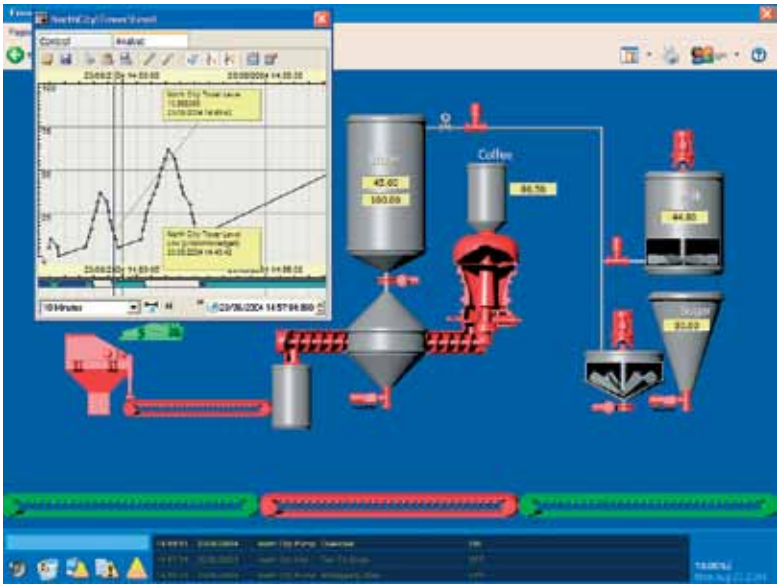
When a process upset or disturbance occurs, finding the root cause is always time consuming. In the past, the process engineer had to compare trend data from the screen with alarm logs. With Process Analyst, all the engineer has to do is simply add any pen (analogue, digital, alarm) that may have contributed to the process upset to the display. Each process change can then be easily compared as alarms occur, enabling sophisticated analysis of the process upset.

Compare different batches

With Process Analyst, it is easy to compare different batches in a single, integrated view. Simply place all the variable tags, alarms and state changes for a batch unit on one pane, and the same set on a separate pane. Then the operator simply has to scroll one of the panes through time. Any differences in the batch execution will immediately be visible.

Sequence of Events

With SCADA systems, the data is distributed around a wide area and typically the RTUs collect the data at millisecond resolution and send it to Vijeo Citect every time it is polled. Process Analyst displays historical alarms and trends to millisecond accuracy, making it easy to determine the sequence of events.



The Process Analyst window, displaying trend and alarm data, can be viewed simultaneously with your project screen for enhanced monitoring.

Improve Operations with Process Analyst

Easy to use

Process Analyst's capacity to display such rich information requires it to have an easy-to-use yet powerful navigation system. Every pen added to Process Analyst has a number of properties, including:

- Pen colour and name
- Tag properties such as engineering units, scales etc.
- Cursor values (multiple cursors are available)
- Data average / minimum / maximum

The information available is customisable, allowing you to add or remove any of the standard column types (e.g. engineering units), as well as add custom columns.

Customisable

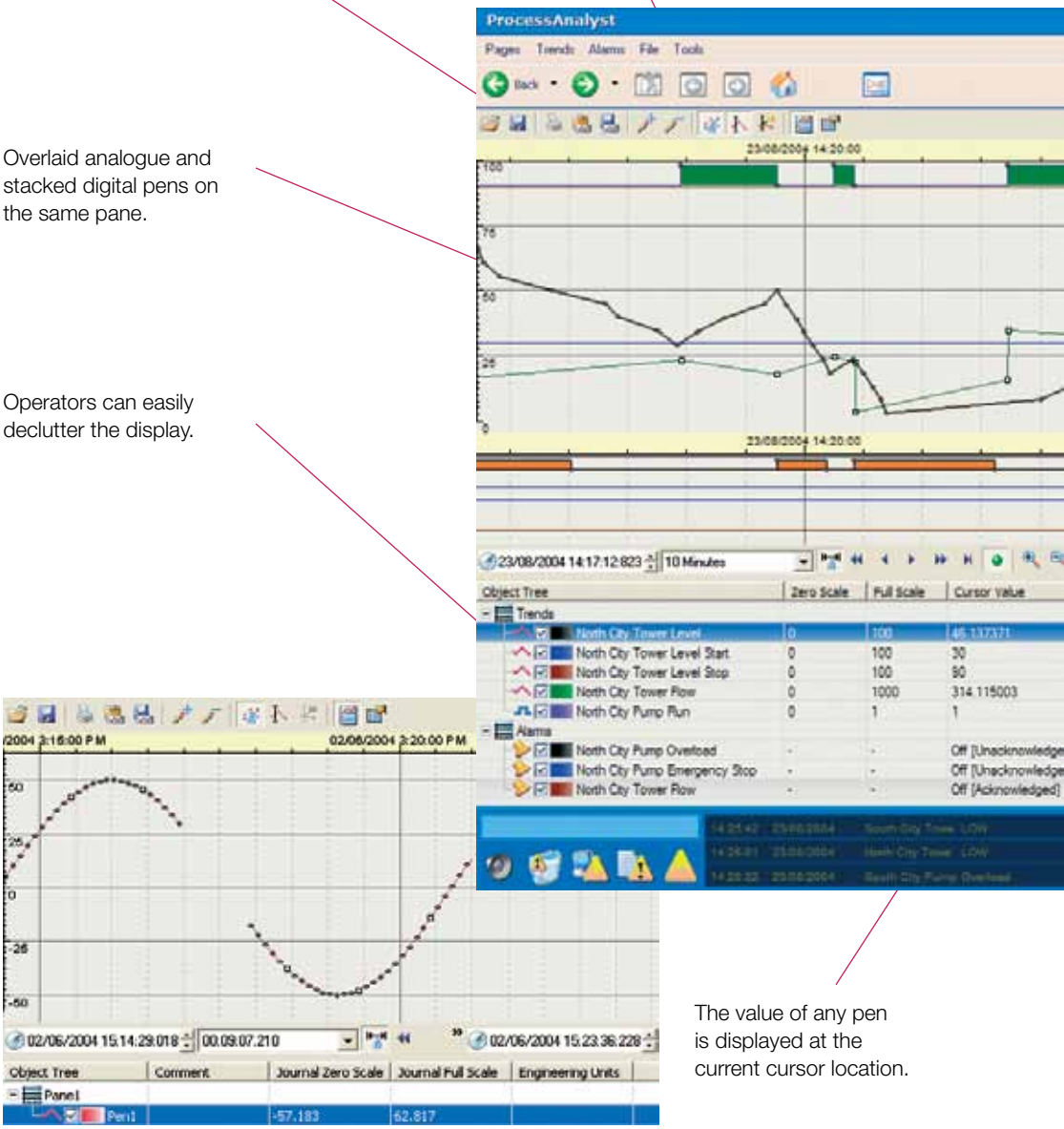
Users can select which buttons to appear on each instance of Process Analyst. The security access required can also be defined and users can add custom buttons for additional functionality.

Individual pens can be unlocked, allowing their values to be compared in different time frames.

Save the current view as either a template or process snapshot.

Overlaid analogue and stacked digital pens on the same pane.

