

Dear friends,

To ensure our strength as a complete solution provider for all types of industries, we are proud to announce our joint co-operation partnership with SUPCON Technology, a leading DCS manufacturer from China. With state-of-art technology, SUPCON has launched their latest Network-based DCS system, a prime mover in technology. Since 1993, SUPCON has served over 3000 customers worldwide, with strategic solutions and services in chemical, petrochemical, power, metallurgical, pharmaceuticals, fertilizers, food industry etc. With deep understanding of the process and the challenges faced by the industries, SUPCON has established a complete integrated system, offering a total solution to customers from engineering design and application, technical support to after sales service and training.

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Regards,

**Hitesh Doshi**  
Chairman & Managing Director

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**InstruMall**

**SUPCON**

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at Dadra (UT)**

- only for  
Manufacturing and  
Exports of Pressure  
Measuring Instruments

**Waaree  
starts  
"InstruMall"**

- 1st time in India  
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Mumbai, Vapi, Bangalore

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Hands with  
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- the largest  
DCS Manufacturer  
from China

**Dwyer  
awarded  
Waaree**

- for outstanding  
contribution to sales growth  
and targeted product  
sales for year 2004

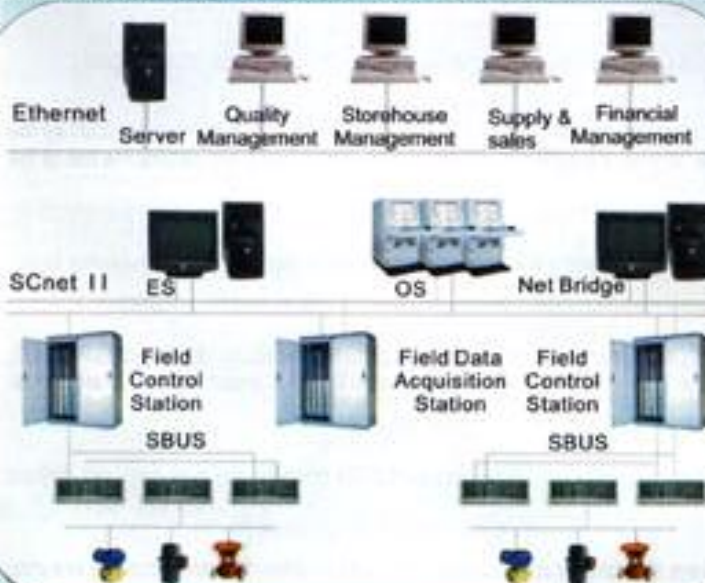
**DCS-ECS 100 WEBFIELD CONTROL SYSTEM**

SUPCON is the largest supplier of control systems in china. Starting in the year 1993, SUPCON first successfully developed & installed their WebField series DCS systems ---WebField JX 100. Over a period of years, various upgrades and enhancements were done on this product as the expectations from the industry demanded a continuous improvement in technology like--- WebField JX 300. With the development of network technology, specially of internet and web, SUPCON incorporated the state-of-art technologicis (like field bus, embedded software, advanced control etc.) into its DCS systems, leading to cutting edge network based control systems --- WebField ECS 100.



Ask for your FREE DCS hand book

**Structure Diagram of WebField ECS-100 Control System**



**WebField ECS-100 comprises of :**

- Engineering Station
- Operating Station
- Control Station
- Process Control Network, etc.

WebField ECS-100 applies 5-layer communication network structure. The upper layer is the information management network, which adopts the common Ethernet technology to complete information transport and management of the plant level. And it is also the Information channel for realizing the comprehensive management of the entire plant. The middle layer is the process control network (named Snet II), which adopts 10 Mbps/100Mbps redundancy industrial Ethernet that conforms to TCP/IP protocol. The bottom layer is SBUS, which is the I/O control bus inside of the control station.

## MAJOR CHARACTERISTICS

• **OPENNESS:**

Integrates all kinds of standard software and hardware interface. Flexible software and hardware control equipment interfaces are embedded into the system, which most conveniently connects the most advanced field bus equipment and the third party DCS, PLC and other equipments and also fulfills remote info acquisition, remote control, remote failure diagnosis etc.

• **COMPATIBILITY:**

The digital signals of field bus and traditional analog signals coexist in the system making enterprise of the current industrial automation solution and implementation of field bus technology simple and feasible and fulfilling a smooth transition between the two.

• **ASSET MANAGEMENT:**

The system adds advanced Asset Management function (AMS), which can realize automatic management for the process parameter setting, record maintenance and equipment achieves in the intelligent transducers of field bus, realizing Asset Management functions, which is impossible for traditional DCS.

• **SAFETY:**

The system safety and anti-disturbance accord with international standard in industrial environment.

