Wonderware United Kingdom

Success Story

Food & Feed

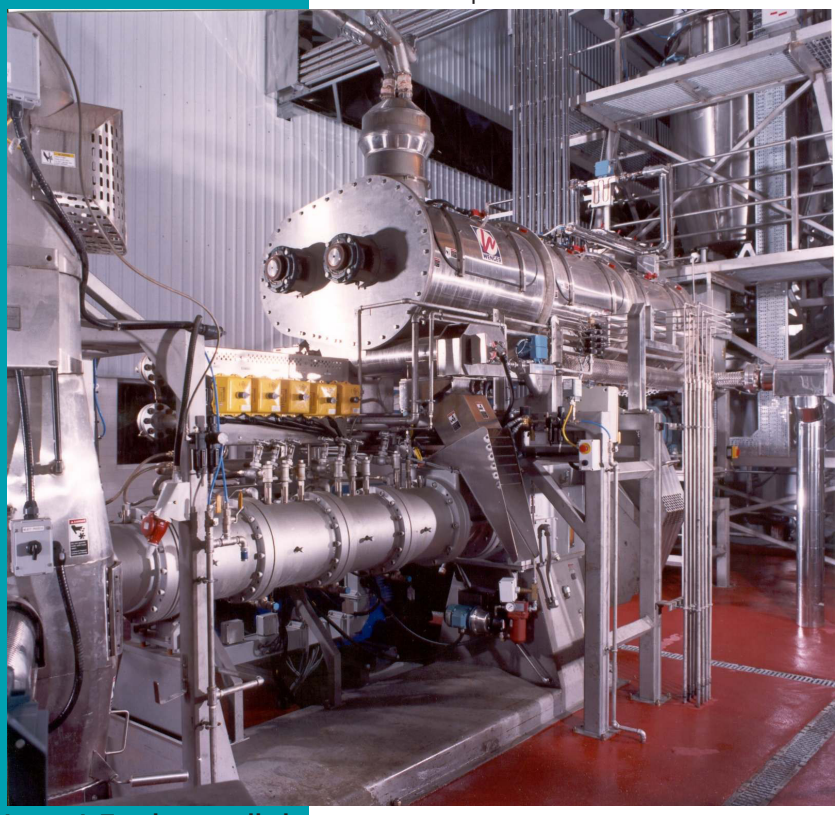
InTouch

Unique farm diversification results in advanced automation

Golden Acres as it is today is the result of a nine year diversification programme, taking the company from arable farming to becoming a major independent manufacturer of quality dry pet food. Located in West Lancashire, Golden Acres has utilised its success with SCADA-controlled extruders as the basis for full plant integration and a business based on detailed cost control through enhanced production insight.

"the true benefit of traceability is cost control"

Nothing that can be said about Golden Acres can be described as ordinary, from the management's vision to the variety of products that they manufacture. The need to diversify was seen over nine years ago. A decision was made to manufacture pet food after rejecting many alternatives some of which were too radical or impracticable.



Wenger InTouch controlled extruder

Golden Acres does not have a high street brand name, they manufacture for others. Their business is to develop, customise and supply prime pet food products which their customers can retail with confidence. Quality is high on their list, together with repeatability and traceability. Traceability is a seamless audit trail from finished product through the process to raw material supply. They simply have to be sure that they are producing to the correct, agreed formulation on behalf of their customers. This is an increasing requirement for the high-value products that discerning end-users are now purchasing for their pets. In this market Nutritional and Ingredient information is just as relevant as for human food.

Production began by connecting an extruder to the mechanical power outlet of a tractor. It was not long before business levels dictated that a better solution was required. The company invested in an electrical extruder from one of the world's largest manufacturers, Wenger Inc (USA). The first extruder was PLC controlled with a traditional operator interface. This proved to be a success and another extruder was purchased from Wenger, this time with Wonderware's SCADA product InTouch supervising the logic controller. The advantages of controllability and product consistency provided by full computerised control were readily evident to the company.

The process of manufacturing dry pet food at Golden Acres is greatly assisted by production of wheat, oats and barley from over 2,500 acres of arable land of the farm. Grain is supplied to the production facility storage bins, in simple terms it is milled, mixed, ground, blended, extruded, coated and packaged. Production at Golden Acres is considerably more complex than this simple model owing to the high variety of and high number of product types; they have to consistently produce quality

products from thousands of recipes and thousands of ingredients.

Given the obvious advantages that had been experienced through InTouch on the extruders, the company looked to take the same technology to the other processes. This was driven by the same business needs and benefits being required throughout the operation.

When this expansion programme was initiated Leeds-based system builder X Controls was selected to undertake this work. The company was an authorised SolutionsPT integrator therefore had expertise in the application of Wonderware technologies; and also had the IT and Integration skills to take the required broader view to automate and integrate other processes and systems.

The Golden Acres "Line C" had a large Wenger extruder and integrated milling, the extruder producing finished and semi-finished product that would be re-blended in some of the more complex recipes. One of the key requirements was to efficiently manage the large variety of products that Golden Acres produce, the key to this was to have all the required information in one database, avoiding duplication of information, revision level and data synchronisation problems.

