



FOR INDUSTRY

Value Driven Control System Migration

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DAK Americas – At a Glance

Headquartered in Charlotte, NC



- DAK Americas is a subsidiary of Alpek S.A. de C.V., a business group of Alfa S.A.B. de C.V., a \$17 billion Mexican conglomerate
- The Cosoleacaque Mexico facility manufactures PET resins







VISION, EXPERIENCE, ANSWERS FOR INDUSTRY

- NovaTech D/3[®] DCS was originally installed in 1995
- While the system has operated reliably for 20 years, we concluded a preemptive upgrade was appropriate due to:
 - Hardware and software obsolescence
 - Limited spare parts
 - Inability to leverage newer control technologies
 - Potential for major manufacturing disruption
 - Limited capacity to add new I/O
- Operational challenge reduce production downtime



Timeline





Risk Assessment

- DCS situation had the potential to result in a major manufacturing disruption with limited response capability (force majeure)
- Cost of doing nothing vs. cost of upgrading
 - XXX mt/day * \$/mt * XX days = \$ M sales loss
 - XXX klb/day * \$/klb * XX days = \$ M margin contribution loss
 - Raw material consumption loss = XXX mt
 - Non-compliance contract to customers
 - Potential permanent customer loss
- Significant effort required to sell the project internally multiple levels of management throughout the company



Process Control Architecture and Prior Status





Prior System





PE STATUS BACKUP	DCM2R INTT	
	CITED UNIT!	8 STATUS
CM RUNNING NONE	ETHERNET	PCH NOT SELECTED
ICM RUNNING NONE	LINK 1 ONLINE	
ICM RUNNING NONE	TOKEN-RING CARD R ONLINE	SYNC STATUS AUTOSYNC ENABLED SCAN IN SYNC
PCM RUNNING 4		
PCM RUN-SEL 3		DEVSCAN IN SYNC SEGEX IN SYNC
PCM RUN-SEL 6		DVQUE IN SYNC
PCM RUNNING 5		
PCM RUN-SEL 8	List Station in the	
PCM RUNNING 7	I/O SUMMARY MRIOC OK DROPS OK	AC INPUT A OK
	Manager.	FOR ADDITIONAL I/O INFORMATION PRESS:
	Contraction of the second	CH> MODICON I/O
P P P P	CM RUNNING NONE CM RUNNING NONE CM RUNNING 4 CM RUN-SEL 3 CM RUN-SEL 6 CM RUNNING 5 CM RUNNING 7	CM RUNNING NONE CM RUNNING NONE CM RUNNING 4 CM RUN-SEL 3 CM RUN-SEL 3 CM RUN-SEL 6 CM RUNNING 5 CM RUN-SEL 8 CM RUNNING 7 Z/O SUMMARY MEZOC OK DROPS OK



Vendor Evaluation Criteria

- **Downtime** → From delivery through startup
- Migration Cost → Direct costs associated with the implementation and operation of the new system
- **Transition** \rightarrow Impact on the operations and personnel
- Financial Strength / Longevity → Financial profile and ability to provide support for 20+ years
- **Support** \rightarrow Response time and cost
- **Functionality** \rightarrow Ease of operation and administration
- Responsiveness → Supplier responsiveness (turnaround time and quality) during evaluation stage



Solution

- After an extensive evaluation, DAK decided to upgrade the existing D/3 system to the latest version of software, hardware and I/O
- Fit 8000 I/O into same space as Quantum I/O
 - Utilized existing I/O cabinets
 - Only DO field wiring was disconnected
 - Developed specialized DO termination block, minimizing the potential for wiring errors
- By utilizing custom I/O assemblies, 2700+ I/O points in 33 I/O cabinets were replaced and rewired in 7 days
- Spanish operator interface
- Preserved all control programs and graphics





New System









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Results

- ✓ 25% increase in I/O capacity
- Improved reliability (spare parts, support)
- Enhanced integration with other plant equipment
- Added simulation and operator training capabilities
- Improved server compatibility with all hardware / software
- Reduced need for human intervention
- ✓ More efficient administration
- ✓ Sets the stage for future enhancements, e.g., loop tuning



Lessons Learned

- Site readiness
 - All plant functions need to be actively engaged throughout the planning phase
 - Be prepared for surprises, issues do come up
 - Consider all sub-systems, e.g., furnace
 - Field wiring identification procedure
- Vendor requirements
 - Good to have a dedicated project team
 - Hardware and applications engineering, field installation
 - Project Manager need a point person on both sides

Best practices

- Sub-assemblies for I/O equipment reduced installation time
- Create designs that minimize wiring changes
- Ensure I/O checkout is properly resourced very demanding
- The sooner you can get started, the better





Vision experience answers

Thank You!