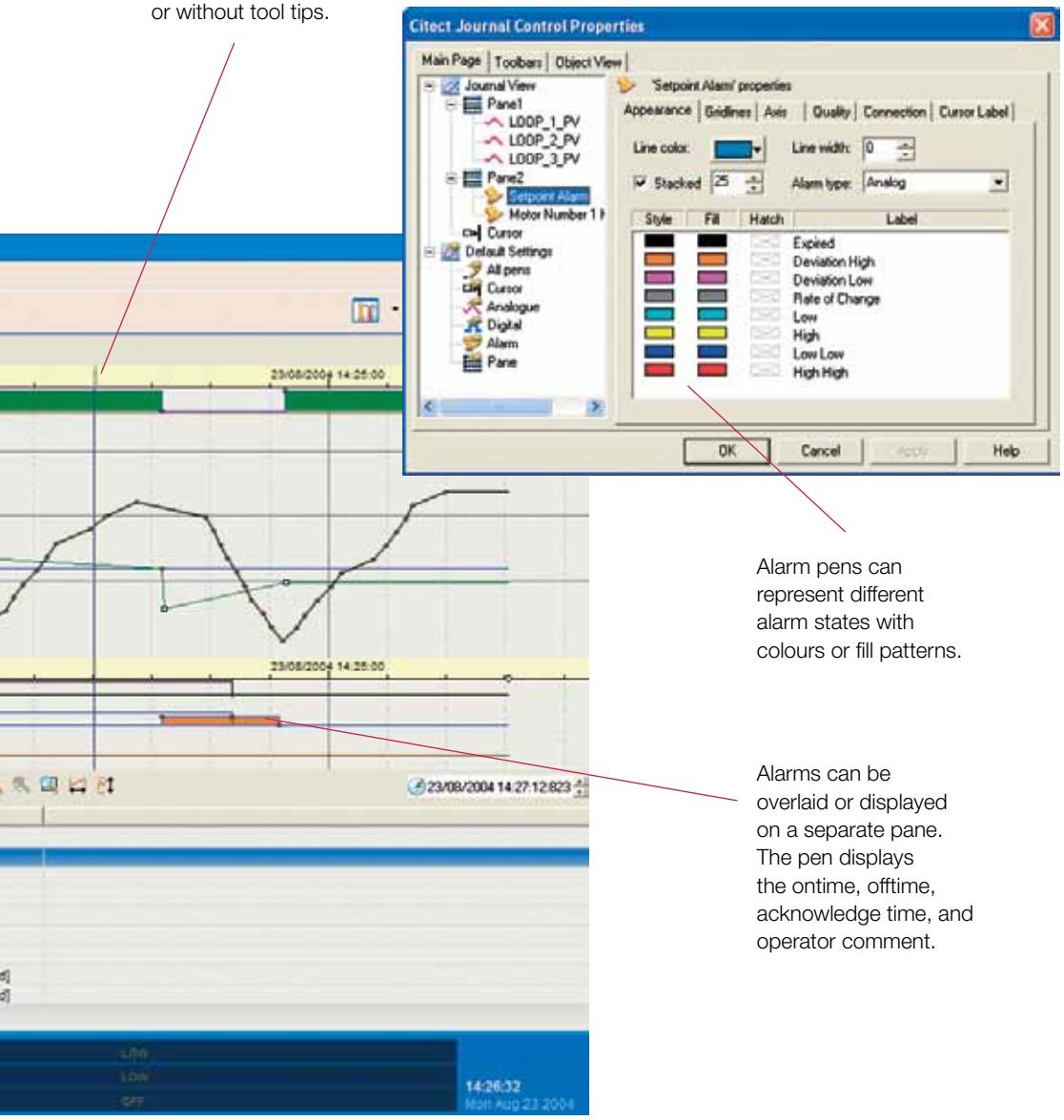
Operators can easily declutter the display.



The value of any pen is displayed at the current cursor location.

Trend Example Showing Different Quality Attributes.

Multiple trend cursors can be displayed with or without tool tips.



Alarm pens can represent different alarm states with colours or fill patterns.

Alarms can be overlaid or displayed on a separate pane. The pen displays the ontime, offtime, acknowledge time, and operator comment.

At a Glance

- Analyses the cause of process upsets quickly and simply
- Allows operators to recognise patterns that may lead to process disturbances
- Provides total flexibility on how you view and analyse your process
- High quality output to printers
- True daylight savings support

Customisable Trend Pages

Vijeo Citect trends are a seamless combination of real-time and historical data. When you display a Vijeo Citect trend page, you can monitor the current activity as it happens, and simply scroll back through time to view the trend history.

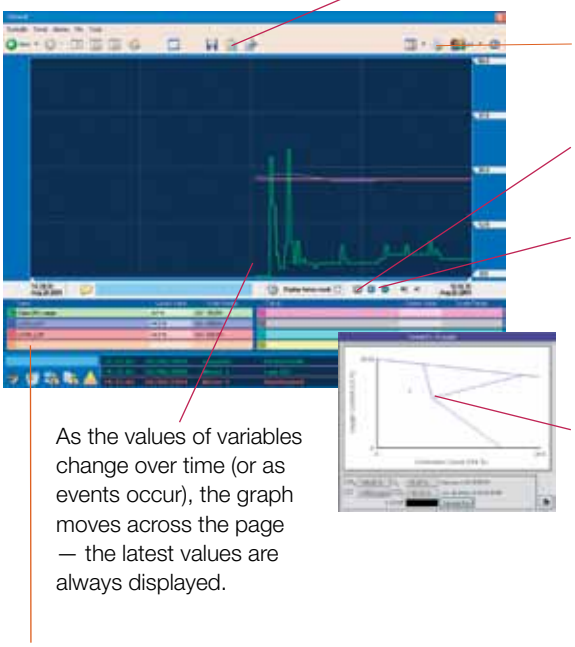
Vijeo Citect's trend task is client-server based. The Primary Trend Server collects and records the trend data, sending updates to a Standby Trend Server (if one exists) as requested. When a trend is displayed on a client computer, the client has only to request the necessary trend data from the Primary Trend Server.

You can choose to have redundancy by allocating a Standby Trend Server (using a wizard). If the Primary Trend Server fails, the Standby will instantly assume its role, obtaining data directly through the I/O server and responding to all client requests. Because the Standby Trend Server tracks all trend data, even when the Primary is operating, no data is lost should the Primary fail. When restarted, the failed computer receives updates from the new Primary Server and becomes the Standby Trend Server.

Vijeo Citect's distributed trending system handles large numbers of variables without compromising performance or data integrity. Choose from a selection of pre-configured trend pages that provide clear data representation with customisable views.

Any plant floor variable can be logged and trended. A trend builds a picture over time of how the variable (product output, level, temperature, etc.) is changing or how a device or process is performing. Vijeo Citect trends are created from a selection of sample values. The sample values are plotted against time, and the resultant graph gives you an indication of process behaviour. Trend samples can be taken periodically, or when specific events occur in your system. Sampling rates can be as frequent as 10 milliseconds or as moderate as 24 hours.

Vijeo Citect comes with a host of ready-made trend templates, allowing you to quickly create trend graphs complete with navigation tools and dynamic readouts from the plant floor. You can display trends in single, double or popup windows. You also have the option of creating a display specific to your system which you can easily configure yourself, complete with your own functions and trend pens.



Copy trend data to the clipboard, ready for pasting into third party applications (in table format), such as Excel, Word etc.

Print the trend data in intuitive colour or black and white plots. You can also integrate trend plots into reports.

Change the resolution and span time of the graph while it is running.

Select an area of the graph, and press the Zoom button to magnify it.

The X,Y plot feature is very flexible, allowing you a high level of customisation. You can display your plots on screen or as a printout — using the full colour palette.

Example: a Vijeo Citect plot used in underground mining (Coward's Triangle), shows whether the air is explosive, potentially explosive or safe. A plot point inside the dynamically calculated triangle indicates an explosive condition and the mine is evacuated.

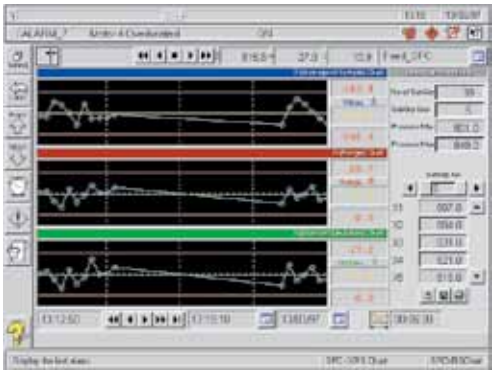
As the values of variables change over time (or as events occur), the graph moves across the page — the latest values are always displayed.

Vijeo Citect trends give you the flexibility to define your trend pens while the project is running.

Statistical Process Control (SPC)

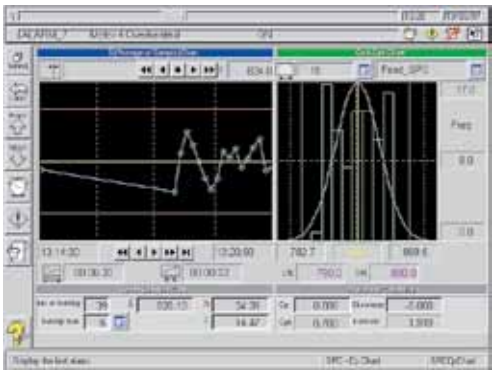
For an easy-to-understand graphical indication on product quality, you can use SPC charts. Prevent out-of-limit deviations before they happen with Vijeo Citect's easy-to-understand SPC charts.

Vijeo Citect provides the three types of charts most commonly used for statistical analysis:



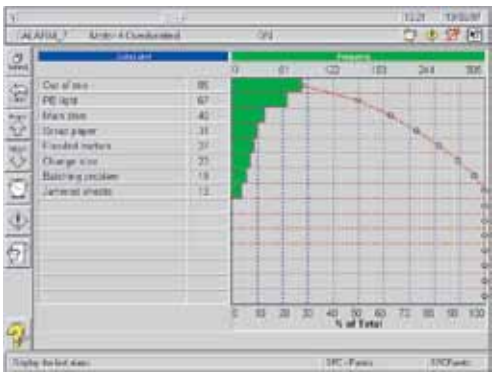
Control (XRS) Charts

Control (XRS) Charts allow you to analyse the variations in plant data. You can configure charts to individually display the mean, range or standard deviation, or all of the above.



Capability Charts

You can use capability charts to determine whether your process is meeting your specifications. Vijeo Citect is pre-configured to arrange the data and make all necessary calculations.



