



Application Project: Pilot Toll Crushing Plant Case Study – Mechanical Oilseed Crushing

Project:

Greenfield Site
Pilot Plant
Tolling Operation
Mechanical Crushing

Location:

MIDIKA International (MIDIKA)
Salamanca, Guanajuato, Mexico

Requirements:

Ability to Process Various Seeds / Nuts
Ability to Hot Press / Cold Press
Small Production Runs
Capacity Up to 1 Ton Per Hour (TPH)
Residual Oil (RO) 6-8% ⁽¹⁾

⁽¹⁾ RO is dependent on product or Customer requirement.

Anderson Products:

SUPER DUO™ 600 EXPPELLER® PRESS
DOX™ 450 (Dry Oilseed Extruder™)
ECOMEAL™

The Opportunity:

There are many methods for mechanically crushing seeds and nuts. The method depends on product type, project scope, end market and Customer requirement.

MIDIKA wanted to build a new, pilot mechanical toll crushing plant capable of crushing various products to service their Customers' needs for research and development, specialty products and long production runs.

MIDIKA turned to the Anderson Oilseed Division Team to help design a pilot plant to fulfill their needs for mechanical crushing of various products, meal production and oil clarification.

The Solution:

The Anderson Oilseed Division Team of Sales, Project Management and Engineering worked together with MIDIKA to design and build a new, flexible, pilot mechanical toll crushing plant capable of processing various products using Anderson's engineering, application knowledge and proprietary technologies.

To achieve the project requirements, Anderson turned to one (1) of its new, **SUPER DUO 600 EXPPELLER** press machines and one (1) **DOX 450** machine.

The **SUPER DUO 600** is the latest version of the **SUPER DUO 33**, which Anderson has been manufacturing for over 75 years. The **SUPER DUO** is Anderson's most versatile piece of mechanical crushing equipment capable of crushing many products like copra, palm kernel, desiccated coconut and cotton seed.

For products like Soybean, Canola and Sunflower, the **DOX 450** was selected for its high-shear and short residence time for drying, cooking and shearing product without degrading protein quality while destroying harmful enzymes.

The Result:

Over the course of about 12-months, MIDIKA's greenfield site in Salamanca, Guanajuato, Mexico was taken from concept to functioning pilot mechanical toll crushing plant capable of processing up to one (1) TPH of product.

This plant incorporates new ideas in material handling, extrusion and pressing technologies to achieve Customer requirements for mechanically pressed products. This, in combination with on-site laboratory capabilities and the lowest total cost of ownership as measured by uptime tonnage produced has allowed MIDIKA to market and sell their tolling capabilities for commercial use as well as research and development opportunities.

Anderson Application Technologies:

Anderson's proprietary process utilizes technologies from various Anderson Vendor Partners in addition to Anderson's own technologies including and not limited to:

SUPER DUO 600 EXPPELLER PRESS

The **SUPER DUO 600** features advanced engineering and manufacturing platforms optimized to provide the highest oil return whether hot pressing or cold pressing of various types of seeds and nuts. The machine is capable of processing up to one (1) TPH producing RO targets of 6-8%.

DOX 450 EXTRUDER

Built to be the best-in-class 0.5 TPH dry, extruder for enhancing oil recovery and meal nutrition, the **DOX 450** features advanced engineering and manufacturing platforms optimized to provide the highest oil return with the lowest energy use.



The Anderson Application Process:

After meeting with MIDIKA International and their General Contractor to understand their needs, the Anderson Oilseed Team went to work designing a new, flexible mechanical toll crushing plant. Over the course of several months, Anderson Engineering worked in conjunction with the MIDIKA Team to develop a Conceptual Design, Preliminary Design and Final Design before ground was ever broken. Careful attention was paid to safety, building and regulatory codes, equipment layout and material flow to have a safe and efficiently run plant capable of handling various types of seeds and nuts with varying types of process and Customer requirements. Having a flexible process was a critical design requirement. Once the Final Design was established, Anderson Project Management and MIDIKA executed the Design Plan. Throughout the execution of the plan, communications, meetings, checks, and signoffs were conducted to ensure the success of the project. With the Design Plan complete, the plant was ready for commissioning.

During dry commissioning, all plant operations were checked without introducing product to the system to ensure proper equipment operation. Once completed, wet commissioning commenced with product flowing through the process in steps. During these steps, checks were taken to ensure proper inputs and outputs from the various points in the system before bringing the entire system online. Throughout commissioning, training was conducted by Anderson and Anderson Vendor Partners to ensure a smooth hand-off to the MIDIKA Team.

MIDIKA is a toll & pilot crushing plant built for performing research and development, specialty seed crushing and full-scale oilseed production. The plant is designed for flexibility as the mechanical crushing process will vary depending on what product is being crushed and what Customer requirements need met. Equipped with an internal laboratory, MIDIKA possesses the necessary capabilities to conduct the required analyses on-site for testing purposes. The **SUPER DUO 600** gives MIDIKA the greatest flexibility for their Customers because of its ability to process many different types of seeds and nuts in addition to its ability to hot press or cold press products in a small footprint. This is achieved by passing the product through a vertical **EXPPELLER** press immediately followed by a horizontal **EXPPELLER** press. It is the combination of these two presses operating in series that enables the **SUPER DUO 600** to be able to process many kinds of seeds and nuts. While the **DOX 450** gives MIDIKA the ability to produce Anderson's **ECOMEAL** and other types of products where meal nutritional value is important in combination with oil recovery and lower energy use.

MIDIKA International and Anderson are in partnership to offer training, mechanical toll crushing and research and development services to our Customers.

Anderson International Corp

With 135+ years of process experience, Anderson is an industry leader and a trusted partner in the various markets we service, Mechanical Oilseed Processing, Solvent Oilseed Processing, Biofuels, Aqua Feed, Pet Feed, Feed Mill and Polymer around the world.

Anderson supplies a broad range of process solutions, equipment, OEM parts and services to assure safety, productivity, quality and sustainability.

For more information, visit www.andersonintl.com.

Follow Anderson on:



Anderson International Corp
4545 Boyce Parkway
216-641-1112 | 800-336-4730
www.andersonintl.com



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