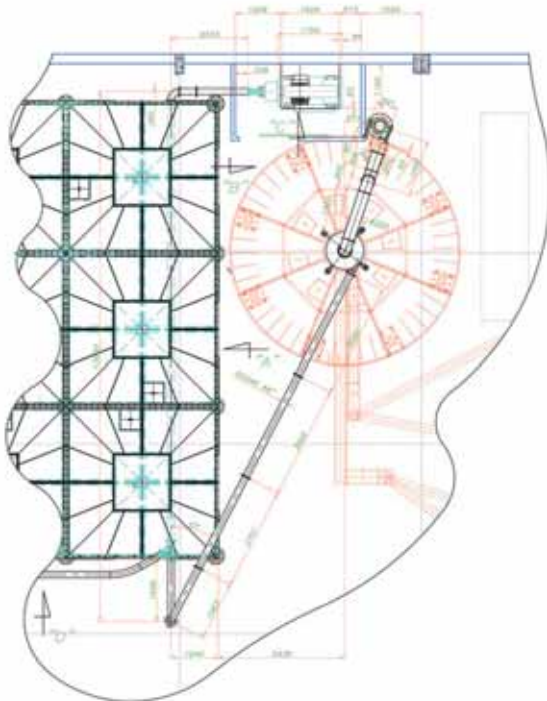




LILLA GAZETTE

customer insight

LILLA SUPPLIES LATIN AMERICA'S LARGEST GREEN COFFEE SYSTEM



A green coffee system with a capacity of 1.500.000 kilos, divided into 22 compartments, was delivered recently by LILLA to one of Brazil's biggest roasters, Café Santa Clara. The new line, installed in Natal - RN, has a set of Lilla's exclusive software that controls the complete automation process. Among its functions is the Full Control of Inventory and the Monitoring System of Transport, which guarantees the delivery of the coffee into the predetermined compartment.

The Storage System connects to the LILLA's Blend System, equipped with compartments, whose feeding is controlled according to the concept of FIFO (First In/First Out).

INVESTMENT DECISIVE FACTORS

One of the factors that has influenced the decision to invest in LILLA equipment was its design characteristics, which has allowed the use of the construction of the full building height, from floor to ceiling. Thus, the company could optimize the occupation of the available space, increasing the real storage capacity, thereby eliminating the inconveniences and resultant risks of storage in bags. More decisive, however, were the resources and the quality inherent in the Lilla Green Coffee System, such as:

■ Reduction of labor and handling costs

A dynamic pneumatic system for green coffee reduces the operational costs and assures continuous raw material feeding to the roasting equipment.

■ Reliable and accurate green coffee supply to the Blending System

With electronic sensors installed at strategic points, LILLA software follows and guarantees the origin and the programmed destination of the coffee in process.

customer insight

■ On line inventory, safe and precise, of the stored raw material

The exclusive technology of the LILLA' Green Coffee System allows the roaster to know, at any time and exactly, the quantity of green coffee received, stored and discharged. Moreover it shows a statement of all coffee processed during a given period.

■ Capacity to feed simultaneously different blends to various roasters, with safety and precision

The LILLA software makes it possible to program and feed simultaneously different types and quantities of blends, allowing various roasters to work, at the same time, with the same raw material. Moreover, it controls and supplies an individualized statement for each roaster and each type of processed coffee.

■ Traceability of the coffee flow

Allows the identification of all used raw materials, as well as its accurate location in the system.

■ Cleaner air in the process

The confinement of the coffee inside the silos eliminates the handling of bags, and reduces significantly the amount of dust in the work environment.

DESCRIPTION OF THE SYSTEM

- Reception of the coffee with Segregation System, for the classification of the raw material before the storage.
- Conveying of the coffee through modern high capacity pneumatic system (Roots Pump).
- Storage of 1.500.000 kilos of green coffee in 22 compartments.
- LILLA' software / Coffee inventory - Guaranteeing full control and security for the stocked raw material.
- Security in the conveying of the coffee with the guarantee of the storage in the specified places.
- Link between the Storage System and the automatic LILLA' Blending System of coffee.
- Silo with capacity for 120.000 kilos in separate compartments
- Feeding of the Silo according to FIFO principle (First IN/First OUT).

TECHNOLOGICAL DEVELOPMENT

To address the increasing and specific necessities presented for the national and international markets, from cafeterias to huge roasting companies,

LILLA maintains specific groups of work in its Technical Dept., staffed with engineers and project technicians. Each line of products has a dedicated team exclusively specialized in the development of the area, either of Roasters, Grinders, Storage Systems or Conveying.