Pareto Charts

If you would like to analyse the frequency of faults and problems, use a Pareto chart. After you specify which values to watch, Vijeo Citect will arrange the data and draw the graphs in runtime.

At a Glance

- Mean, range and standard deviation (XRS)
- Pre-configured calculation routines
- Template-based pages (easy configuration)
- Capability charts
- Pareto charts
- SPC alarms integrated into the alarming system

Fast and Reliable Alarms

There are often many alarms that trigger simultaneously.

You can specify the action to be taken when the alarms are triggered (e.g. activate an audible alarm such as a .WAV file).

To assist operators in dealing with alarms, you can create graphic help pages that contain information about the alarms, such as the action an operator must perform to correct the situation. You can display these pages automatically when the alarm occurs or only when an operator specifically requests help.

An efficient alarm system allows you to quickly isolate and identify faults, reducing the amount of downtime. The Vijeo Citect alarm system is fast and reliable, providing you with detailed alarm information in formats that are clear and legible.

All alarms are processed and managed by a Vijeo Citect Alarm Server. Any Vijeo Citect Control Client can display alarms and acknowledge alarms. This eliminates duplicated processing, ensures that alarms are acknowledged systemwide and provides for server-based security checking.

Configurable alarms report fault conditions in your plant. Variables, groups of variables, expressions, calculation results etc. can all be monitored by the Vijeo Citect alarm system.

Working in conjunction with the I/O device, Vijeo Citect's alarms are time-stamped, with precision to one millisecond. This can be essential when differentiating between alarms that occur in rapid succession. Millisecond accuracy helps you to determine cause-effect relationships between alarms.

Quick recognition and identification of alarms is vital. Vijeo Citect displays alarms on dedicated alarm pages, but the most recent alarms are always visible on every page. Alarms can be organised by colour, font and order, according to priority, category or time of occurrence. For an account of all alarms that have occurred on your system, the alarm summary page provides a complete history.

Vijeo Citect also continually runs diagnostic routines to check both its own operation and all peripheral equipment, such as I/O devices. This facility is fully integrated within Vijeo Citect and no configuration is necessary.

The alarm summary page, shows the details for each alarm occurrence on a single line so that users do not need to scroll through history to determine the on time, off time and duration.

Flexible alarm formatting permits display of any related variable when the alarm is triggered.

Alarm Properties

Alarm properties can be used to change the appearance of your graphics objects — when a specific alarm occurs, you might change the colour of a symbol from green to red, or display a 'danger' icon.

- Alarm Tag, Alarm Name, Alarm Description
- Alarm Category, Help Page, Area, Privilege
- Disabled, Acknowledged, Unacknowledged
- On Time, Off Time, On Date, Off Date, Alarm Duration, Acknowledged Time/Date
- Operator Definable Comment
- Alarm State for High High, High, Low, Low Low, Rate, Deviation
- Value of the variable and the alarm deadband (hysteresis)
- Custom filters

Alarm Filters

A good alarm system should not overwhelm operators with excessive alarm information.

Vijeo Citect allows the operator to filter alarms based on any alarm property. Filters can be saved and automatically loaded based on the current user.

At a Glance

- Analogue, digital, SPC and custom alarms
- Integrated hardware/ diagnostic alarms
- Millisecond resolution
- Configurable display formats
- Summary/history logging
- Filter is customisable using alarm properties
- Acknowledgement from multiple network computers
- ODBC, DBF, CSV and ASCII data formats
- Support for RTU-based alarms

Accessing Database Systems: DatabaseExchange

At a Glance

> Menus can be positioned at the top or bottom of the control

> The control supports parameterised queries of a Microsoft Access database

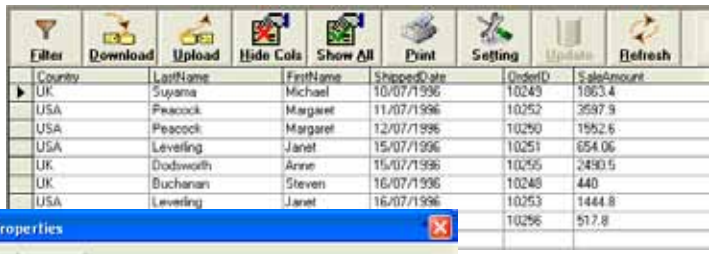
DatabaseExchange is an ActiveX control that enhances the ability of Vijeo Citect to utilise database information.

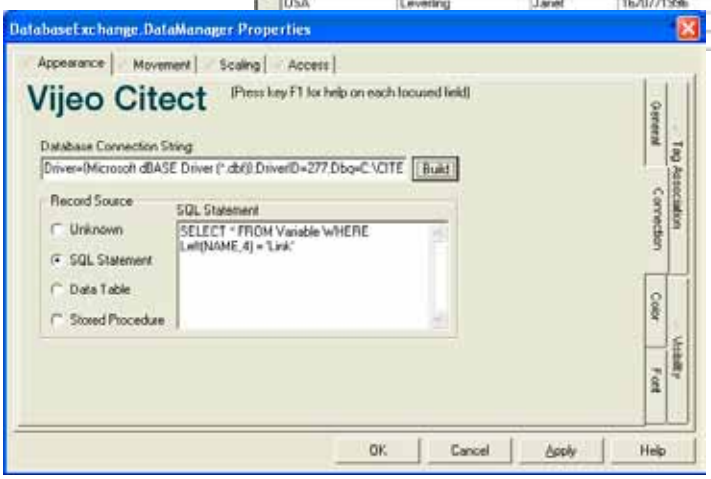
DatabaseExchange will display data from any configured database (via ODBC) within an operator's screen. The data displayed can be controlled by a query that can be configured within the project. DatabaseExchange is able to react to settings within the control system as operators can edit data within the control. The data can also be altered via code at runtime. These changes will automatically persist to the database.

As well as displaying information from the database, the control enables the user to define tags for each column within the data returned. The user is then able to select to upload or download information between these tags and the database. In this way, machine setup parameters or set points can be loaded from a database or persisted to the database after an optimal performance. The uploading of data will replace the existing data if a row is selected, or add an additional row to the database.

DatabaseExchange is integrated into the Graphics Builder toolbar.

The returned data ready to display or exchange





Use the power of SQL directly from Vijeo Citect

Integrated Reports

Vijeo Citect's reports system is a fully integrated aspect of the product. When you invest in Vijeo Citect, you automatically receive the tools you need to create and run attractive, informative reports.

Shift Report

24 March 2008

Total milk in:	336150	L
Total starter in:	3080	L
Total Milk and Starter in:	339230	L
Production Time Forward:	656	mins
Production Time in Divert:	10	mins
Total Production Time:	666	mins
Number of Diverts:	8	diverts
Number of Vats:	22	vats
Total Cheese Weight:	23441.92	Kg
Total Number of Blocks:	1272	blocks
Yield:	***0.069***	***Kg/L***

Grower Status

24 March 2008

Run No.	Batch No.	Merchant	Processed Modules	AV Turnout
66	13	ADF	8	36.52%
66	13	ADF	2	39.77%
67	14	ADF	6	37.28%
67	14	ADF	2	38.41%
68	15	BBF	10	39.60%
68	15	BBF	4	36.88%

A Vijeo Citect report is a statement or account of plant floor conditions that you can run periodically on request or only when an event occurs (such as a change of state in a bit address, when Vijeo Citect starts up, or at a specified time of day).

Reports can be generated in any format you choose. They can include formatted text, current and historical data and even the results of calculations. They can also contain operating instructions — to change operations or variables within your plant, download instructions, perform diagnostics or change recipes...

Reports can be displayed on a page at runtime, printed when the report runs or saved on disk for printing or display at a later date. You can use a text editor or word processor to view, edit or print these reports. Your reports can be saved in HTML format so they can be viewed over the Internet using a standard web browser.

For more sophisticated reports, or reports that integrate data from multiple SCADA systems, Vijeo Historian should be used. It is a powerful reporting and analysis tool that seamlessly collects, historicises and reports data from multiple SCADA systems. Users can utilise the integrated database containing trend, alarm and event data to get a complete understanding of plant operations.

Accumulators

Accumulators are an easy way to keep track of incremental runtime data such as motor run hours, power consumption and downtime.

You set a trigger (e.g. motor on) to increment three counters:

- The number of times the accumulator is triggered (e.g. start times for the motor)
- The run time in steps of one second
- The totalised value, by a value you define (e.g. the current)

Vijeo Citect Project Development

Vijeo Citect is conceptually divided into two distinct parts: The Runtime Environment and the Configuration Environment. The Configuration Environment consists of a set of tools (applications) that are used to build the runtime system. It is centred around the Vijeo Citect Explorer, which is used to create and manage projects.

Vijeo Citect Explorer can be customised to suit special use and OEM applications. Menus, toolbar buttons and features can be altered or removed.