At the heart of the integration requirement was the Wenger extruder. In an extruder two large screws compress and heat the grain and the resulting cooked product is then extruded through a nozzle to produce the forms required. This is a complex control task to deliver repeatability, product texture, nutritional guarantees and production efficiency. The need to integrate the control features within the extruders to the rest of the plant required X Controls to go the Wenger plant in the US to become familiar with their fully developed control software.

Having done this X Controls was then capable of delivering maximum integration benefits from the mill, extruding, coating and packaging processes. The business was at the same time growing and therefore new requirements appeared as the work was being done. A long standing working relationship has developed between the companies and a thorough working knowledge of the plant has been established by X Controls.

The integration programme required solutions to Golden Acre's total vision of their business requirements. This included a single source for Bill of Materials (achieved through integration with the financial system), off-line scheduling as a pre-scheduling stage to determine production loading and optimisation (this is currently subject to production operator interaction

Operator consoles

The utilisation of technology to make direct business benefits for both Golden Acres and their customers is exemplary.

driven by real-time events, the next stage will include full scheduling that takes into account manufacturing events). Stringent Traceability requirements required schemes involving automatic reading and printing of barcodes as a further necessary integration issues. Cost control through capture and feedback of data from production was also needed.

The operation has its own laboratory on site where nutritionists ensure that the balance of proteins and energy sources, together with essential vitamins and minerals produce the exact product that is required. All data is available from, and archived in, an electronic database. Release of product from the facility is controlled by the result of the laboratory testing.

"the true benefit of traceability is cost control"

Golden Acres soon realised that traceability allowed extra insight into every detail of the operation, resulting in a powerful tool to manage the business. Everything is recorded, allowing real data to be available for any management report that is required. From this data "true costing" can be conveniently obtained.

Technology, control to integrated business system...

The extruders are controlled by PLC's that are supervised by Wonderware InTouch SCADA, this being an advanced OEM application of the product by Wenger. The other parts of the plant are integrated together by additional InTouch systems; these perform integration functions and allow operation of input facilities (weigh scales, routing and storage) and output facilities (packing, check weighing, and warehouse data interface). At the core of the system is Microsoft® SQL, this acquires all the data in the form of Tags from the InTouch nodes, thus detailed information can be reported of any aspect of production. Key to handling the traceability trail (and ensuring correct dispatch) is the labelling of pallets and other supply units. The system produces comprehensive print-on-demand labelling through the IMS (Integrated manufacturing System) that contains full information about the product, its destination and genealogy code. Additionally, digital photographs are taken by an integrated camera of all shipments as further confirmation for traceability.

Operating this complex facility requires the process "to know where everything is", some components being bulk commodity others being high value additives. With the system that is installed all components and ingredients are tracked, a major contributor to schedule adherence.

One noteworthy and very obvious aspect of one of the X Controls supplied InTouch nodes is the use of a 42" plasma display as an operator interface. This display can be readily seen from a distance, allowing operating decisions, and alarm annunciation and acknowledgement to be made through remote IR control.

Alongside the SQL database is Sage Line 100, this accounting system has a full suite of manufacturing modules that provide the guiding requirements for Golden Acre's production. The core Sage functionality is retained and enhanced to meet Golden Acre's business requirements by close integration with the real-time, site-wide IMS system. The schedule information is received by SQL and is processed into single production steps that are required by operators. Which job is scheduled to be run currently will become fully automated, but for now there is a choice of immediate jobs that "can be run", the operator making the most appropriate selection according to conditions prevailing at that time.

The complete 2500 acres of the farm provide a unique topography for technology to be deployed. All the previous farm buildings are used in the business, these being naturally distributed across the land. A fibre optic backbone has been installed for all communication requirements; this in turn has wireless nodes that allow full advantage to be made of mobile devices.

The utilisation of technology to make direct business benefits for both Golden Acres and their customers is exemplary. The current programme, IMS (Integrated Manufacturing System) with X Controls uses the new Microsoft.Net technology to better integrate all aspects of the business into a single consolidated architecture. This delivers a tool for complete management insight to processes and detailed costing information. This powerful tool will ensure the continued success of the Golden Acres as new markets, new customers and new business are developed.

§

Wonderware UK wishes to thank the following companies for their valued contribution to this success story...

Golden Acres:
www.goldenacres.co.uk

XCL Technology Group
140 Aberford Road, Woodlesford, Leeds, LS26 8LG
Telephone: 0113 2880111
www.xcontrols.com

Wonderware®
United Kingdom

© 2009 by SolutionsPT Ltd. All rights reserved. No part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), or for any purpose, without the express written permission of SolutionsPT Ltd.

Invensys, Wonderware, ArchestrA, InTouch and SCADAlarm are trademarks of Invensys plc, its subsidiaries and affiliated companies. All other brands and product names may be the trademarks or service marks of their respective owners. Wonderware United Kingdom & Wonderware Ireland are trading names of SolutionsPT, an independent Wonderware software distribution partner. All rights reserved.

Contact SolutionsPT for information about software products for industrial automation.

SolutionsPT
Wonderware United Kingdom and Wonderware Ireland, Unit 1 Oakfield Road, Cheadle Royal Business Park, Cheadle SK8 3GX
+44 (0)161 495 4698

info@wonderware.co.uk www.wonderware.co.uk

2009-06-GoldenAcresv2