

MONARCH

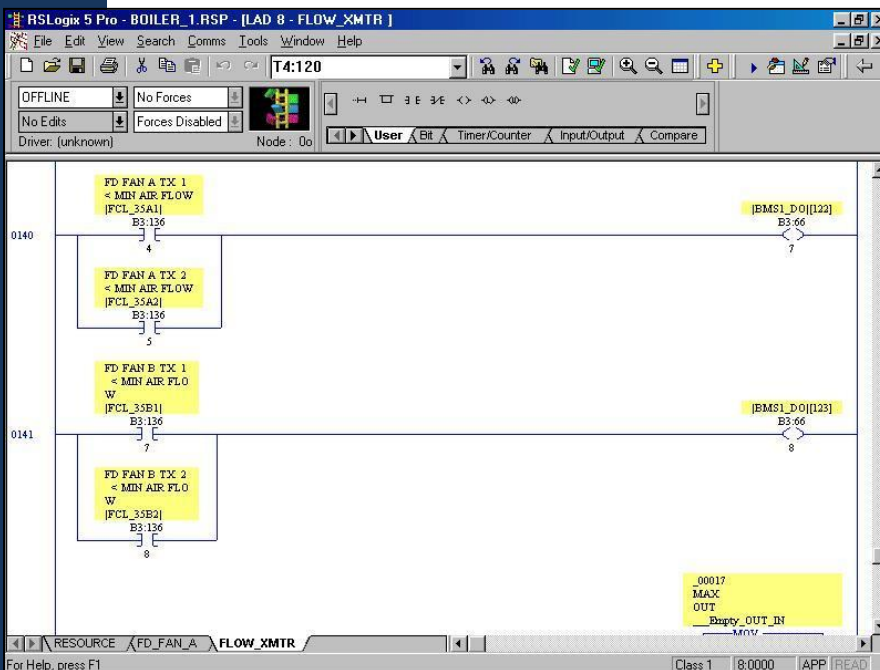
CONTROL SYSTEMS MIGRATION

Intuitive DCS Migration Solution from Legacy APACS® / Quadlog® to Advanced Control Systems

MONARCH Provides a Cost Effective, Automated, Low Risk Solution for Migrating to State-of-the-Art DCS and Advanced Enterprise Control System Technology.

With ever-increasing numbers of process automation systems reaching the end of their useful lives, owners are faced with the challenge of dealing with their installed base and their ongoing maintenance & growth requirements. Control system migration strategies are becoming important considerations for plant performance and the adaptation of new automation systems.

OVERVIEW



DMI Engineering Inc. proudly introduces new software, MONARCH, for easy upgrade of legacy Quadlog/APACS control systems to advanced technology, including the latest generation of distributed control systems. DMI offers a step-by-step migration plan that includes service, applications, and a strong set of automated conversion tools that ease the process of migration for end users while allowing them to retain the functionality and look and feel of their legacy systems.

Using MONARCH'S supported migration approach a **PLC upgrade can often be accomplished without having to replace existing field wiring, termination assemblies, system enclosures, or power supplies.** With proper upfront planning, database conversion, and off-line testing, the actual system switchover and validation can be accomplished in hours, with minimal - if any - costly process downtime.

MONARCH also incorporates a philosophy of continuous improvement and operational excellence. DMI realizes that an effective migration solution should be complemented by significant service and solutions offering a complete system integrator package.

MIGRATION STEPS

MONARCH automatically and accurately migrates APACS & Quadlog configurations to other, newer platforms. These previous configurations have often taken 100's and 1000's of hours to develop manually. MONARCH leverages this effort and virtually eliminates human error in the migration process. Checking and validation of the new configuration are minimized and guided.

The following functions are automatically handled by MONARCH, based on the configuration file provided for an APACS or Quadlog system:



RE-SPECIFICATION OF HARDWARE

Based on the existing APACS or Quadlog system components and architecture, MONARCH will generate system architecture drawings for the target control system, complete with Bill of Materials and Part Numbers.