• **FAILURE DIAGNOSIS:**

Traditional signals input and output apply intelligent technology, which possesses failure diagnosis function of modules and channels as well as that of transducers or sensors such as thermocouple's disconnection, resistance, bulb's disconnection or short, transducer's open and short, transducer signal abnormality and so on.



• **POWER SUPPLY:**

AC/DC power supply applies dual hot redundant supply mode and component's hot plug and pull structure, which is easy for installation and maintenance.

• **REAL-TIME EMULATION:**

The system has the functions of off-line real-time debug and emulation. You can emulate the control solution by means of emulating environment provided by the system before it is brought into effect, which can provide several object model base, shorten the cycle time of the system's site debug and reduce the risk of the implementation of the solution.

• **SYSTEM CAPACITY:**

Due to use of system structure based on network, the system scale is flexible enough to meet the user's different application requirements ranging from several loops, tens of I/O points to 1,000 loops, 10,000 I/O points.

• **CONTROL:**

System control configuration based on former powerful C language redeveloping tool is added to configuration tools that accords with IEC61131-3 such as FBD, LD, SFC, ST and so on, which makes DCS and PLC's control functions uniform and their application more extensive. At the same time this system realizes share of real-time process info inside local control area (Network).

• **INTEGRITY:**

WebField is an open and expandable system, which is easy to be extended and integrated. User can utilize Microsoft COM policy to add third-party self-defined application in WebField according to their specific Needs.

• **DATA MANAGEMENT:**

WebField software can collect and manage data, save historical data and transfer them to public database, or distribute data to different reports, thereby ensuring process running under the best condition.

**MAJOR PERFORMANCE INDEX OF THE SYSTEM****SCALABILITY :****WebField ECS-100**

One control area can include 15 control stations, 32 operating stations and Engineering stations, with total capacity of 10,000 nodes.

**The maximum configuration :**

- AO (Analog Output) point <=128 per station
- AI (Analog Input) point <=384 (including pulse input) per station
- DI (Digital Input) point <=2048 per station
- DO (Digital Output) point <=1024 per station
- Control loop : 128 per station.
- Memory for program : 4M Flash RAM; Memory for data, 4M SRAM
- 512 second timers and 512 minute timers

**SYSTEM SOFTWARE**

- **USER DEFINED ENVIRONMENT :**
- **CONFIGURABLE DYNAMIC GRAPHICS :**
- **OPEN PLATFORM ARCHITECTURE - REALIZE DATA-SHARING AT ANY LAYERS VIA DDE, OPC, OLE, ODBC, COM/DCOM. IT CAN INTERFACE TO ANY THIRD PARTY PROGRAMS/DEVICES SEAMLESSLY.**
- **HIGH LEVEL SECURITY:**
- **ROBUST DESIGN :**
- **SUPPORTS REMOTE AND INTERNET ACCESS:**
- **IMPLEMENT SIMPLE TO COMPLEX CONTROL STRATEGIES :**
- **POWERFUL DATA MANAGEMENT FUNCTIONS:**
- **HIGH LEVEL DIAGNOSTICS FUNCTIONS :**
- **Truly Open Scalable Distributed Control Systems :**
  - Scalable Control Systems are truly open DCS solutions that seamlessly integrate your choice of modular hardware and software components into completely open systems. We call these feature-rich Distributed Control Systems "Scalable Control Systems". To highlight the fact that DCS systems are pre-integrated solutions that grow gracefully from a few I/O points to plant-wide or Even a global network- "A famous saying **Grow along with Growth**".
- **POWERFUL FUNCTIONS :**
  - Advanced Alarm Management function :
  - Flexible reports - for Management, Plant personnel etc :
  - Complex computations and algorithms
  - Convenient operator guide function - dynamic object guidance and script language guidance etc.
  - Duplexing OPC
  - Embedded VBA, ActiveX, OLE
- **SPEED :**
  - Sampling and control cycle : 100ms-5.0s
  - Redundancy machine switch time : <0.1s
  - Redundant synchronous speed : 1 Mbps

**TOTAL SOLUTION FOR PROCESS AUTOMATION**

**InPlant** aims to provide an integrated solution for process automation industries. The solution integrates process control, optimization, planning, scheduling, and management, which adds significant value to plant operations and helps forward-thinking companies establish and maintain advantage in the competitive global markets.

