ANDERSON PROCESS BULLETIN

THE ANDERSON EXPANDER-EXTRUDER-COOKER™

The Anderson Expander-Extruder-Cooker consists internally of a discontinuous screw turning within a retaining tube, fitted with breaker bolts, which match the interruptions of the screw. The screw, when viewed from the drive end, turns in a counter clockwise direction and is driven by a "V" belt and sheave assembly.

The Expander is fitted with a variable feeding device of such size and range as to permit adequate feed rate changes to the Expander, as are indicated during processing. Between the metering screw and the Expander inlet, is a feeder screw which turns at a constant rate sufficient to maintain a fast, uniform, low level feed to the Expander downspout.

Positioned at the Expander discharge is a cutter assembly for the purpose of cutting the discharging material into uniform and easily handled lengths.

Water is added to the incoming dry mix material through a water line equipped with a pressure regulating valve and flowmeter which terminates at a special water injection valve located in the Expander tube. This water produces a moisture level in the dry mix suitable for conversion of the starch.

Sparge steam is added to the moistened material through a combination of special steam injection valves located in the Expander tube. This steam produces a temperature increase in the material sufficient to cause the starch conversion, and provides the expansive medium necessary to produce a product of low bulk density. In providing this heat, condensate is formed, which is taken into consideration when process water rates are established.

The Expander motor is electrically interlocked with the feeder screw and the metering screw motors, so that the Expander must be started first and will shut down the feeder screw and metering screw motors if it is inadvertantly stopped during operation. In addition, the equipment is inter-controlled by a current sensitive relay which will, at a preset condition of Expander motor load, stop the feeder screw motor and the metering screw. All functions will automatically restart when the Expander motor load decreases. This Expander motor load limiting device can be set for a range of trip values. Normally the trip value is about 90% of the applied motor full load current ratings. The wiring circuit is such that the relay will automatically restart controlled equipment at 88% of the trip-out value. This provides automatic protection of the Expander in the event of a malfunction in the water, feed, or steam systems.

A bulk density in the expanded material from 16 pounds per cubic foot and up, may be produced, depending upon the formula employed. It is the primary factor on which the expansion operation is judged. Expanded material, as it discharges from the Expander, will have a moisture content of 20 - 25%. A drying operation follows which lowers the moisture to 10 - 12% to produce a material ideal for subsequent storage.

Typically the Expander will require the following utilities:

Electricity:	**18 KWH per ton**
Steam:	**175 pounds per ton @ 150 PSI @ pressure reducing valve inlet**
Water:	**32 gallons per ton @ 115 PSI**

The drive for the Expander-Extruder-Cooker is of the V-Belt type and the Expander uses grease lubricated bearings, which require only minor periodic attention.

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