MIGRATION OF I/O

All existing I/O, tag names, and tag descriptors will be mapped to the target control system.



TRANSLATION OF CONTROL SYSTEM CONFIGURATION

APACS and Quadlog logic sheets (Function Block, Ladder Logic, Sequential Function Charts) will be translated to the configuration environment of the target PLC. In the event that the target PLC does not support Function Block or Sequential Function Charts, the target PLC will receive Ladder Logic versions of these sheets. Sheet Descriptors and Comments are maintained.



CONVERSION LOG

MONARCH will give a conversion log detailing all the steps that were undertaken to arrive at the new configuration. Tabulation is given of APACS/Quadlog vs. Target System details, including Hardware, Variable Names & Descriptors, I/O types, Names & Descriptors, Logic Sheets, and Function Blocks.



VALIDATION ASSISTANCE

Since the final system will need to be manually checked and validated, the system will generate checklists to assist in this effort, including I/O check sheets, Variable Name cross-references, Logic Sheet Functionality sign-off sheets, and others.

SCREENSHOTS

Left:
Quadlog network tree.

Below:
Migrated ControlLogix network tree.

Resource - RIVER_IN <RES>

RESOURCE_BKLS - RESOURCE_BLOCKS <FBD>

AREA - AREA <FBD>

AIR_SCOUR - AIR_SCOUR <LLD>

DESILTER - BACKWASH <LLD>

P4_P5_PUMPS - CHARGE_PUMPS <LLD>

LIC005 - LIC005 <FBD>

INPUTS - INPUTS <FBD>

OUTPUTS - OUTPUTS <FBD>

CHLORINE - P3_PUMP <LLD>

POWER_FAIL - POWER_FAIL <LLD>

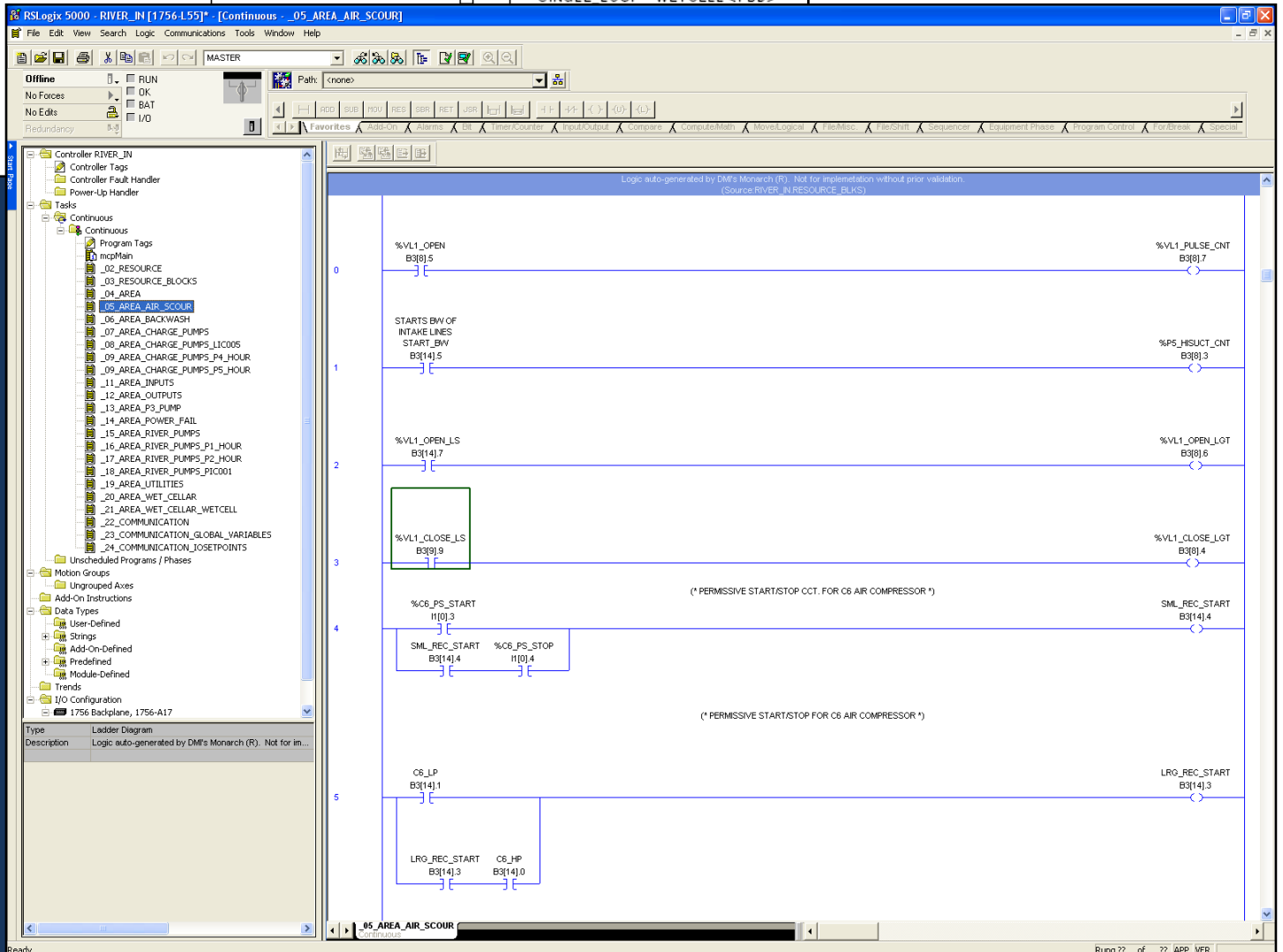
P1_P2_PUMPS - RIVER_PUMPS <LLD>

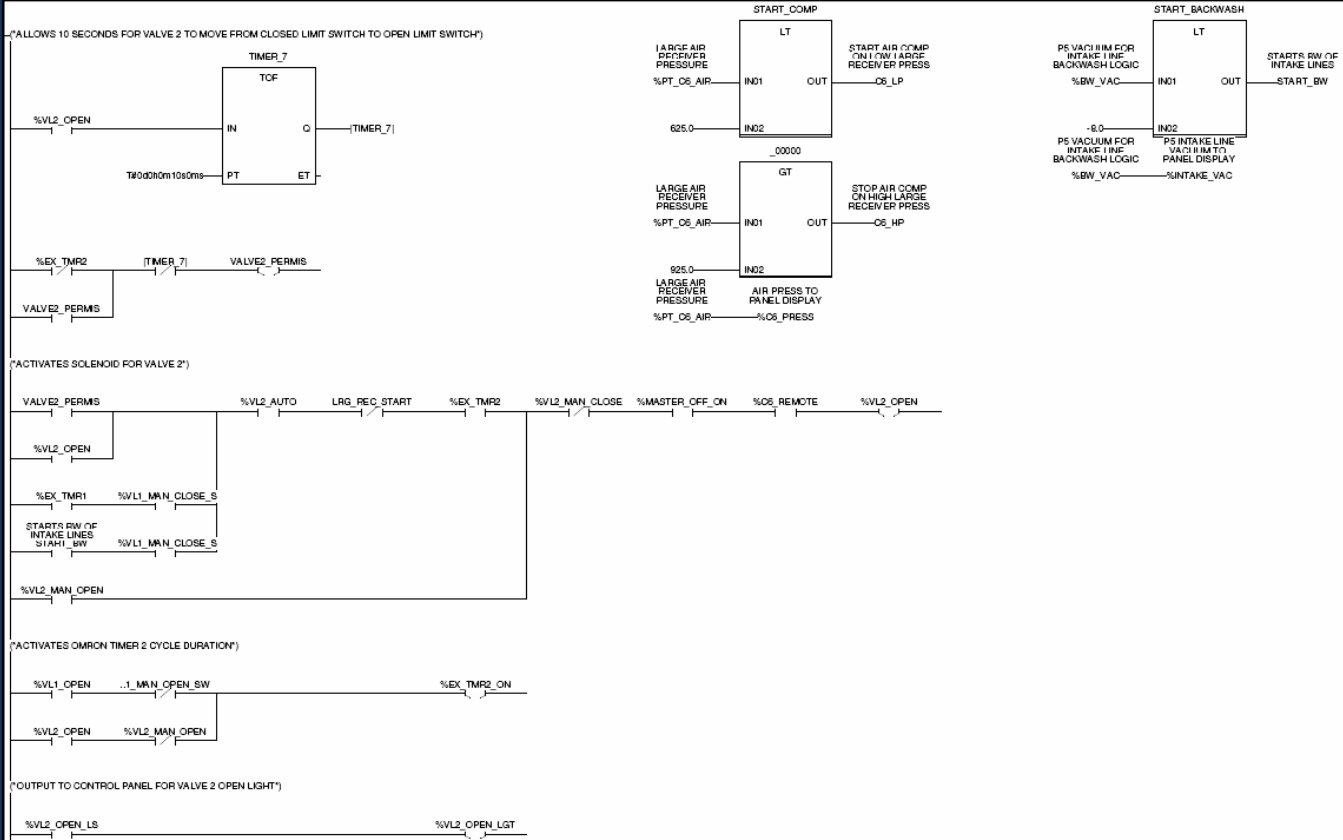
PIC001 - PIC001 <FBD>

UTILITIES - UTILITIES <LLD>

WET_CELLAR - WET_CELLAR <FBD>

SINGLE_LOOP - WETCELL <FBD>





Left:
Sample
Quadlog
logic.

Below:
Migrated
Control
Logix.

