ICMS ™

INDUSTRIAL CONTROL & MANAGEMENT SYSTEMS, INC.

SYSTEM DESIGN & INTEGRATION

ICMS ™

SYSTEMS
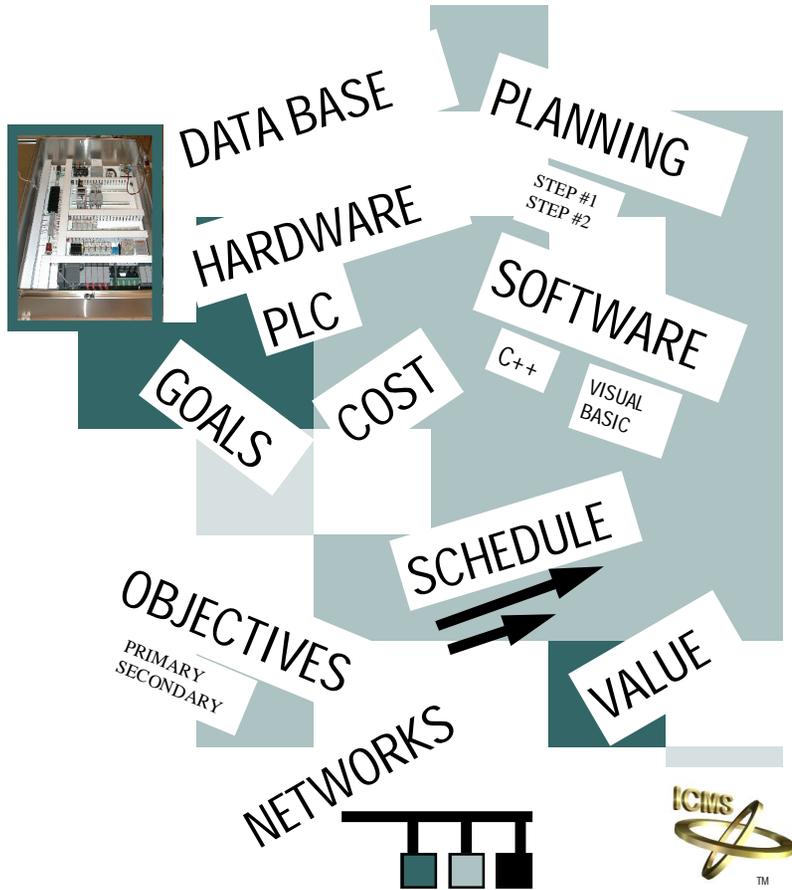
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IMPROVE OUR CLIENTS BUISNESS
by applying
KNOWLEDGE , EXPERIENCE, AND TECHNOLOGY

PN : SDI1

ICMS FURNISHES A SUPERIOR PRODUCT WITH A HIGHLY MOTIVATED AND QUALIFIED STAFF RESULTING IN AN EFFICIENT AND MOST COMPETITIVE SOLUTION TO YOUR AUTOMATION NEEDS.

DATA BASE

PLANNING

STEP #1
STEP #2

HARDWARE

PLC

SOFTWARE

C++

VISUAL BASIC

GOALS

COST

SCHEDULE

OBJECTIVES

PRIMARY
SECONDARY

VALUE

NETWORKS

ICMS
™

A system is an integrated assembly of interacting elements, designed to carry out co-operatively a predetermined function.

INDUSTRIAL CONTROL & MANAGEMENT SYSTEMS

ICMS INC.