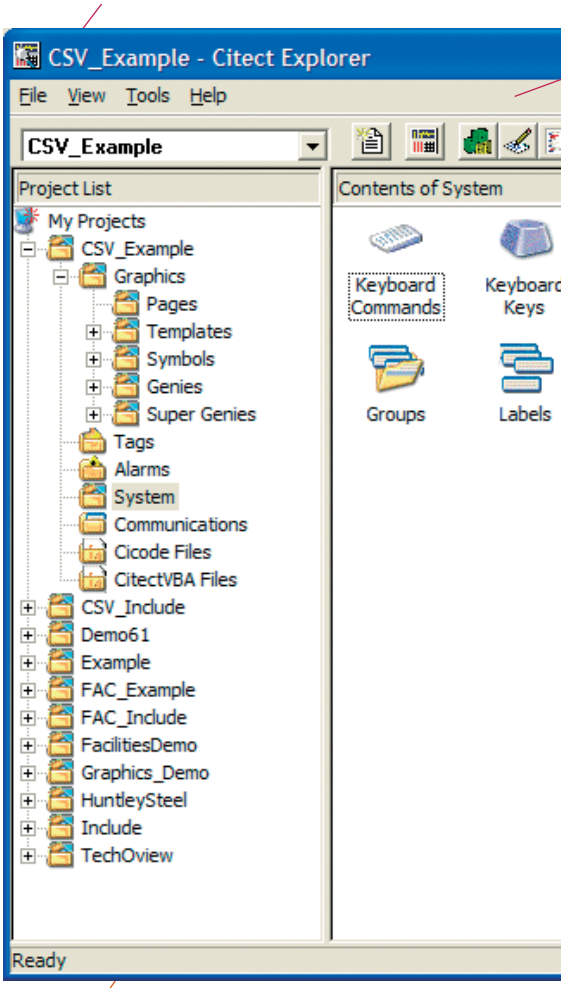
Disorganised projects lead to maintenance problems. The Vijeo Citect Explorer is the hub of the configuration process. It simplifies project management, allowing you to access and modify any part of any project.

Vijeo Citect provides tools to enable rapid development of small and large projects. Each project can be divided into a large number of included projects. Each of these projects can be worked on by different developers at a variety of locations. In these cases, it is difficult to maintain control of project standards and merge changes from different teams together. Vijeo Citect's included projects enable this to occur without placing additional effort on development teams.

Vijeo Citect manages standards within a project by placing all the standard symbols, objects and user interfaces within a single base project. Each development team can include this base project within their own subprojects and have access to all the project standards. When standards are changed or updated, the new base project can be sent to development teams to update their sub-projects and see the changes within their project.

Vijeo Citect facilitates the remote development of projects by enabling any combination of Vijeo Citect projects to be combined together. A remote developer can include the project standards as well as their own section of development. This can be used during development of the existing project or during maintenance – a single project can be updated by an Integrator at the same time as small changes are being made by the local maintenance team.

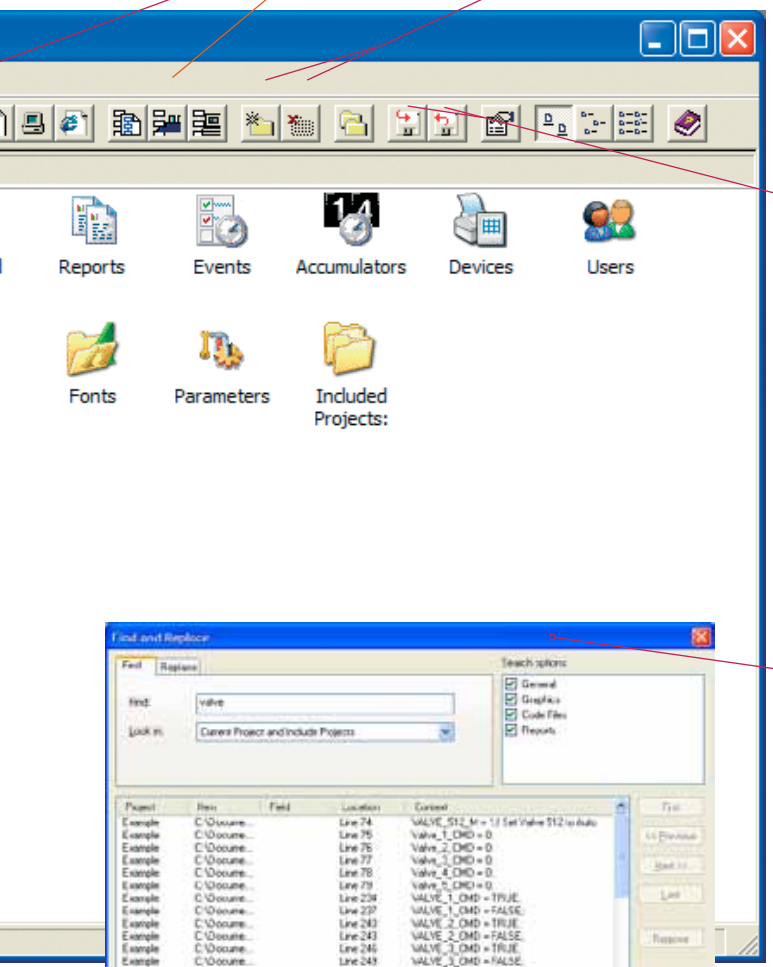
The File menu contains commands for creating, removing, organising and running your projects. The global properties of a project are accessed through this menu.



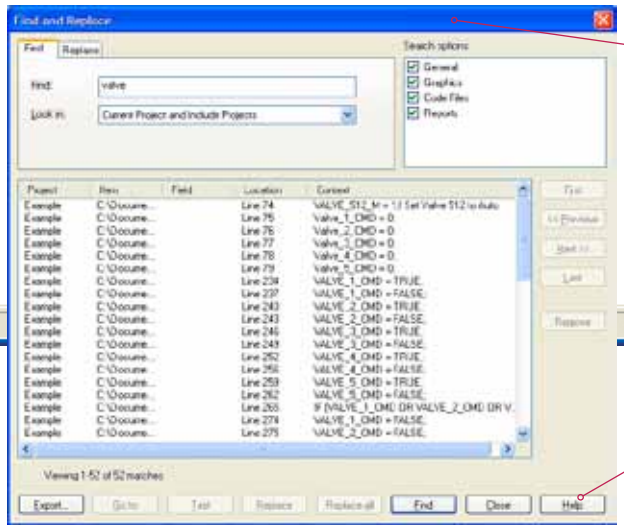
The Vijeo Citect development environment can open any number of projects. This enables CIPs to edit projects from different customers at the same time. The projects are displayed in the tree. Their file structure is displayed as you navigate with the (+) and (–) symbols.

Use the tool bar to switch to the other applications in the Vijeo Citect environment (Project Editor, Graphics Builder, Vijeo Citect Batch, Cicode Editor, Online Help).

Vijeo Citect can work on projects located on fileservers. Simply use link and unlink to bring projects from the file server into the development environment.



Vijeo Citect provides one-step backup and restore of all parts of a project. A project can be backed up to floppy disk (with automatic multiple disk span), your local drive, or a network drive.



Configuration is made easy with the Find and Replace feature.

Vijeo Citect forms and dialogues have a Help button which invokes context sensitive help.

At a Glance

> Quick, easy access
> Familiar interface
> Simple, convenient management of projects
> Single step backup and restore of entire project

Find and Replace Feature

The Find and Replace feature enables you to find and replace text strings within a single graphics page, template, Graphics Builder and across multiple projects when accessed in the Project Editor. There is also a new option that warns you about unused tags on full compile, which identifies unused tags. All these contribute to a significant reduction in the time spent in configuration.

Extending Vijeo Citect with Cicode

Cicode is easy to use and offers the flexibility, reliability and performance required by plant monitoring systems. Cicode is a programming language written for the control environment, it is also compiled and offers full multi-tasking. These important features provide Vijeo Citect users with unmatched flexibility for extending the functionality of their SCADA/HMI systems without compromising system performance.

Many applications have special requirements. To provide you with maximum flexibility and power, Vijeo Citect comes with two programming languages: Cicode and CiVBA. Both languages can be used to extend the data available to most fields in your system configuration.

CiVBA

CiVBA is a Visual Basic compatible scripting language perfect for integrating Vijeo Citect with ActiveX objects and third party applications. CiVBA utilises the Cicode engine to ensure the running code is multi-threaded.

