SEED PROCESSING

TURNKEY
Cimbria is one of the world’s leading manufacturers of equipment and plants for seed processing. Based on in-house technology and experience, we have the capability to carry out the full design and supply of seed processing projects on a turnkey basis.

Each and every part of the process requires specialist knowledge. When designing process plants and solutions, we use our knowhow to ensure that all parts of a plant are coordinated in an optimum manner – and that daily operations and subsequent maintenance run as smoothly as possible.

Robust project management supports the assurance of safety that lies in our products and project execution. From the placement of your order all the way through to the expiry of the warranty, the responsibility for your project lies in the hands of an experienced and dedicated senior project team.
INTAKE AND PRE-CLEANING

INTAKE

Cimbria intake systems are designed and manufactured to fit the specific requirements of each individual product and plant. Our focus is to secure gentle handling of the seed and to minimize waste and dust emissions to reduce the impact on the environment.

Furthermore, intake systems have to have a robust design to be able to reliably handle the incoming product with high hourly capacities during start-up and the stressful harvest period.

PRE-CLEANING

During the pre-cleaning process, undesirable elements such as large impurities, sand, thin grains and weeds are to be separated. Pre-cleaning differs from rough cleaning in that this process is also able to separate products smaller than the main crop. Overall focus in terms of pre-cleaning is always on ensuring a product that subsequently stores well.

DELTA PRE-CLEANER

The efficient and accurate screen cleaning effect is secured by a well-balanced oscillating movement complemented by Cimbria’s highly effective pre-suction and after-suction system, extracting light impurities from the material at both the machine inlet and outlet.

ASPIRATOR

The Cimbria Aspirator can be used both as a pre-cleaner and after-cleaner aspirator for the effective extraction of dust, glumes, etc. The aspirator efficiently reduces the very fine dust content in the seed, typically before chemical treatment.
It is of utmost importance that seed is thoroughly cleaned. The fine cleaning process is carried out with high precision to ensure the best quality of seeds by removing dust and foreign impurities, as well as kernels with low germination capacity.

Grading into many different fractions is sophisticated precision work. For the final sorting process, Cimbria has developed a unique technique for sorting according to length, thickness, width, weight, shape and colour.

During the grading process, seeds of almost identical size can be separated due to Cimbria screens being available in more than 900 different sizes in increments as small as 0.05 mm.
FLAT SCREEN GRADING
When using a Cimbria Delta flat screen grader, width and thickness grading will be carried out by combining the optimum screen aperture and screen slope with the length and frequency of the stroke. The product will be separated into the different fractions required. In terms of grading, in particular, Cimbria’s unique multiple flow diagrams in our Delta graders outperform the rest of the market.

CYLINDRICAL GRADING
The incoming material is sorted according to its width (round perforation) and its thickness (slotted perforation), respectively. All kernels thinner than the screen holes fall through the screen, and all thicker kernels remaining in the screening cylinder are transported to the end-outlet. By means of the permanent circulation of the product and the resulting centrifugal force, each kernel will come into contact with the screen perforation, thus enabling sorting operations to be carried out with a high degree of accuracy.

MECHANICAL SURFACE TREATMENT
Cimbria Delta Brush Machines are suitable for handling grass seeds and clovers, as well as separating double grasses. They are likewise used for removing the hairy tails from the germ end of oats. The brush machines are totally enclosed, dustproof, and provided with an aspirator spout for connection to the general dust collecting system or to a separate fan and cyclone.

INDENT CYLINDER SEPARATION
Separation is carried out by means of an indent cylinder which is used for separating seed kernels by length and for separating unwanted long or short product impurities. Depending on the required grading, the incoming product will be sorted according to roundness and length.
FINE CLEANING, GRADING AND SORTING

GRAVITY SEPARATION
The product processed by the Gravity Separator is separated into layers with different specific weights according to the “fluid bed” principle. The deck is fluidised by a completely uniform pressurised air system stratifying the light material to the top of the product bed and allowing the heavy material to come into contact with the deck surface. The deck is inclined from side to side and inlet end to discharge end at adjustable angles.