05_AREA_AIR_SCOUR - Ladder Diagram

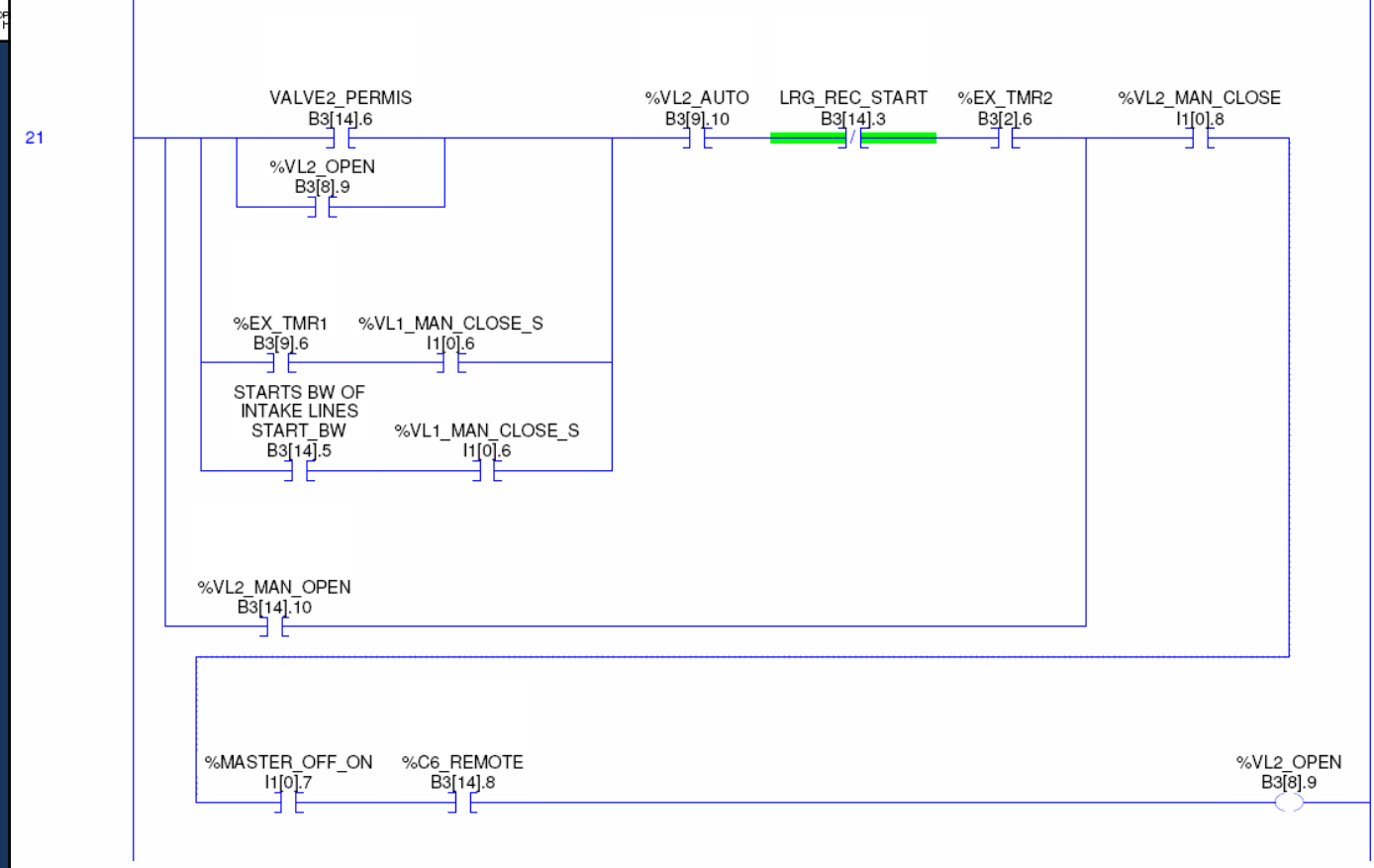
11/9/2009 2:04:08 PM

C:\Data\MonarchConversions\2009\Mitsue\RevisionA\RIVER_IN.ACD

OUTPUT TO RIVER_IN:Continuous:Continuous
Total number of rungs in routine: 25

Logic auto-generated by DMI's Monarch (R). Not for implementation without prior validation.
(Source:RIVER_IN.RESOURCE_BLKS)

(*ACTIVATES SOLENOID FOR VALVE 2*)



ADDITIONAL OPPORTUNITIES

In addition to control system replacements, MONARCH has been used by major clients during the development of their DCS and plant-wide simulators. Where a Quadlog control system existed between the DCS and their plant, MONARCH was used to generate control configurations that their plant simulator was able to execute. Since the conversion process is automated, ongoing updates to the live control system can be immediately reflected to the simulator.

MIGRATION SOLUTIONS

DMI provides options for modernization; from a simple component upgrades to a total system change-outs. DMI will assist you with:

- Conducting front end engineering and design studies
- Preparing Business Case for modernization/migration
- Assisting in the process of supplier selection
- Providing path for operational excellence in modernization /migration using MONARCH
- Providing technology, consulting, support and educational resources for end-users
- Post migration testing and validation

Teaming up with solution partners is a key aspect of DMI's migration strategy. The deep knowledge of legacy systems that a solution partner has becomes invaluable to the DMI migration team and becomes key to ensure successful project execution.

ABOUT DMI ENGINEERING

DMI Engineering is an Engineering and Operations Consulting Firm providing support for operating industrial clients. Services include:

- Design Engineering with specialization in Instrumentation and Controls
- Software and Database Solutions, including web-served applications
- Project Services, with on-staff Project Management Professionals (PMPs)

Through providing this service, our clients can focus on their core competencies and excel in their line of business. Our target is to achieve operational excellence for our clients by making each client's vision ours.



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