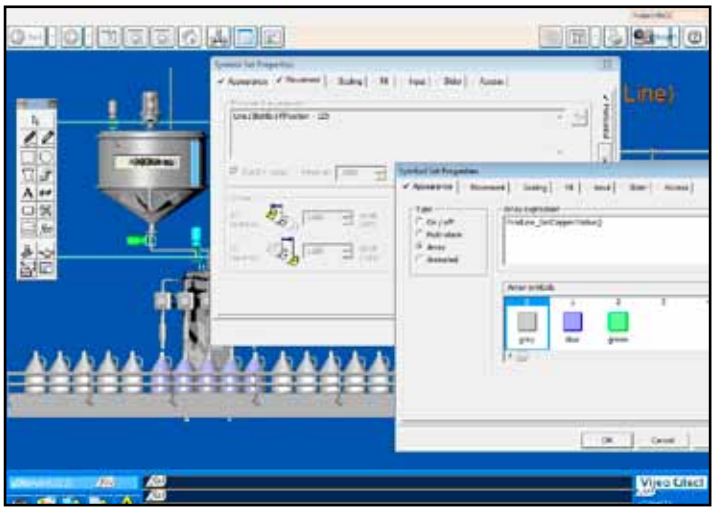
Events

Events can be set up so that they trigger actions when they occur. For instance, when a process is complete, an operator can be notified and a series of instructions can be executed.

You can run an event:

- Automatically at a specified time and period
- Automatically when a trigger condition becomes TRUE
- Automatically when a trigger condition is TRUE at a specified time and period

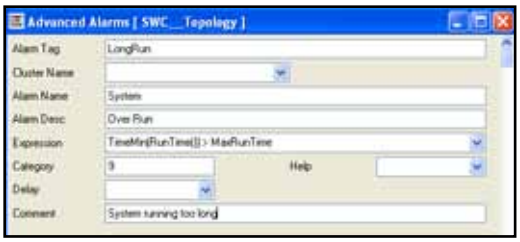
Almost all of the fields available within the graphics and database configuration are able to utilise an “expression” rather than just a tag value. Adding an expression allows you to smooth an analogue value for trending, transform numeric values into strings or simply combine multiple tags in a simple expression.



There is an extensive library of functions for both Cicode and CiVBA which can be directly accessed within an expression field. Additionally, individual functions can be created by the customer with a combination of library and individual functions producing the required result.

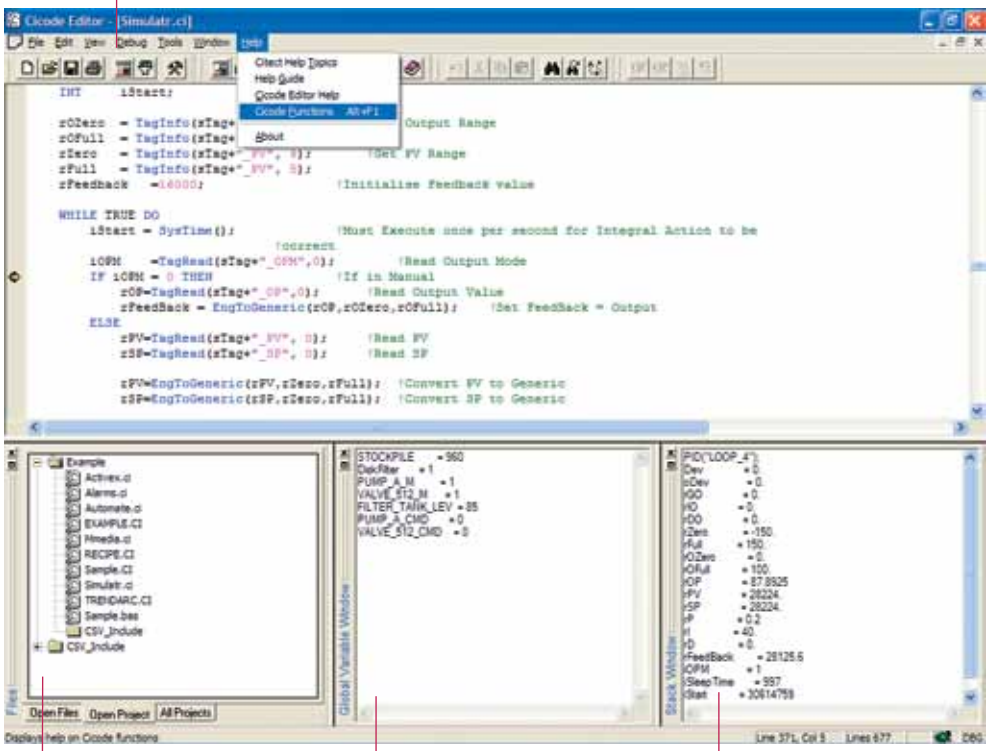
Code can also be triggered by events or buttons within the user interface. This code runs as a separate thread within Vijeo Citect and gives access to enhanced functionalities within the system. For example, it can retrieve information from remote servers, call databases and external libraries or spawn additional threads to wait for events in the future.

To aid with diagnostics on the code, Vijeo Citect provides comprehensive logging and tracing of its code.



The Vijeo Citect debugger provides a step-by-step debugging system for code with access to the state of all internal and external variables. Additional debug traces can be activated before compilation or at runtime in order to track the operation of real-time or time sensitive code within the SCADA system. Combining the debugger and detailed tracing makes it possible to rapidly diagnose any problem within your Vijeo Citect system.

Included in Vijeo Citect's collection of debug controls are tools for starting and stopping debug mode, inserting and removing breakpoints and stepping controls.



The Files window displays all Cicode and CiVBA files for each project linked to the development environment.

The Global Variable Window displays the current value of each global variable.

The Stack Window displays the functions called, their parameters and the value of local variables within each function.

At a Glance

> Easy to use
> Industry standard
> Pre-emptive
> Multi-tasking
> Compiled for optimal performance — not interpreted or scripted
> Extends the functionality of Vijeo Citect
> Integrates seamlessly as part of Vijeo Citect
> Proven, robust language
> Over 650 SCADA functions included

Breakpoints

To debug a function, you must first stop the code at a desirable point. The DebugBreak function, a manually inserted breakpoint or a hardware error will halt a Cicode thread.

Stepping through CiCode

The position of a halted thread is marked with an arrow. You can step through the function, line by line, and watch what happens in the debug windows as the code executes.

The following tools are provided in the Cicode Editor to control stepping through functions:

> Step Into
> Step Over
> Step Out
> Continue

Online Help

Vijeo Citect's Online Help is a comprehensive package, logically structured, easy to find and easy to understand. It is accessible in a number of different ways, from any part of the Vijeo Citect system.

At a Glance

> Comprehensive coverage (over 4000 pages)

> Context sensitive

> Effective search facility

Vijeo Citect dialogues have a Help button that invokes context-sensitive help.

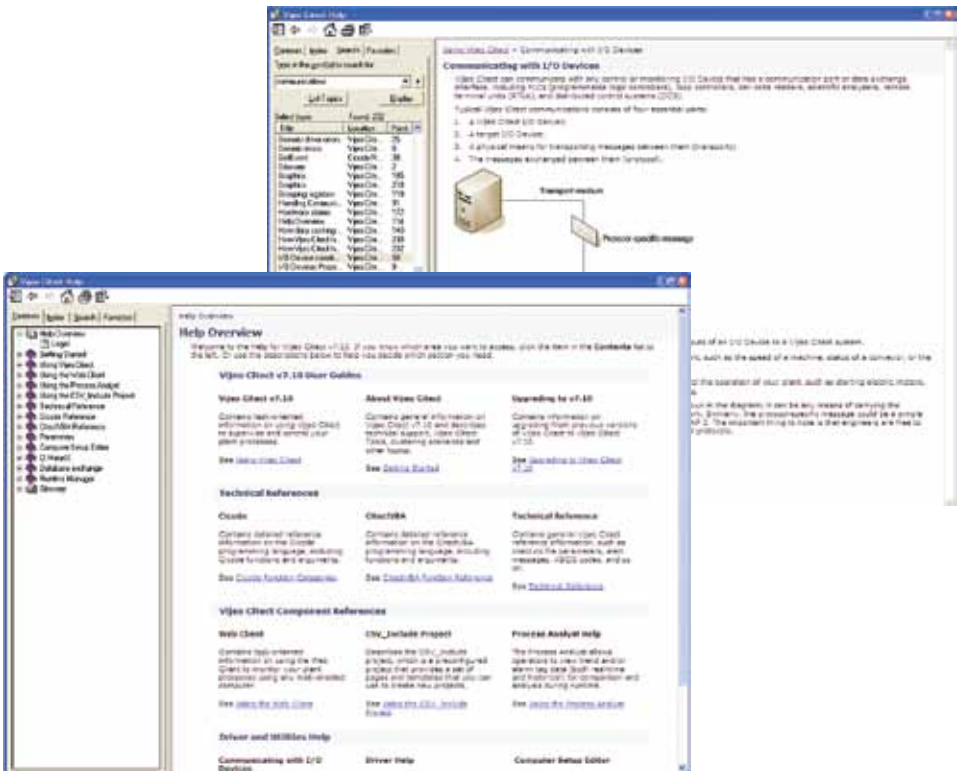
For more general information, you can use the Help menu. It gives you direct access to the Help Contents and the Help Guide, as well as application-specific information, such as the click-and-learn facilities.