EMPTY BOX & INLINE SCALING SYSTEM
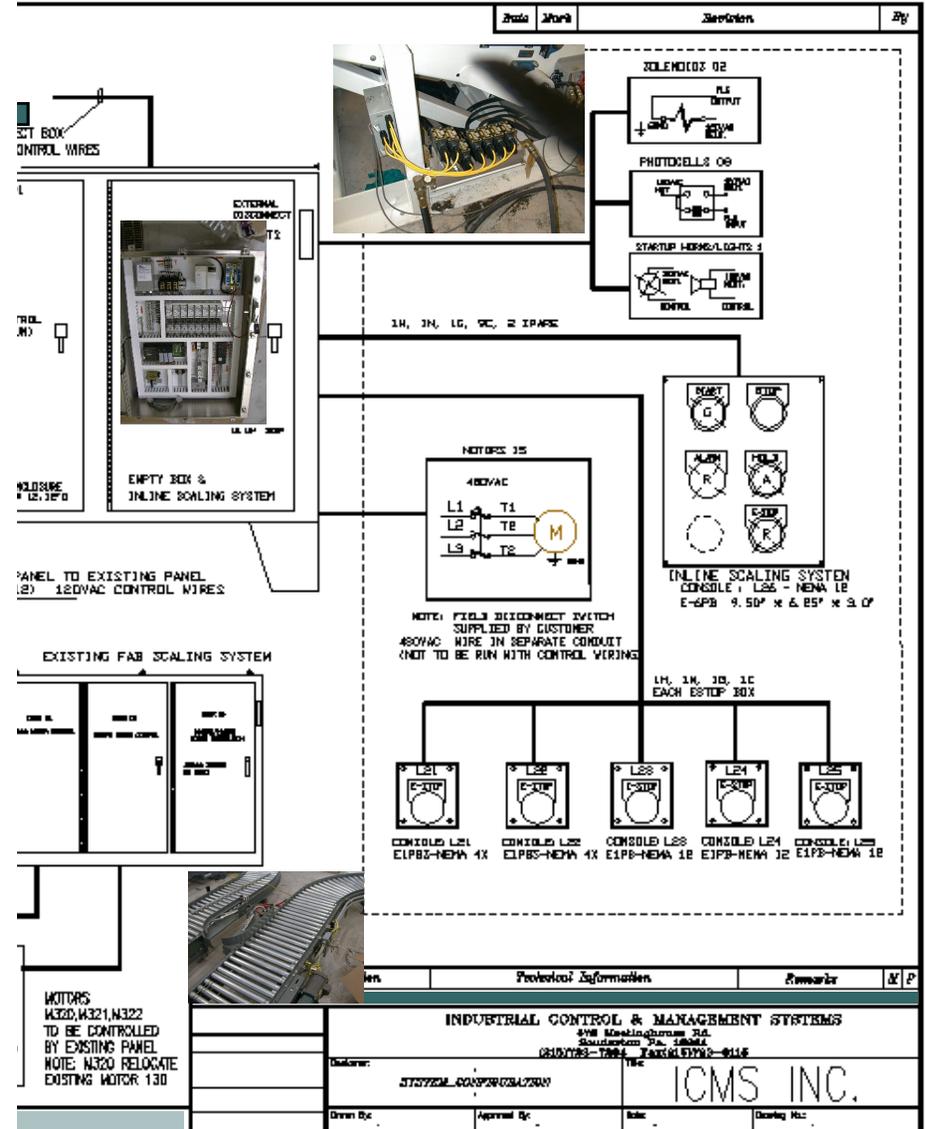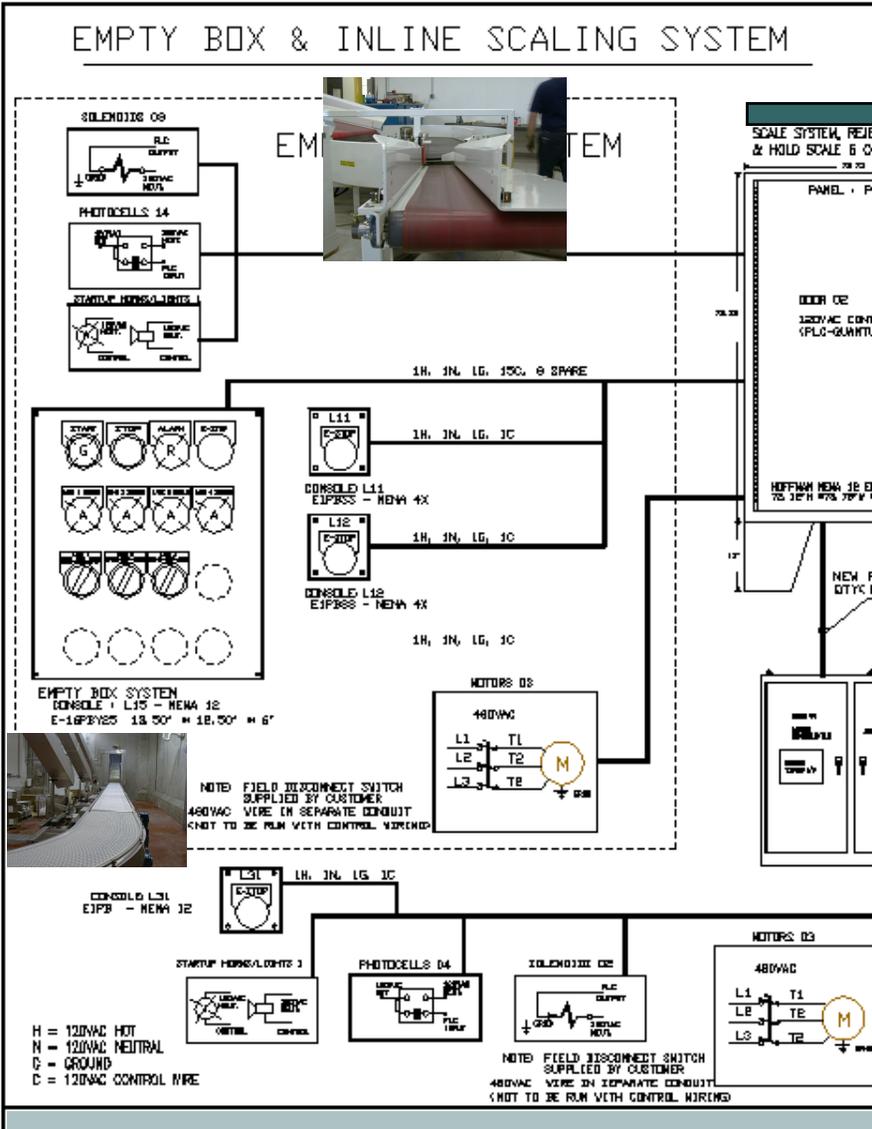
INDUSTRIES SERVED