ENGINEERING OF AUTOMATION

In addition to groups of professionals specialized in each area, LILLA also maintains an Automation Engineering team. With more than 15 years in existence, its professionals are constantly updated and enabled to develop new concepts of controls. They are also responsible for the continuous improvement of the existing software, from the simplest to the most complex.

Offered solutions are customized, allowing to the customer to monitor, with the maximum efficiency, the processing of small, medium or large volumes of coffee. The adopted concept consists of the implementation of specific screens for each necessity of the management system used for the



NEW AGENT

Lilla welcomes Robert Hensley as their new agent for the western US and Canada. Mr. Hensley is known throughout the coffee industry from his seminars with the Coffee Training Institute, and presentations for industry organizations including the National Coffee Association, and the Specialty

Coffee Association of America, among others. Building on the foundation of his lifelong love of coffee, and early training in specialty coffee with Peet's Coffee and Tea, Mr. Hensley began equipment sales and training, and teaching coffee roasting seminars in 1989. To date more than 700 companies, covering the entire spectrum of coffee farmers, exporters, importers, roasters, and retailers, have attended his workshops.

Mr. Hensley's educational programs cover a spectrum of topics including green coffee evaluation, coffee buying, roaster technology, quality management, and coffee cupping and analysis for beginners and experienced professionals.

With his purchase of the company, Equip For Coffee, in 2004, Mr. Hensley took over the manufacture of that company's classic brass display bins. "I am thrilled with the opportunity to join the Lilla team. Lilla roasters and plant equipment have an excellent



reputation for quality construction and innovative design features. I've certainly been around enough installations to be aware of the issues that roasting companies are faced with when making purchasing decisions and equipment installations. Lilla roasters offer some unique features that just make sense. In the real world, integrated design that alleviates the need for afterburners, duct cleaning, and chaff removal, is a dream come true. And the control options on designs like the Opus 3rd generation literally make one roaster do things that before only separate designs could achieve. I'm excited about what Lilla is doing and very pleased to have been invited to become a part of it."

We at Lilla are pleased as well. Anyone interested in knowing more about Mr. Hensley's seminars and services can visit his website at www.specialtycoffee.com.