DESTONER
Destoners are used for separating various seed products according to their specific weight into two fractions in dry material condition. The goal is the elimination of heavy impurities, such as stones, metallic particles and other foreign bodies from seed products.
OPTICAL SORTING
Using the very latest technology, the Cimbria SEA optical sorter will remove kernels having a different colour or exhibiting visual damage. In the optical sorter, the feeding system carries seed through oblique chutes where the flow is further divided and controlled. The seed then falls through an analysis section where each kernel is checked by a number of optical devices facing each other. A colour-characteristic electrical signal is led to a control unit which then converts the signal. Should non-designated particles be present, these are shunted off to the discard bin by means of an air blast fired by ejectors. The sorters are controlled by micro-processors and their sophisticated software allows the use of up to 600 different sorting programs to be stored on board. This ensures a wide range of applications in production, since the same machine is able to switch between different sorting processes for the same product or for different products in a matter of a few minutes.

COLOUR SORTING
The SEA colour sorter is the highest production capacity RGB tri-chromatic sorter on the market using chute feeders. Equipped with full-colour RGB cameras and LED lighting system, the optical system fulfills the needs of modern seed processing systems that demand the optical sorter’s ability to detect and reject seeds having either non-conforming colours or shapes. SEA colour sorters offer almost human vision colour sorting technology.

SHAPE-SIZING INTEGRATED INTO THE SYSTEM
Prior to being sown, the seeds have to be protected against attack by fungi and pests. Cimbria seed treaters are suitable for all types of liquid or powder treatment. Multiple contact of each seed surface with the atomized treating agent in the mixing drum ensures exact and uniform coating of the seed surface. A closed vacuum system ensures zero pollution with no aerosol leakage. Jog Conveyor drying treatment is mainly used after the coating process to prevent wet kernels from sticking together during bagging off.

**SURFACE TREATMENT**

» CHEMICAL TREATMENT

» SURFACE DRYING

**CENTRICOATER**

The Cimbria centricoater is designed for the most precise and uniform application of costly seed treating materials. The system employs continuous batch operation utilising a highly accurate electronic scale together with an equally accurate chemical dosing system controlled by a PLC. Centricoaters are ideally suited to film coating, as well as special applications that include encrusting, increasing weight and pelletising.

**CONTINUOUS TREATER**

Continuous Treaters are used for the application of protective chemicals such as insecticides, pesticides and fungicides to seed in a continuous process. In cereals, in particular, where high hourly capacities are usually required, Cimbria’s continuous treaters represent the ideal choice.

**JOG CONVEYOR DRYING**

Jog Conveyor Dryers are mainly used after the coating process to prevent wet kernels from “caking” during bagging off. The wet product is transported by means of an eccentric drive through the drying sections, where warm air is blown through the product layer from underneath. The moist air is aspirated from the top and led to a plant that removes dust. There is an option of installing a screening section at the end of the machine to screen out undersized and oversized material, thus improving the environmental protection aspect during sowing, for both farmers and bees.
PACKAGING SYSTEM
The treated seed is packed in a variety of bags depending on region, tradition, bag size, bag type, etc. The packaging systems are very individual in their layout, ranging from a simple net bag weigher with open mouth bag, manual sewing and stacking of bags on pallets to more advanced systems, including automatic bag placement and flattening, automatic sewing as well as robot palletizing and wrapping systems.
CONTROL AND AUTOMATION

A modern facility is not utilized in an optimum manner without an effective and reliable control system. A Cimbria control system combines our many years of process experience with the latest technology. This is your guarantee that all installed machines operate at their optimum performance, thereby ensuring the best economy of the entire system throughout the lifetime of the plant.

SCADA SYSTEM
The Scada system is tailor-made for operation, monitoring and alerts and it can be controlled by the operator from one or several locations. In order to facilitate daily operation, all routes are saved and can be easily accessed.

Our preferred system is WinCC from Siemens - a powerful, user-friendly, high performance PC based Human-Machine Interface (HMI) together with Microsoft Windows.

TRACEABILITY
Seeds represent great value, and thus traceability is extremely important. A stable and proven database system is normally set up in Microsoft SQL. Logging is typically done using a barcode system, but other systems such as RFID are also available.

SERVICE PROGRAMME
To minimize the risk of breakdowns and plant downtime, operating statistics on each machine can be set and monitored, enabling scheduled service and preventive maintenance to be carried out on time.
SAFE STORAGE

TEMPERATURE MONITORING SYSTEM
Safe storage of seeds is a crucial stage of the complete seed processing cycle. Cimbria silos, with their smooth walls, ensure genuine storage of valuable seed without the risk of admixture. Aeration and cooling systems, supported by Cimbria’s temperature monitoring system, eliminate the risk of losses and damage to the seed during storage. Intelligent filling systems with gentle let-down ladders preserve the seed during filling, thus safeguarding its ability to germinate.
SOLUTIONS.
TOGETHER.