* MATERIAL HANDLING

* PHARMACEUTICAL

* WAREHOUSING

* AUTO

* STEEL

* FOOD

ICMS ON THE PLANT FLOOR DESIGNING FOR THE FUTURE.

METHOD PROFILE

- PROJECT PLANNING
- DEVELOPMENT PROCESS
- SOFTWARE DESIGN
- CUSTOMER PARTICIPATION
- DOCUMENTATION
- ACCEPTANCE

PROJECT PLANNING

During the project planning phase, project philosophy will be established. Principles and theory will be utilized to formulate an approach to the project.   Specific tasks will be assigned and time schedules established to ensure the goals and costs are maintained

PHILOSOPHY ➤ GOALS , NEED, PEOPLE, TECHNOLOGY

THEORY ➤ SYSTEMS,SIMULATION,VALUE

PRINCIPLES ➤ REAL TIME CONTROL, DATA BASES

LEADERSHIP ➤ PROJECT MANAGER, KNOWLEDGE TRANSFER

OBJECTIVE ➤ PRIMARY, SECONDARY

FUNCTIONS ➤ SPECIFIC TASKS DEFINED / ASSIGNED

SOFTWARE DEVELOPMENT

HIGH LEVEL ➤

GRAPHICS

LADDER

```
Switch (ICMS)
  {
  case CONTROL:
  break;
  case  SOFTWARE:
  break;
  case  PC_PLC:
  break;
  default:
  ICMS =  Automation Needs
return;
  }
```


DISPLAYS

- *Designed to accommodate operators.*
- *Designed to accommodate maintenance*

Operator control stations range from Local pushbutton stations to panel mounted displays/terminals.