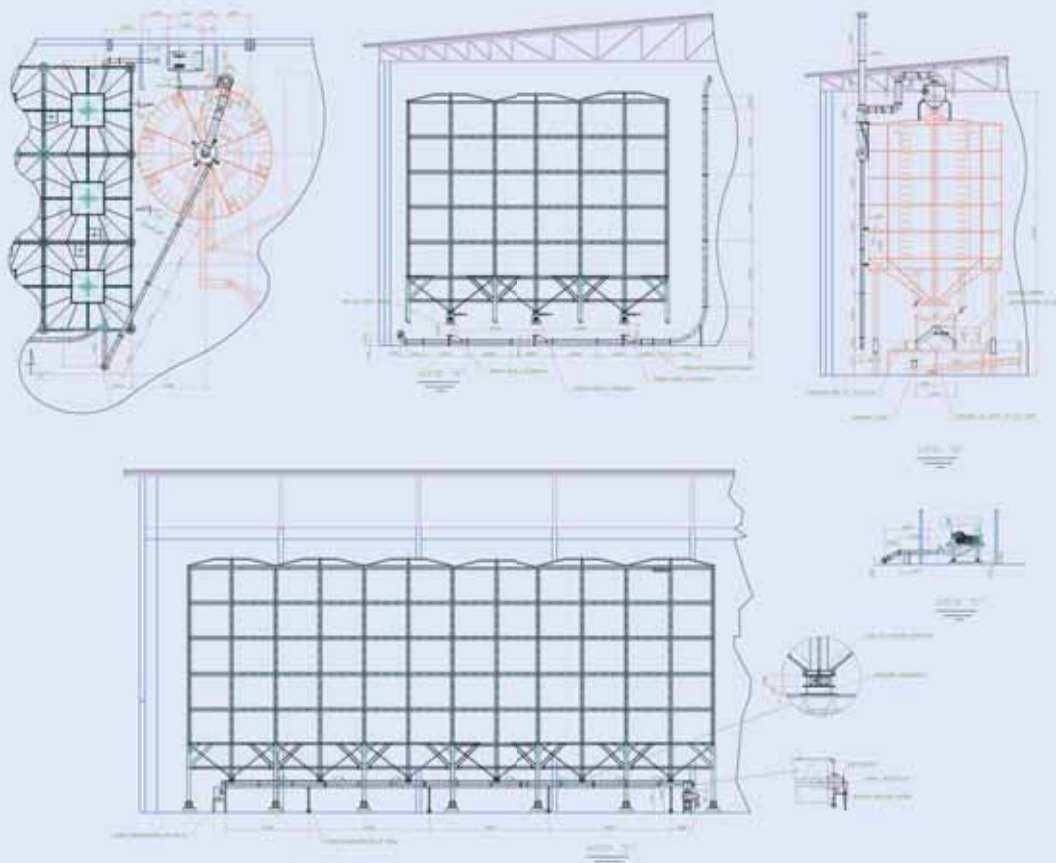


roaster (existing software), or of the development of wide and integrated systems, in order to address the quantity of blends and types of coffees that each roaster processes.

APPLICATION ENGINEERING

In the same way, the Technical Group dedicated to the studies that involve the Storage and the Conveying of coffee, for example, is prepared to handle any requirement of any installation, independent of the processing capacity or the specific complexity of each; hence, the solutions and the applied knowledge are also specific, targeting the characteristics of each project.

The studies start with the analysis of the materials to be used, and continue to the formulation of precise dimensional and structural calculations (plating, basic structure, necessary reinforcements, adjusting feet, etc.). In addition, research and evaluation of all electric motors is undertaken to assure optimum cost/benefit relationship.



SHOWS

This year Lilla exhibited in SCAA Long Beach-USA, SCAE Antwerp-Belgium and Tea & Coffee World Cup Geneva. Particularly, Geneva was a good opportunity for us to show the latest results on coffee roasting technology.

Our Executive Director, Eng. Fernando Fernandes was invited by the show organizers to make a speech about the recent findings on experiments conducted last year with the presence of a team of specialists coming from the major coffee roasters of Brazil. The great success of the event led to publication of an article on Tea & Coffee Magazine September Issue.

Lilla team would like to thank all the visitors who stopped by our booths or had the opportunity to attend to Mr. Fernandes' speech.

Please see us at Tea & Coffee World Cup Americas – Miami, USA – Jan. 9-11, 2007 – Booth 713.



HOW TO REDUCE SHRINKAGE IN THE ROASTING PROCESS



Shrinkage, or loss of weight during the roasting of coffee is the result of two principal factors: loss of moisture; and, pyrolytic reactions – chemical changes provoked by the increase of bean temperature in an oxygen poor atmosphere.

The moisture content of green coffee- approximately 12% - is lost in the early stage of roasting; however, during quenching of the roast – the application of a measured quantity of water to stop the roasting- some of the lost moisture content is replaced; therefore, the the final weight loss due to loss of water is the initial moisture content of the green coffee, less the the moisture content of the roasted coffee. Control of this fraction of the roasting shrinkage requires a roasting machine with sophisticated heat control instrumentation; and, efficient quality control procedures to monitor the final moisture content of the beans.

The second cause of weight loss during roasting - pyrolytic reactions caused by heat - in this case causing chemical decomposition of elements in the green coffee. Large molecules are broken, forming smaller molecules, and even smaller particles, which are the detached volatile organic compounds; also carbon atoms and hydrogen, which react with oxygen in the air to form CO₂ and H₂O which are released to the atmosphere.

The darker the roast, the higher the shrinkage rate. This is because a dark roast will require longer pyrolysis- which means molecular decomposition that will result in the release of more carbonic gas, water and volatile compounds. If the pyrolysis continued indefinitely, the coffee would be

reduced to pure carbon and ashes composed of mineral elements, and the organic compounds in the coffee would be released to the atmosphere as CO₂, H₂O and volatile elements.

Obviously, the lighter the roast, the less pyrolytic reactions take effect, and the lower is the shrinkage rate, but a lighter roast color may not be desirable in order to develop coffee flavor. The goal, therefore, is to modify the pyrolytic reactions and still reach the desired roast color, moisture content and flavor characteristics.

Extensive testing on the Lilla Opus 3rd Generation roaster has shown that coffee roasted on Lilla equipment consistently had up to 1.5% less shrinkage than the same coffees roasted on other machines to the same colorimeter readings; and, most significantly, exhibited superior taste and aroma to panels of experienced tasters. These results clearly indicate that Lilla's system of profile roasting has achieved the desired result of controlling the pyrolysis reactions to achieve optimum results in flavor and aroma as well as reduced shrinkage.

Please feel free to contact us for further discussion of this issue.