Of course, you can always just press the Help Topics button to the right of the toolbar and display the Contents.

Once the Help is opened, you can perform index or keyword searches or browse the 'Help Direct' topics. No matter what information you require, the Vijeo Citect Online Help provides you with the tools to find it.

Vijeo Citect's Online Help Index operates using standard Windows functionality. To find the information you need, just type part of a key word — the keyword list scrolls automatically to the closest match. You can also do a full text search using the Find facility.

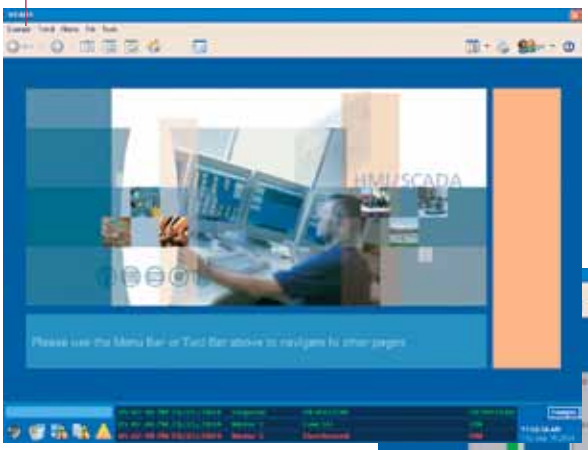
Vijeo Citect's Online Help provides easy access to the information you need. It includes a logical grouping of Help items on the Vijeo Citect Help Overview page, easy access to driver Help and the use of "breadcrumbs" to facilitate navigation.



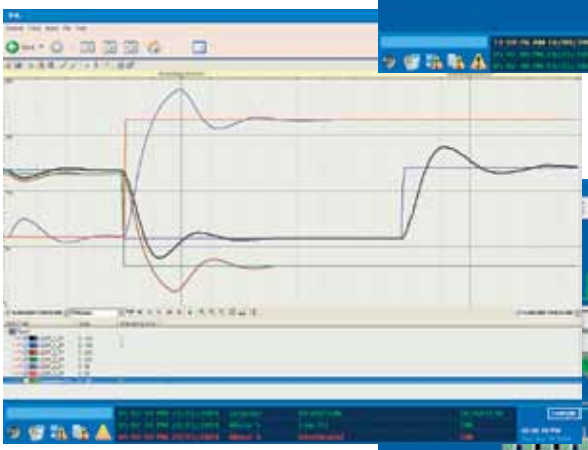
Example Project

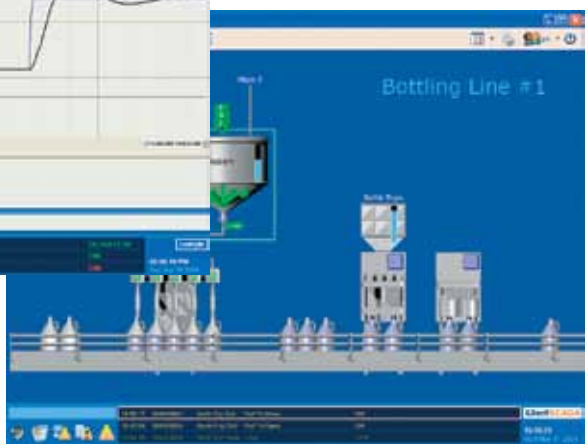
Two Example Projects are supplied with Vijeo Citect based on different templates. These are fully configured projects that are ready to run and can be used to give you ideas on how to configure your own project.

To display any graphics page in the example project, click on the menu or toolbar icon. Hold the cursor over buttons and other objects to display tool tips.



Every element of the Example P) roject functions exactly as it would in a 'real' project.





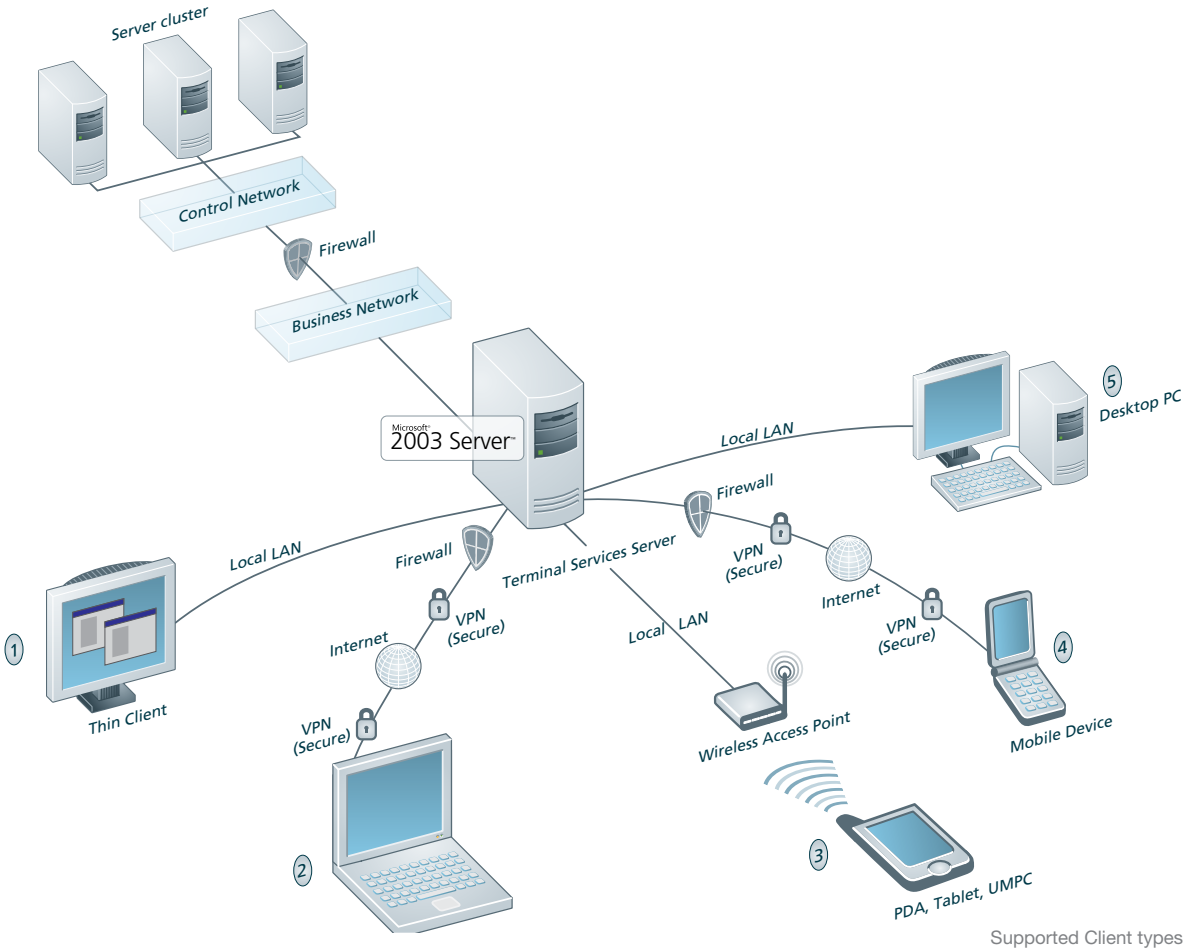
The Example Project is automatically installed when you install Vijeo Citect.

You can use the Example Project if you want to experiment with something before including it in your own project. The test page is already set up to display directly from the menu page.

The Example Project is provided complete with the ability to switch online between the following languages:

> Afrikaans
> Chinese
> Dutch
> English
> French
> German
> Hungarian
> Japanese
> Korean
> Norwegian
> Polish
> Russian
> Spanish
> Swedish

Vijeo Citect Mobility Solutions



Supported Client types

Vijeo Citect's Mobility Solution extends the capabilities of Vijeo Citect software by providing easy access to the SCADA application from several different software platforms and devices. This increases visibility into the plant's real-time processes and leads to more intelligent decisions.

With Vijeo Citect's Mobility Solution, remote control and application shadowing have become possible. Designated users can dial in via a remote access server and request simultaneous control of the session. Our Mobility Solution also supports wireless clients throughout the plant operation for easy mobile access to Vijeo Citect applications.

Virtually any wireless remote device can be used over any TCP/IP connection. This brings your Vijeo Citect system to you, anywhere you go.