ICMS has broad experience with various controller manufacturers.

SYSTEM HARDWARE

DEVELOPMENT PROCESS

ICMS system development process consists of two main areas, system analysis and system design. The system under development will progress through the following steps.

1.– DETERMINE THE OBJECTIVE OF THE SYSTEM

2.– STRUCTURING THE SYSTEM AND SETTING DEFINABLE BOUNDARIES.

3.– DETERMINE THE SIGNIFICANT COMPONENTS THAT MAKE THE SYSTEM.

4.- PERFORM A DETAILED STUDY ON THE COMPONENTS IN LIGHT OF THE OVERALL SYSTEM.

5.- SYNTHESIZING THE ANALYZED COMPONETS INTO THE SYSTEM.

6.- TESTING THE SYSTEM ACCORDING TO A DEFINED PERFORMANCE CRITERION.

7.- IMPROVE THE PERFORMANCE BY CYCLING THROUGH STEPS AS NEEDED.

ICMS application software will undergo the following life cycle during its design and implementation.

- DETERMINATION OF REQUIREMENTS
- DESIGN OF SYSTEM
- CODING / TESTING
- INTEGRATION
- OPERATION TEST AND ACCEPTANCE
- DOCUMENTATION AND MAINTENANCE

SOFTWARE DESIGN

ICMS software systems produced possess the following characteristics.

- MODULAR / WELL STRUCTURED
- WELL DOCUMENTED
- CONSISTENCY
- COMPLETENESS
- CONCISENESS

The quality of a program produced depends upon the rules and guidelines used during the analysis, design, coding stages. With the software characteristics as outlined, the software undergoes a quality test . The programmer has the responsibility to ensure the software meets the following guidelines.

MODULAR / WELL STRUCTURED
- Decompose the Program into Independent Tasks
- Structure the Modules to Reflect the Design Process
  Example: Control areas, Alarms/Status, Data Base etc.

DOCUMENTATION
- Program comments / Cross Reference
- Data Base Variables—Descriptive Names
- Note: Program Limitations / Restrictions
- Summary diagrams

CONSISTENCY , COMPLETENESS, CONCISENESS
- Consistent Style Throughout
- Error/Fault Recovery Procedures
- No Redundant Code/Logic
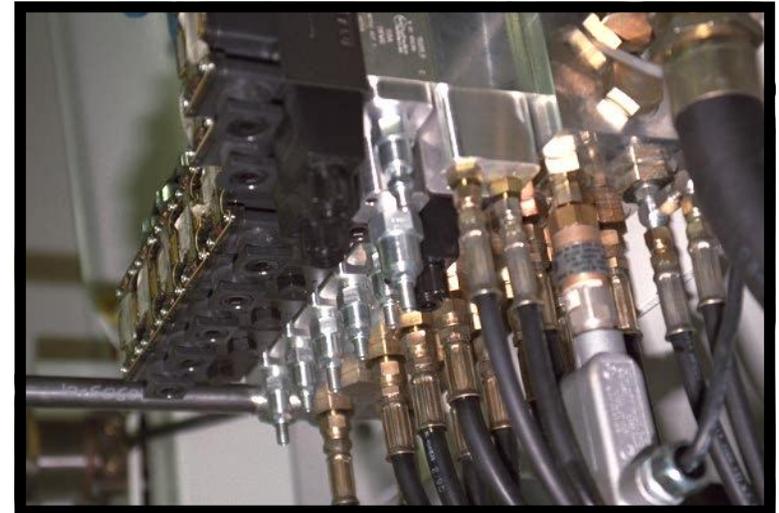
ICMS PROFILE: MACHINE CONTROL

ICMS has employed PC based / PLC based devices for machine control. Local or remote fault detection can alert operators of machine errors or status. A plc forms the base of local cell control of which several can be linked to a PC based work station. The PC station's responsibilities can include data acquisitions and supervisory control. Such supervisory functions include logging machine status, down time, and machine scheduling.

