

Take a look at the process adopted by two companies separated over 7,000 miles to bring the largest bioethanol facility online in Argentina

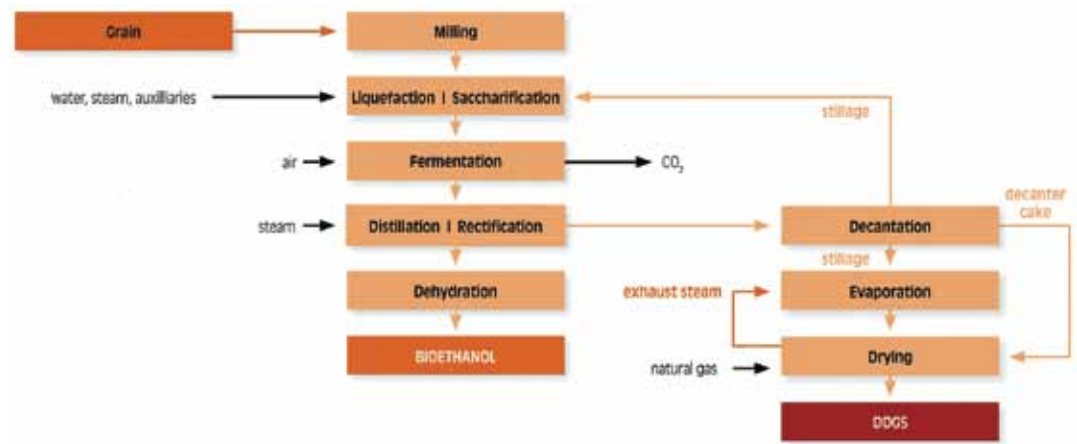
Grand designs

When bioethanol producer Promaiz planned to construct the largest facility in Argentina, it enlisted the help of Austria-based technology provider Vogelbusch. The plant recently began operations and this is its story of realisation.

Picking a partner

Biofuel production has taken off in Argentina. Following the introduction of mandates for fuels from renewable resources, investments in further installations have been made, utilising the country's abundant grain resources. Argentina, which has predominately produced biodiesel, has a rising output of grain-based fuel ethanol which is mainly used for direct blending with petrol.

Promaiz decided to bring new ideas to its agribusiness chain and to install a plant for the production of ethanol and animal feed by-products from corn. Alejandro Roca, a small town some 300km



The Vogelbusch bioethanol process

away from the region's capital Cordoba, was chosen as the location for a plant capable of a daily output of 420,000 litres of anhydrous fuel ethanol.

Promaiz management then set about investigating different technologies and respective contractors available on the market. After studying the economic situation it finally came to the conclusion, that energy demand plays a key role in producing ethanol from corn.

It was decided Vogelbusch,

which provides integrated, energy efficient processes for ethanol production, was the appropriate partner for the project.

It's good to talk

Vogelbusch bioethanol plants achieve their energy efficiency through proprietary systems such as the Multicontinuous fermentation, multipressure distillation coupled with direct feed to the molecular sieves for

dehydration, and the multi-effect evaporation, driven by waste heat from the dried distillers grain with solubles (DDGS) dryer.

Vogelbusch's continuous fermentation achieves high alcohol concentrations and excellent yields continuously over extended periods of time. The mash is distilled in a three column, multi-pressure distillation system using every kg of steam three times. Further reduction of energy consumption is obtained by recycling stillage.

In line with Vogelbusch's principle to customise designs for optimum process economics, the Promaiz process was no different and regular meetings between the two companies took place in both Argentina and Europe.

Promaiz and Vogelbusch decided, when discussing emissions, to base elements of the project, such as the exhaust scrubber and the integration of thermal oxidation in the DDGS drier, upon on the highest European standards in order to establish an energy-efficient, environmentally benign and modern process.



Unexpected challenge: visiting sandstorms didn't halt the project's progress

Bringing the concept to life

During planning, Promaiz went through several concepts of realisation, from turnkey to build-to-order, before finally deciding to act as a general contractor supported by Vogelbusch.

Vogelbusch was commissioned to deliver basic and detail engineering of all mechanical components. Additionally layouts for pipes and vessels were compiled. Support and consultancy during the purchase of equipment, as well as supply

of key components, training of personnel, process management, was entrusted to the Austrian company.

Tell the people what it's about

It is obvious advanced processes demand increased know-how in operation. Promaiz attached importance to hiring well-educated personnel with a view of further increasing their capabilities via specific training.

During the period of mechanical construction, the heads of the different plant

departments were invited to on-site sessions at another plant which was already operational, mainly for both theoretical and practical training from both Vogelbusch technologists and the personnel of the ethanol plant.

Back in Argentina, during the plant start-up, all operating procedures were conducted step-by-step. After a successful start-up, a final two day theoretical course on upstream and downstream processing was held.

Challenges

Apart from the usual difficulties which can be faced during the construction and starting-up of a plant, planning and execution at almost opposite places on Earth offer special challenges. Be it logistical or legal obstacles, regular contact and open communications between partners are matters of consequence when aiming to stay on a time schedule.

Trading issues, for example, require flexibility and dependability between the customer and the vendor. It also makes it easier to find the most effective contractors for mechanical and electrical engineering in the respective countries.

Promaiz decided to purchase process control and measurement equipment in-house, but to assign the programming of the operating software to Vogelbusch. This necessitated an exact design matching on-site during construction.

Vogelbusch had developed and tested the control functions prior to installation in order to save time on-site for testing and proper implementation of the system. This concept enabled parallel tests and predetermination of control parameters even though some parts of the plant had not been fully equipped.

It can be challenging for the engineering enterprise when a customer decides to purchase

process equipment on their own, especially as process control equipment parts must be chosen properly. Promaiz kept close contact when equipment was acquired however to help ensure a smooth startup of the process.

An engineering company, when considering working on projects overseas, should take into consideration the invariable surprises that may crop up. This thought proved true enough for this bioethanol project in Alejandro Roca, which did suffer one unexpected situation of powerful sandstorms reaching the site at a power usually associated with those found closer to deserts.

Achieving results

Basic engineering started in September 2011 and, approximately one year later, construction of the buildings and equipment installation had begun.

During the following eight months practically the whole plant was built. Starting from the baseplates, casted in October 2012, inclusion of the main equipment was finished around the end of April 2013. In the beginning of May instrumentation, software implementation, loop tests and water-vacuum-steam tests commenced almost in parallel and completed during June/July.

Finally, after overcoming all the challenges, the first maize kernel entered the mill on 21 July this year. During the first week the bioethanol plant operated at 50% capacity, followed by increases to 70%, 90% and finally 100%. The first drop of alcohol was also produced in July and from August the Promaiz bioethanol plant went to full capacity. ●

For more information:

This article was written by Emmerich Haimer, technologist of Vogelbusch Biocommodities, hae@vogelbusch.com



The plant is now operating at 100% capacity