USES OF ELECTRONIC COLOR SORTERS

Virgil Harris 1/

The use of color sorting equipment is world wide. Products range from "pearls to peanuts."

Over the years our company has been called upon to sort many varied objects. Some exotic, including Chinese Mung beans, Japanese pearls, and Hawaiian Macadamia nuts.

On the other hand, we are continuously and successfully sorting the many products recognized as standard in the sorting industry.

A brief run-down on sorting machines we produce include those for classifying lemons down to sesame seeds.

This includes the model G machine (Figure 1) used for sorting lemons, tomatoes, and other large products. The design configuration is necessarily different for classifying this larger product, as compared to other seed sorting machines we have.

REFLECTIVITY SORTING MACHINE

This machine is utilized for making a simple reflectivity separation of products such as peanuts, pecans, walnuts, beans and various dehydrated products.

THREE-WAY SORTING MACHINE

Some products lend themselves to the necessity of being separated into three classifications. The sorted product is classified into a bright-medium, and dark product. Pecans, walnuts, and raisins fall into the category of being processed on the three-way sorting machine.

COLOR SORTING MACHINE

Our Bichromatic Sorting Machine (Figure 2) makes a separation according to the actual color of the objects. Products color processed include green coffee, peas, beans, or any product with a differential of color.

This color differential doesn't need to be too great in order for a successful color separation to be made, and in some cases the color dif-

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FIGURE 1. Large Products Sorting Machine, Model G
ference cannot be detected by the human eye.

This machine is also used in the peanut industry to help solve their problems centered around product color variations.

**FRESH OR WET PRODUCT SORTING MACHINE**

Usage of this machine (Figure 3) is made by the largest food canners in the world.

Processed products include diced vegetables of various types, soaked beans, cherries (both red and brined), olives, cocktail onions, and asparagus. We have also installed various types of ultraviolet light source, and product density sorters in the food industry.

With this impressive line of sorting equipment developed over the past 35 years, we feel our company has become experts with regard to color sorting.

Now, Mr. Seedsman, what can we do for you? To find out, our representatives came to you to become aware of your problems and needs.

At Electric Sorting Machine Company we are acutely aware of the need in the seed industry for reliable color sorting equipment that will not only upgrade your seed product by color sorting, but equally important - save you money. With this in mind, it is our goal to more fully develop color sorting equipment in order to make it profitable for you to process your seed product whether the large or small variety.

We feel our success is our method of product conveying.

In this manner, our machine inspects each individual product object on its own merit and, if necessary, removes it singularly from the stream of objects being processed. This is accomplished without disturbing the object either in front or behind it and without sacrificing production rate. This concept of individual conveying and rejection within itself has proven very successful over the years in color sorting.

I will first discuss a machine which has been developed for the processing of seed sweet corn. This machine - our TP-100 - has been in the field, in a processing line for one full season. This machine has been supplied to the Asgrow Seed Company at Filer, Idaho for exhaustive tests. This patented sorting device operated on a unique light viewing method and is designed to remove all field corn from the seed sweet corn.

Through-put production with this machine, of course, will vary depending on the count per pound of the product, but normally 250 to 300 pounds per hour production can be expected.

Quality of separation yielded from this machine has proved to be excellent. It is realized that standards from company-to-company will vary, but the standards
on seed sweet corn at Asgrow is that there will be no more than 200 grains of field corn in a 100 pound bag or 1 grain of field corn in 20,000 grains of processed sweet corn. Our machine makes this grade with no difficulty, and without final hand inspection. With the amount of production and quality of separation derived from the TP-100 machine, Asgrow has indicated that this significantly reduces their hand labor. Asgrow further indicated their approval by purchasing this first machine. It is believed that this sorter has a fixed place in the seed corn industry.

If any of you would like to see just exactly what the TP-100 sorting machine can do with your seed sweet corn, we offer a service for this purpose. At our Houston plant we have a special Sort Testing Department. Products are accepted which are shipped to us by our customers, or potential customers. They are then color sorted to the best of the machine’s efficiency. The sorted product, along with through-put production figures in pounds per hour is returned to the customer for his inspection and evaluation. This is a customer service we render for you.

In another area in which we have spent considerable time and research has been with cotton seed product. For separation of this type product, along with vegetable seeds of the larger variety, the Selexso Ten high speed color sorter is utilized. During the study of processing cotton seed we found that the Selexso Ten color sorter yielded on flamed cotton seed samples with a count per pound of approximately 4,330 seed, a through-put production of 420 pounds per hour. This was accomplished while also delivering an excellent color separation.

With tinted cotton seed samples with an approximate count per pound of 3,225 seed per pound, the machine yielded approximately 530 pounds per hour. The sorting efficiency while processing cotton seed product proved to be nearly 99%. Again, this very high sorting efficiency is due to the unique method with which our sorting equipment operates. That is, it picks up, carries, views, and ejects, if necessary, each seed individually and separately from every other seed in the lot. We believe that this concept of seed conveying and sorting is the only efficient way in which seeds may be profitably processed. Also, for those of you in the cotton seed industry we again offer the services of our Sort Testing Department. We would be more than happy to receive your sample and have the opportunity to show you what the Selexso Ten could do for your production.

The Selexso Ten color sorting machine is also utilized for the processing of various vegetable seed of the larger variety. Included in this category are bush beans (string beans), lima beans, and seed peas.
Through-put production on the above three mentioned vegetable seed was found to be from 400 to 500 pounds per hour. Again, of course, this depends on the count per pound of the product to begin with. At this high rate of production, the color separation was extremely good, while damage to the germination qualities of the seed were kept to an absolute minimum.

The initial test in seed color sorting was centered around the bush bean. This is a strain of lima bean developed especially for mechanical harvesting. The bush bean was selected for the first tests because of its fragility. We found after exhaustive tests that damage to the germination quality of this product was very insignificant.

Tests were then conducted on seed peas, which are less fragile than the bush bean, and on lima beans which are even less fragile than seed peas. Germination damage, due to mechanical handling in the color sorter, to the seeds was practically zero.

The last device that I will describe is a new sorting machine that has not been announced to the industry prior to this time. As an answer to a need and demand for increased production of small seed variety processing we have engineered and developed an extremely high speed sorting machine for use with products the size of rice or smaller. This newest addition to our color sorting machine line is Model Selexso 2000.

A few of the small variety seed products would include beet, pepper, mustard and sesame seed. I know that there are many others which would fall into this category - both vegetable and flower seed.

With the Selexso 2000 sorting machine it is possible to process up to 1,750 seed per second. Now it is economical to process ultra small seeds. As an example, sesame seed with a very high count of 155,000 seed per pound, the Selexso 2000 will process from 35 to 45 pounds per hour. This is with an excellent quality of color separation. Also there is no impairment to germination qualities whatever, to any of the ultra fine seed products.

This will briefly give you some idea of what we are doing in Houston in the way of developing and producing color sorting equipment for the seed industry. We realize that just producing and marketing color sorting equipment is not nearly enough, but must continue to develop equipment to deliver higher capacities that will make it economically profitable for you to mechanically process your seed products.
FIGURE 2. Selexso Ten Color Sorting Machine

FIGURE 3. Wet Products Sorting Machine, Model WZ-3