SEQUENCE OF STEPS   MOTION CONTROL   CYCLE

PLC BASED   PC BASED   C++   VISION SYSTEMS   MONITOR

SCHEDULING   DATA LOGGING   FAULT DETECTION   RECOVERY

NETWORKS   DATA BASES   INPUT/OUTPUT   SENSORS

ICMS PROFILE: MATERIAL HANDLING

ICMS personnel have control system experience in a wide variety of handling systems ranging from the automated roller conveyor system to in the floor chain systems, to over-head power and free systems. In the manufacturing process material spends the majority of its time moving through the facility, selecting the appropriate control method/philosophy can greatly improve a manufacturing process. ICMS can offer system control selection, design, programming and field start-up .

SENSORS	**TRAFFIC CONTROL**	**PRODUCT TRACKING**
PRODUCT TRACKING	**BAR CODES** **VISION SYSTEMS**	**PLC**
DISTRIBUTED / LOCAL CONTROL	**PALLETS - BOXES - TOTES**	
MERGE CONTROL	**DIVERTING**	**METERING** **MAINTENANCE**

CUSTOMER PARTICIPATION

A sound relationship between customer and supplier is vital for a successful project. Customer / Supplier participation may be required in the following areas . (Based on Project Size/Complexity)

- Requirements specification documents will be submitted to the customer for review. The customer must review and return comments or approval within the time frame specified to ensure a successful completion date.
- In the event the system supplied interfaces to a higher or lower level system, interface specification documents will be prepared to firmly define the interface requirements. These documents will be jointly agreed upon.
- The requirements, design, interface specification will firmly define the supplied system. Approved reviews will be maintained and documented, thus ensuring the customer receives the desired system at acceptance time.

DOCUMENTATION

The degree of documentation is based on the size and complexity of the system and customer requirements. Documentation is broken down into the following areas.

SYSTEM DOCUMENTATION
- Block diagrams—System Overview
- Schematics

PROGRAM DOCUMENTATIONS
- Textual Descriptions / Variables Defined

USER DOCUMENTATION
- Operator Manuals

SOUND DOCUMENTATION = MAINTAINABILITY /EXPANSION

ACCEPTANCE TESTS

Acceptance tests are performed to assure the final system meets the defined system requirements and the system functions properly.

The acceptance test performed will vary depending upon the system under test. The following guidelines are used in developing the acceptance test.

- IDENTIFICATION
  Customer notified of completion of the system in accordance with the system requirements document.

- OBJECTIVE
  The purpose and scope of the test is defined.

- ENVIRONMENT
  Personnel and product to run the test is defined.

- TEST CONDITIONS
  - area of system under test (defined)
  - operation (manual / auto etc.)
  - data collected—documented results

- TEST DESCRIPTION
  - step by step description of test execution
  - input required / output expected

ICMS PROFILE: PROCESS CONTROL

Process control involves the control of variables to a set points during normal operation and maintaining these variables (heat,flow,time,temperature) or progressing an operation through various steps such as mixing, heating , and filling. Whether the process is continuous or batch, the introduction of an automatic system can improve product quality, increase capacity of equipment by shortening delays between steps, and provide greater flexibility of manufacturing variations of product. ICMS can structure the appropriate control strategy and design the control software to meet system needs.

SYSTEM PLANNING   CLOSE COUPLING   PARALLEL OPERATION

SYSTEM PARTITIONING   ALARM CONDITIONS

LEVEL 1 ———— LEVEL 2 ———— LEVEL 3 ——— LEVEL 4   CORRECTIVE
INTERLOCKS COMPUTATIONAL   MANUAL   AUTOMATIC   ACTIONS
         .   DATA   CONTROL   CONTROL

SERVICE LOGIC   START-UP/SHUTDOWN   MAINTENANCE