HOT DEHULLING

The ultimate dehulling system: Will produce "High Protein" meal, 12 months a year, even with hard to dehull 'new crop' beans.

HOT DEHULLING

PROCESS DESCRIPTION:

Before beans enter the ***Crown Hot Dehulling*** process they should be properly cleaned to remove sticks, pods, and trash. After cleaning, the beans enter the ***Crown Whole Bean Aspirator*** to remove loose hulls and field dust. The beans then enter the ***Crown Vertical Seed Conditioner 'VSC'*** to condition the beans by a slow heating process raising the temperature of the bean. As the bean temperature rises, the moisture of the bean migrates to the surface allowing the patented ***Crown Aspiration System*** to remove the moisture, drying the beans and softening the hulls. After the beans are properly conditioned in the VSC they enter the patented ***Crown Jet Dryer*** which injects heated fresh air and recirculates filtered hot air to shrink the hull, releasing the hull/meat bond. After the Jet Dryer the beans enter the ***Crown Hulloosenator®*** which uses chilled iron corrugated rolls to split the beans in half, which allows much of the soybean hulls to be removed without creating fines. The half beans and loose hulls then enter the ***Crown Cascade Dryer 'CCD'***. In the CCD, the half beans and hulls cascade downward releasing even more hulls. Re-circulated countercurrent heated air will lift the hulls separating the two products. After the CCD, the meats enter a double stand ***Cracker*** where the meats are sized for flaking. The sized meats and loose hulls enter the ***Crown Cascade Cooler 'CCC'***. As in the CCD, the meats cascade downward, releasing the last remaining hulls. The heavier meats fall out the bottom of the CCC as the lighter material is lifted with the countercurrent airflow. In the CCC, fresh air is introduced to cool the meats for proper extraction temperatures. The product lifted in the CCD and CCC is a combination of hulls and small meats that are separated in the ***Crown Secondary System***. A two deck ***Hull Screener*** is used to size the material in three cuts, hulls sent to hull processing, meats sent to flakers, and the middle cut, a combination of small meats and hulls. The middle cut is sent to a ***Crown Secondary Aspirator*** where the final fiber and hull fat separation is controlled.

BENEFITS OF CROWN HOT DEHULLING SYSTEM

- Can process beans with moisture up to 13.5 percent, producing high protein meal without installing expensive/high maintenance grain dryers, tempering silos, or rotary conditioners.
- Crown **Vertical Seed Conditioner 'VSC'**, heats, dries, and conditions beans preparing the beans for ultimate hull removal in only 30 minutes.
- Low electrical energy requirements.
- Patented '**Jet Dryer**' uses less power than fluidised bed and ensures uniform retention and aspiration for all beans.
- Gravity flow through system from jet dryers through conditioners.
- Low heating requirements due to recycled air.
- '**Hulloosenator'®** gives highly efficient separation of meats and hulls.
- Patented '**Crown Aspirator**' allows for highly efficient particle size distribution.
- System creates a minimal amount of fines with extended roll life.
- Low volume of air discharged to atmosphere.