Increase Network Flexibility

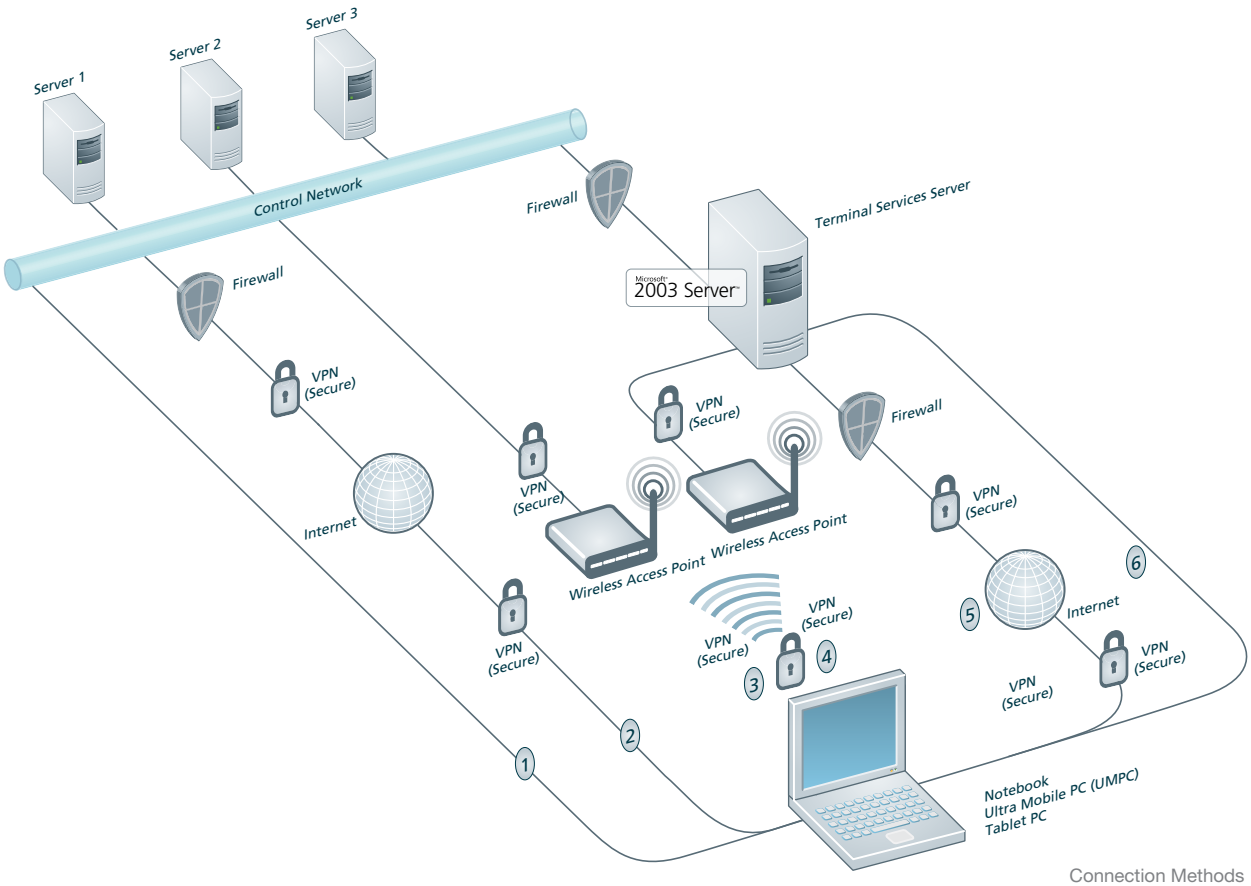
> Have a computer network adapted to your enterprise
> Enable remote access
> Access your SCADA system from almost anywhere you want
> Only requirements for clients are screen, keyboard and sufficient circuitry

Improve Data Security

> Less vulnerable to hacking
> Focus your security measures on the server while ignoring the clients because all data is processed on the server
> No data loss if client is damaged
> When operating over the Internet, Virtual Private Networks (VPNs) are recommended for data encryption

At a Glance

> Remote application control
> Wireless access
> Multiple platforms and devices
> Easy update to existing applications
> Increased reliability
> Decreased costs to deploy automation projects
> Reduced implementation time



Connection Methods

Minimise Downtime

> Save time: upgrade your entire network with a single operation
> Install only on the server side
> Any future software upgrades are limited to the server
> Vijeo Citect project files exist only on the Vijeo Citect server and are available to the entire network

Mobile Visualisation and Control – Go Anywhere

Vijeo Citect for Terminal Services software gives users the mobility and flexibility to view Vijeo Citect applications through:

> Hardware systems
> Thin-client terminals
> PDAs
> Internet browsers

Hand-held PDAs can display Vijeo Citect for Terminal Services applications, with the added benefits of mobility and constant application supervision:

> Empower users
> Increase productivity
> Go anywhere and stay in control

Software Licensing

Every Vijeo Citect package you buy has most of the features and protocols/device drivers included. Vijeo Citect's no-nonsense licensing scheme allows you to choose an appropriate package to match your system, providing you with maximum value for money.

At a Glance

> Concurrent licensing

> View-only clients

> Hardware or software protection keys

> Internal variable tags – free

Evaluation Pack

If you would like to try Vijeo Citect for yourself, please contact your local Schneider Electric representative or distributor to obtain a fully functional evaluation pack for a small fee (to cover printing and shipping costs).

The evaluation pack is exactly the same as a licensed pack, (including the software and manuals), but projects will only run for a limited time in a stand alone network.

The configuration environment, on the other hand, can be utilised for as long as you like. Feel free to use the evaluation pack to build a trial project — to test the runtime and communication capabilities of Vijeo Citect as introduced in this document.

Vijeo Citect's licensing is based on the number of computers that will be running Vijeo Citect at once, not the number of computers with Vijeo Citect installed. So, if Vijeo Citect is installed on 100 computers, but no more than 15 run it at any one time, you only need to purchase 15 licenses.

The price of each license is determined by a number of factors:

Point Count and Limit

A point is an individual digital or integer variable read from an I/O device. Vijeo Citect only counts points from the I/O device once regardless of how many times they are used in your project. Memory, disk and Cicode variables are free of charge.

The point limit is the maximum number of I/O device addresses that can be read. Vijeo Citect caters for any point limit — 75, 150, 500, 1500, 5000 …unlimited.

When running more than one cluster using a single license, the point count is the aggregate of the point count of all clusters.

Computer Role

In networked applications, not all Vijeo Citect tasks are used on each computer. Since you should not have to pay for what you do not use, you have the option to purchase Control or View-only Client licenses instead of a full license. A computer with a Control Client license is able to perform all operator interface functions and exchange data with servers but cannot be a Vijeo Citect server. A computer with a View-only Client license provides read-only displays — perfect for just monitoring a process.

Single vs Multi-User

Vijeo Citect licenses can be supplied as single-user or multi-user. Multi-user licenses allow anyone on the LAN or WAN to run a session of Vijeo Citect. This means you can use any PC to run Vijeo Citect without having to install a software or hardware protection key on every PC. It also means you can access any information from any computer.

Become a SCADA Partner

Increase your business opportunities

In 2009, Schneider Electric's Global Partner Network consists of some 2000+ Integration Partners. Our comprehensive solutions ensure Schneider Electric partners deliver market-driven solutions to enhance the value of the partners' expertise. This in turn allows the partners' customers to reap the benefits.

The Global Partner Programmes have been developed to provide a collaborative framework in which our valued partners can grow their businesses. Our Global Partners are the cornerstone of our success. Leveraging their local market knowledge, experience and capabilities, our global reach now extends to operations in more than 80 countries.

The programmes benefit partners with access to leading industrial automation solutions, world-class technical support, sales and marketing resources and a comprehensive education system.

Why become a SCADA partner?

> **Increase your business opportunities:** By becoming an approved Schneider Electric partner, we will direct our customers to you.

> **Drive sales:** Partners receive access to sales tools, providing you with the complete message for the customer.

> **Reduce risk:** Partners gain access to world class support, reducing the risk when developing HMI/SCADA projects.

> **Reduce costs:** Partners receive licenses for system development and testing at no extra cost.

> **Show your skills:** Partners with exceptional skills receive awards that recognise their achievements worldwide.

