



Application Project: Copra Crushing Plant Case Study – Mechanical Oilseed Crushing

Project:

Greenfield Site
Mechanical Crushing
Copra

Location:

Southeast Asia- Indonesia

Requirements:

500 Tons Per Day (TPD)
Residual Oil (RO) < 8%

Anderson Products:

SUPER DUO™ 33 EXPELLER® PRESS
HIVEX™ EXPANDER™
STACKED-COOKER-DRYER™

The Opportunity:

There are many methods for mechanically crushing copra. The method depends on project scope, end market and Customer requirements.

A large Customer in Southeast Asia wanted to build a new, mechanical copra crushing plant capable of crushing 500 TPD with copra meal RO levels below 8%.

This Customer turned to the Anderson Oilseed Division Team to help design the equipment capable of meeting their copra crushing, meal production and oil clarification needs.

The Solution:

The Anderson Oilseed Division Team of Sales, Project Management and Engineering worked together with the Customer to provide the equipment necessary for their state-of-the-art mechanical copra crushing facility in Southeast Asia using Anderson's engineering, application knowledge and proprietary technologies.

To achieve the 500 TPD and < 8% RO targets, Anderson utilized twenty-one (21) of its industry leading **SUPER DUO 33** machines paired with Anderson **HIVEX EXPANDER** and Anderson **STACKED-COOKER-DRYERs**.

The **SUPER DUO 33** has a unique design in the oilseed industry. Incorporating two (2) **EXPELLER** presses in a small footprint. One press is mounted vertically and the other horizontally. The machine is capable of rates up to 1 TPH and RO results of less than 8% for copra applications.

The Result:

Over the course of about 18-months, the Customer's greenfield site in Southeast Asia was taken from concept to functioning mechanical copra crushing plant capable of processing up to 500 TPD.

This plant incorporates new ideas in material handling, extrusion and pressing technologies to achieve the Customer's requirements for mechanically pressed copra meal and oil. This, in combination with the lowest total cost of ownership as measured by uptime tonnage produced has allowed the Customer to market and sell their products and capabilities throughout the region and world.

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 333 EXPELLER PRESS

The **SUPER DUO 33** features advanced engineering and manufacturing platforms optimized to provide the highest oil return whether hot pressing or cold pressing products. The machine is capable of processing up to one (1) TPH producing RO targets of 6-8%.

HIVEX EXANDER

The **HIVEX EXPANDER** is designed to rupture the oil containing bodies inside the oilseed and recover any oil that is released in the process to prepare the copra for the **SUPER DUO**.

STACKED-COOKER-DRYER

The **STACKED-COOKER-DRYER** conditions the copra meal prior to entering the **SUPER DUO** to maximize production and oil recovery.



The Anderson Application Process:

After meeting with the Customer to understand their needs, the Anderson Oilseed Team went to work building the equipment for their new, mechanical copra oil mill. Over the course of several months, Anderson Engineering worked in conjunction with the Customer to develop the equipment needed to meet their objectives. 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 processing 500 TPD of copra with less than 8% RO in the copra meal. Once the Final Equipment Design was established, Anderson Project Management went to work on this large project. Throughout the execution of the plan, communications, meetings, checks, and signoffs were conducted to ensure the success of the project. With the delivery of all the equipment 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, remote support was provided by Anderson to ensure a smooth plant start-up.

The Customer's plant is designed to mechanically crush copra. Plant operations start with purchasing, receiving, inspecting and storing locally sourced, copra. Sourcing copra is challenging due to the many avenues of supply with varying quality and processing standards. It is typical for copra to be mixed from various sources to help average out the variances in quality, copra processing and moisture to help with normalizing plant production and efficiency. From storage, the copra is conveyed to a cleaning system where debris is removed prior to further processing. This is of particular importance given the variation in supply quality combined with the potential negative effects on operations from some of the contaminants like sand and stones. Once cleaned, the copra is prepared for processing utilizing several steps including hammermilling, rolling and flaking. The hammermill step breaks down the copra halves for the rolling mill. Due to copra's high oil content of 60-65%, the hammermill is limited in reducing the particle size that it can produce. From here, the copra proceeds to the cracking mill, which further breaks down the copra for presentation to the flaking mill. The flaking mill provides the final sizing step of the copra to be used in production. Once prepared, the properly sized copra is sent to the **HIVEX EXPANDER**. Work is now applied to the copra to start removing oil from the copra prior to being sent to the **STACKD-COOKER-DRYER** and **SUPER DUO** system. The **STACKED-COOKER-DRYER** conditions the product for the **SUPER DUO**. The **SUPER DUO** takes the material and utilizes its dual **EXPELLER** press design to further reduce the RO content in the copra meal to less than 8%. The copra meal is then sent to a cooling bin before being processed by a hammermill to final End-User copra meal sizing requirements. The copra oil is sent through a screening and clarification process before it is stored for sale. The copra oil may require further processing depending upon the End-User's requirements.

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.

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