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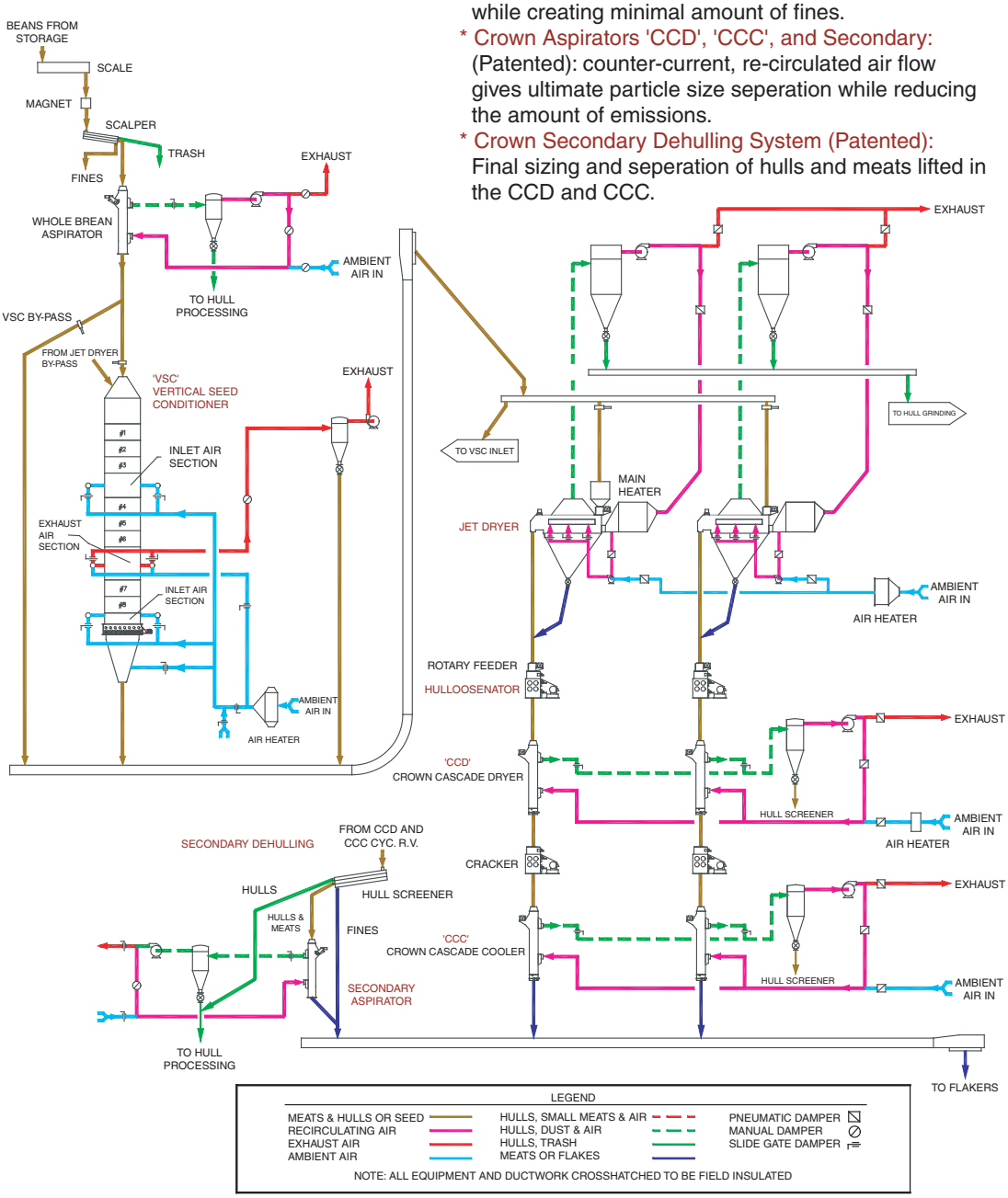
Typical Two-Line Hot Dehulling Flowsheet

* Crown Vertical Seed Conditioner 'VSC' (Patented):
  Heats, dries, and conditions all beans evenly, preparing the beans for hull removal.
* Crown Jet Dryer (Patented):
  Assures even heating and drying of all beans.
* Crown 'Hulloosenator' (Patented):
  Breaks beans in halves and rolls hull loose of meats while creating minimal amount of fines.
* Crown Aspirators 'CCD', 'CCC', and Secondary:
  (Patented): counter-current, re-circulated air flow gives ultimate particle size seperation while reducing the amount of emissions.
* Crown Secondary Dehulling System (Patented):
  Final sizing and seperation of hulls and meats lifted in the CCD and CCC.



Specifications of the Two-Line Cold Dehulling system may be modified or changed to meet specific client requirements and/or manufacturing necessity.

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