Features

Architecture

Scalable

- Configuration-free system growth
- Large project size
- 255 simultaneous connected clients
- LAN / WAN support
- Web ready without configuration
- Support for low bandwidth operation
- Support for multiple active cluster systems

Flexible

- True Exception reporting
- Client/Server architecture
- Alarm, trend and report servers scalable across any machine configurations
- Project files centralised for maintenance, distributed for remote sites or a mix of both
- Changes in a single location

Reliable

- Built-in Primary/Standby level
  - File server redundancy
  - LAN redundancy
  - Alarms server redundancy
  - Trend server redundancy
  - Report server redundancy
- Multi-level I/O server redundancy
- Support for full reliability at local control panels
- Automatic server swap
- Automatic trend history synchronisation
- Automatic alarm table synchronisation
- Automatic time synchronisation
- Secure
- Automatic restart upon system failure

Performance

- Maintain performance regardless of size
- Multi-CPU support

Security

- Based on individual users as well as groups of users
- 250 simultaneous logged-in users
- Large number of user names definable
- Definable area and privilege profile per user name

I/O Communications

Connectivity

- Support for open standards
- Multiple protocols per I/O server
- Drivers work on RS232, 422, 485, TCP/IP
- Driver setup in 60s
- 4096 I/O devices per cluster
- Dial-In/Out support for remote devices
- Driver Development Kit for custom protocols
- OPC Server DA2.0 support

Access

- Drivers at no additional cost
- Driver Web contains latest version
- Driver update to maintain up-to-date drivers

Performance

- Dynamic optimisation of all drivers
- Data read on-demand
- Can support 100,000 integers per second update from an I/O device

Tags

- Large number of tags
- 80 character tag name
- Support for quality and time-stamped on relevant drivers

FastLinx

- Single database solution for PLC and SCADA
- Bi-direction synchronisation with PLC development environment
- Static synchronisation for offline development

Import

- Automatic importation and synchronisation
- Import from multiple PLC types
- Add user defined importation schema

Graphics

Development

- True colour screens
- Easy pick colour selector with names colours
- Transparent colour support
- Advanced animations without coding
- Animation of symbols sets based on tag data
- 32,000 animations per page
- Full flashing colours support
- Support for multiple languages
- 3D pipe tool
- 3D effects (raise, lower, emboss)
- Import graphics
  - Windows Bitmap (BMP, RLE, DIB)
  - AutoCad (DXF)
  - Encapsulated Postscript (EPS)
  - Fax Image (FAX)
  - Ventura (IMG)
  - JPEG (JPG, JIF, JFF, JFE)
  - Photo CD (PCD)
  - PaintBrush (PCX)
  - Portable Network Graphics (PNG)
  - Targa (TGA)
  - Tagged Image Format (TIFF)
  - Windows Meta File (WMF)
  - Word Perfect (WPG)
- Large number of undo support
- Windows XP-style buttons with dynamic movement properties

Runtime

- 4096 x 4096 resolution
- Resizable screens (Isotropic and Anisotropic)
- Multi-monitor support
- Page selectable update times (min 10ms)
- Communication loss display
- Runtime language swapping
- Support for single and double byte character sets

Security

Security level can control:

- Visibility of objects
- Access to graphic displays
- Acknowledge of alarms
- Running of reports
- System utilities

Operations

Controls

- Touch commands
- Mouse over detection
- Keyboard commands of system, page or animation level
- Sliders in one or two dimensions
- DatabaseExchange

Process Analyst

- Combine alarm and trend data
- 32+ pens
- 4+ panes
- 2+ cursors
- Stacked or overlaid pens
- Display of data quality
- Analogue and digital pens
- Alarm acknowledge displayed
- Alarm description (analogue and multi-digital)
- Alarm comment display
- True Daylight Savings support
- Save views at runtime
- Views stored in redundant locations
- Display different time periods on the same display
- Customisable and extendable controls

Alarms

- Large number of alarms
- Centralised processing of alarms. Alarms can be defined as:
  - Digital
  - Analogue
  - Time-stamped
  - High level expression
  - Multi-Digital
  - Time-stamped digital
  - Time-stamped analogue
- On-line change of language for all alarms
- Network acknowledge without configuration
- Network disable without configuration
- Category, area and priority of alarms
- Alarm delay
- 1ms precision of time stamped alarms
- Variable data in alarm messages
- Acknowledge individually or in group
- Acknowledge based on category or priority
- Acknowledge graphically, in alarm list or through Cicode
- Alarm sorting
- Alarm filtering
- Custom alarm fields

Trending

- Large number of trends
- Supports any historical trend in less than one second
- Control of trend file sizes
- View archived trends transparently in the running trend system
- Resolution user selectable from 1ms
- Compare trends
- Instant trends on any tag
- Event or periodic storage

SPC

- Cp and CpK charts
- X, R and S charts
- Pareto charts
- Adjustable subgroup size and limits
- Alarms on the following: Above UCL, Below LCL, Outside CL, Down Trend, Up Trend, Erratic, Gradual Down, Gradual Up, Mixture, Outside WL, Freak, Stratification and High Level expression

Reports

- Native report editor, WYSIWYN reports, Rich Text reports
- Alarm Management Reports (EEMUA): alarm correlation, alarm count, alarm frequency, alarm major event, alarm longest standing
- Standard Reports: disabled alarms, alarm statistics, alarm states, alarm states matrix, run hours, numeric statistics, tag calculation, tag value, string statistics, tag states, digital statistics

Triggered by: Time Schedule, External Event, High Level Expression, Operator Input

Output to: Printer, file, email, screen, HTML

Configuration

Project Development

- Flexible project size
- Divisible into include projects
- Easy standards definition
- Easy project maintenance
- Computer Setup Editor to configure each PC in network

Code

- True pre-emptive and multitasking
- Up to 512 concurrent threads
- More than 600 SCADA functions provided
- Libraries for user-written functions
- Supports more than 4,500 user functions per project
- Local, module and global variables
- No additional software required to write own functions
- Direct access to trend data, report values and alarm details
- Syntax colouring
- Online Help functionality
- Quick help as 'tool tip'
- Editor with:
  - Runtime breakpoints
  - Variable watch
  - Thread monitoring
  - Colour coding
  - Breakpoints window
  - Single stepping
  - Current line indication
  - Remote debugging (NT only)
  - Automatic debug on error

Templates

- Over 70 templates in multiple styles and at multiple resolutions are provided
- Templates are extensible in the graphics builder
- Templates can contain animations
- Changes in templates are replicated to linked pages
- Templates are transportable between projects

Symbols

- Over 800 symbols provided
- User-defined symbols can be developed in the graphics builder
- Symbols can be animated
- Changes in symbols are updated to all instances
- Symbols are transportable between projects

Object-based Configuration

- Large number of objects defined as Genies and Super Genies
- User-defined Genies enable user defined plant equipment to be placed on the screen
- User-defined Super Genies enable a single user interface for multiple devices
- Genies and Super Genies can accommodate variations in the device tags without needing further development

Runtime Security

- Project level Microsoft Windows integrated security

Data Exchange

- OPC Server and Client
- ODBC
- OLE-DB
- CTAPI
- DLL
- MAPI (MAIL)
- TCP/IP
- SERIAL

Object Integration

- SpeedLink allows PLC configuration to be linked to the SCADA configuration
- OFS integration, real-time access to the PLC data (Modicon Quantum, Premium, TSX Micro, Twido and Momentum PLCs), as well as to all Modbus devices.

Supported Manufacturers

ABB
ABB Instrumentation
Action Controls
Advantech
Air Liquide*
Allen Bradley
Ampcontrol
Anybus*
April
Aromat Corporation
Aspen Technology*
B&R Industrial
Baker Hughes
Barber Coleman*
Beckhoff
Bosch
Bristol Babcock*
Busware*
Campbell Scientific Inc
Cegelec
Cimetrics
Clipsal
Colby Demag
Contemporary Control Systems
Contrec Systems
Control Microsystems Inc.
Cutler Hammer*
Danfoss
Data Electronics
Detroit Diesel Corporation
Eberle
Echelon*
Elpro Technologies
Elsag Bailey
Emerson
Engage Networks
Enron
Eurotherm International
Facon
Fischer & Porter
Fisher
Fisher and Paykel
Fisher Rosemount Systems*
Fluke
Foxboro*
Fuji Electric
Gantner
GE
GE Fanuc
GEC
GEC Alsthom
Generic devices
Harris Controls
Hewlett Packard
Hima Gmbh
Hitachi
Honeywell
Idec Izumi
Intech (NZ)
Intuitive Technologies (@aGlance)*
Johnson Controls
Kaye Instruments Inc
Keyence
LG Industrial Systems
Matsushita
Mauell
Mettler Toledo*
Mitsubishi
Moeller
Moore Industries
Moore Products
Motorola
MOX Products
MTL Instruments
National Instruments
Nematron
NJ International
Omnitronics
Omron
Optimation Optilogic*
Opto 22
Philips*
Phoenix Contact
PLC Direct (Koyo)
Preferred Instrumens
Reliance Electric
Rockwell Automation
Rosemount
RTP
SAAB
SAIA
Samsung
Satt Control
Schlage Electronics
Schlaps & Partner
Schneider Electric
Serck
Siemens
Sisco
SIXNET
Softing AG
Sprecher & Schuh
Square D
Steeplechase
Telefrang
Telemecanique
Thermo Westronics*
Tibco*
Toshiba
Transmitton
Triconex Corporation
Unidata
Universal Instruments Corporation
Valmet*
Vikingegaarden
VIPA
Wago*
Weidmuller
West Instruments*
Westinghouse
Willowglen
Woojin
Yaskawa*
Yokogawa
ZWorld

NOTE: *Supported by using OPC.
The list is valid at the time of printing.

Industry Standard Protocols

Ascii
BacNet*
DNP 3.0
EIB
IEC870-5
Modbus
OPC
Profibus
SNMP

For more information visit www.schneider-electric.com

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