**ADVANTAGES OF INPLANT :**

- **SAFE** : Ensuring a safe operation of plant units and equipments by highly reliable control systems, sensors, actuators and valves. Low maintenance of key facilities and equipments can also be guaranteed by fast and reliable fault-detection and Diagnosis.
- **LOW COST** : Reducing energy and material consumptions by improving percent of qualified Products and conversion rate via advance process modeling, control, and optimization technologies
- **HIGH EFFICIENCY** : Improving utility operating rate and productivity by advanced planning, scheduling and management.
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**ESP-Suite (Enterprise Solution for Profit) is a major component of InPlant Solutions**

**ESP-Suite helps process industrial customers with :**

- Best return on investment
- Maximized production capacity
- Reasonable integrated automation solutions
- Flexible combinations of process control, optimization, and management software packages
- Integrated and optimized material flow, capital flow, and information flow

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**DCS MIGRATION ?****What is a DCS?**

A distributed control system is the geographical distribution of Control and I/O's and Seamless integration with any 3rd party device. It enables you to manage the process as a complete system, with control over the interrelationship of the various subsystems. A DCS lets you see the "Big picture" and improve the overall efficiency, quality and Productivity. It Provides the management with single point window for taking strategic decisions.

**Truly Open Distributed Control Systems :**

Open System offers an open approach to DCS systems. Long-term success is best achieved through truly open systems. Interconnectivity stops being magic when equipment communicates through Ethernet, Modbus and other open standards. An open choice of products eliminates the risks of obsolescence. Open-source software puts an end to the piracy of high software costs and perpetual upgrade fees. At long last, truly open systems offers Freedom from the captivity of proprietary systems.

**Scalable Control Systems**

Scalable Control Systems are truly open DCS solutions that seamlessly integrate your choice of modular hardware and software components into completely open systems. We call these feature-rich Distributed Control Systems "Scalable Control Systems". To highlight the fact that DCS systems are pre-integrated solutions that grow gracefully from a few I/O points to plant-wide or Even a global network. - a famous saying Grow alongwith Growth.

**How to do DCS Migration?****1] The Basics of Control System Migration Planning**

Control system migration and migration planning are not new. The basic concepts have been around for about two decades. There have been several rounds of migrations starting with the early generations of systems moving to more modern distributed, but still fully proprietary systems in the mid-80s. There was another migration shift toward VAX and UNIX-based systems in the 90's. Systems today are migrating to Windows-based workstations, hybrid controllers and open architectures. There has been a lot of overlap in these major migrations. Many systems have migrated several times and often consist of components from several generations of technology. Other systems have never been migrated, yet continue to reliably meet their user's basic needs.

What is new is increased complexity. Business needs are changing at a much quicker pace than before. Also there are many new technology considerations such as business system integration, open architecture frameworks, hybrid systems, field buses, etc. There is no one right solution for everyone. Just like personal financial planning to meet specific goals in your life, preparing for the future is best done by working closely with professionals to plan. You should then follow the plan and update it periodically as your goals or other Circumstances change.

**2] Defining Migration**

What is really meant by the term migration? With migration there is a starting place and a destination. Unlike the migration of animals such as birds or caribou, there is normally no plan to return. Control systems are not static during their operational lives. There are usually a variety of maintenance updates and upgrades that are done to systems. Migration is different in that it usually involves a major architectural shift in the system hardware and software. Below are definitions of various types of control system changes to help us better understanding of the term migration. These Definitions are only for the purpose of referencing migration as these terms are not used in a standard way throughout the industry.

- Updates :** These are primarily maintenance fixes. Changes that fall into this category include software patches, maintenance releases Or patch sets, maintenance releases of firmware, and also hardware modification kits to correct maintenance issues.
- Upgrades :** These are primarily enhancements to software and hardware that do not fundamentally change the architecture of the system. This is typically going from Version 1 to Version 2 of software, and making only basic hardware changes such as More memory. In most release policies an upgrade includes all of the previous applicable updates.

*Want to know more ? Send us an email to [cf@waaree.com](mailto:cf@waaree.com)*

**We Sense • We Measure • We Control**



- **Migration :** This is a major enhancement that changes the fundamental architecture of the system. Migration ranges from changing between generations of hardware and software within a specific system family, to switching to a completely new architecture with little or no elements in common with the original system. When a completely new architecture is used, it is only a migration if some elements of the old system are used in the new system or used for translation, etc. Was some element of the existing system used to lower the total installed cost of the new control solution? If the answer is no, then it was a replacement.
- **Replacement :** The old system is simply replaced by a new system. There are many gray areas between each category of system change. Some equipment manufactures do not offer updates separate from upgrades. This is especially true in newer systems that have yet to reach a mature baseline version. Some upgrades may require major hardware changes to go to faster processors even though the architecture remains similar. The amount of engineering and planning increases with each type of change. Updates are relatively straightforward in that there are usually standard instructions that can be followed to implement the update for all applicable systems. Upgrades often require some basic engineering and planning. Migration efforts are really projects that require major Amounts of engineering and project management and of course planning.

### 3) Migration Path Considerations

The migration path determines how easily you can get from your current system to the new technology. Key considerations are price, risk, Time and functionality. The following sections review migration path considerations for major system components.

#### A) Operator Interface :

The HMI is the system component that is often changed first in phased system migrations. It is the most visible part of the system and where major informational exchange occurs between human users and applications. It usually represents a natural architectural component that can be addressed stand-alone. It is sometimes supplied by a vendor separate from the DCS or PLC controllers or as separate SCADA components. This approach can lend itself well in cases where there is a migration from a traditional DCS system to a more hybrid architecture.

In addition to their original engineering and implementation costs, your existing graphics have gone through years of incremental changes to optimize them to your exact operational needs. New graphic displays typically take 6-20 hours of labor to develop, document and test depending on their complexity. Being sure that new versions of existing displays present themselves and interact with the operator in a Beneficial manner is a major area for attention and review.



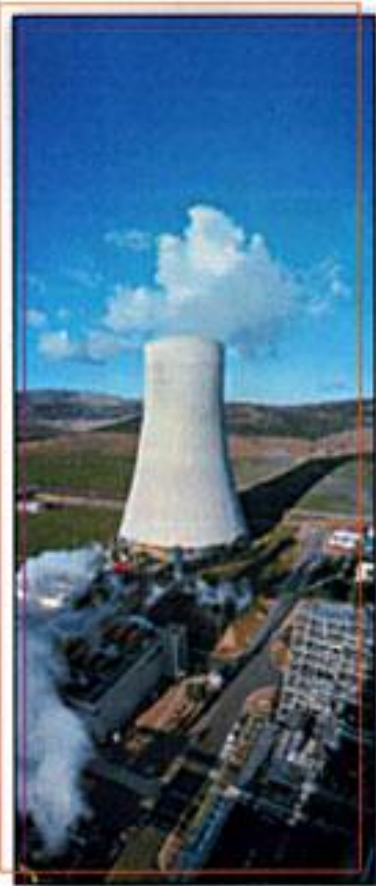
Conversion routines are typically not 100%. Converting the static part of the graphics is relatively easy, but the dynamic elements are more complicated. This is often because the new functionality does not map completely to the old. Some functions simply work differently and others are no longer available. Good converters will include decision routines to automatically handle these as options, or will "flag" parts of the existing display that cannot be converted. When displays have complex engineering, there may be significant manual cleanup. A good conversion tool and process can result in converted graphics that only take about 1-4 hours each to clean-up and test.

Converters do not do a good job of converting existing graphics so that they can take advantage of new functions that did not exist in the old system. For example, if your old graphics are basic stick figures, your conversion might give you the same stick figures and not the 3-D graphics you were expecting. You should also be aware of some conversion programs that simply encapsulate or emulate your old graphics in the new operator environment. This situation would mean that you could not edit your graphics in the new display environment, and would have to utilize the old tools and functionality.

The operator interface may be migrated in the first phase to create a common HMI layer for several different systems that will eventually migrate to a common technology. One thing to consider with this approach is that the graphics or the display database may need to go through a significant new round of conversions when the controllers are migrated.



**DCS MIGRATION ?**



**b) Control Applications and Database :**

Migrating an application and database from an old controller to a more modern one that uses the same control application is relatively straight forward. Migrating an existing control application and database to a new control language is a complex task. Often the new object-oriented languages do not map well to the old DCS structures. In some cases the application will simply need to be redesigned in order to take advantage of new features. This is an area in which you should work closely with your automation vendor to understand what type of tools and methods they will be using.

**c) Information Management and Advanced Applications :**

This category of system components includes such items as historians, reports, SPC, batch managers, LIMS systems, gateways and a long list of any special applications that may have been created.

There are often no conversion tools for these applications and most will be handled very differently in the new system architecture. There is also the consideration that if your existing historical data storage system had electronic records (reports or time-based storage of measurements, alarms and messages), you may need to be able to playback (reproduce or otherwise present) historical records to a regulatory agency to prove compliance.

**d) Controllers and I/O :**

The controllers and associated field I/O are normally the biggest hardware cost of a system. In many older controllers, the I/O was physically integrated to the controller hardware. In these situations the I/O will probably need to be replaced. If the I/O was remote or in separate card files, it may be able to be re-used with the new controller. When planning to re-use existing I/O in a new controller you need to verify with your proposed automation vendor on how integrated the old I/O will be in your new system environment. For example, many older DCS systems had excellent I/O diagnostic displays for commissioning and troubleshooting that might not be available in the new system. Additional considerations are in retaining existing power supplies, power distribution panels, cabinets and network wiring. Some vendors can provide you with diagrams that show common before and after layout options and what equipment is recommended to be retained.

**e) Field Terminations :**

At a very minimum a migration should retain the field terminations even if the rest of the system is simply replaced. There is a significant investment in the termination labor, testing and documentation. In addition to the labor savings, it may not be possible to accomplish the migration in the shutdown time window available if you have to re-terminate.

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