

LILLA



Roller Grinder



3G Roaster

LILLA GAZETTE



**TRESMONTES LUCCHETTI
CHOOSES LILLA**
page 3

**ROBERT'S COFFEE
RENEWS PARTNERSHIP
AND ADDS AN OPUS 6
TO EXISTING PLANT**
page 3

**KOPI BALI - LILLA
CUSTOMER SINCE 1993**
page 3

**MAILLARD INFLUENCE ON
COFFEE ROASTING - PART 1**
page 4

LILLA'S NEWEST RELEASE:

EXPERT ROASTER

Bringing start of the art technology to the world
page 2

LILLA'S NEWEST RELEASE – EXPERT ROASTER

GREEN TECHNOLOGY, PERFECT ROASTING AND HIGH COST-BENEFIT RATES. WHAT ELSE ARE ROASTING COMPANIES LOOKING FOR?

It is well known that as time goes by, more and more countries are joining the new wave of environmental standards as to decrease the emission of hazardous gases. Environmental control has become an important issue in many countries, and is now a trend to become more present in our daily lives both as roasters and as consumers, all over the world.

This ever-increasing demand on environmental actions, along with the need of offering high cost-benefit rates to its clients led Lilla to the creation of an extremely versatile solution for one's roasting business: the all-new EXPERT roaster.

Neighbors tired of smoke, chaff and smell, as well as environmental inspectors hungry for finding flaws in your roasting process will be at ease with Lilla's new release. Such claim is only possible through a large number of features that grant the Expert Roaster the title of "Green", or "Eco-friendly" roaster, combining low cost, high roasting quality standards, and ecological operation. A light at the end of the tunnel for those who are concerned about not spending a large amount in order to fit in the new environmental regulations, and at the same time keep their recipes and quality that were acquired overtime.

Expert's built-in afterburner is the feature that allows Lilla to call it an ecological roaster. Doing two jobs at the same time, only one burner is used to both generate the hot air for the roasting process and clean this very same air that was contaminated during the roasting process, through an exclusive recirculation duct system.

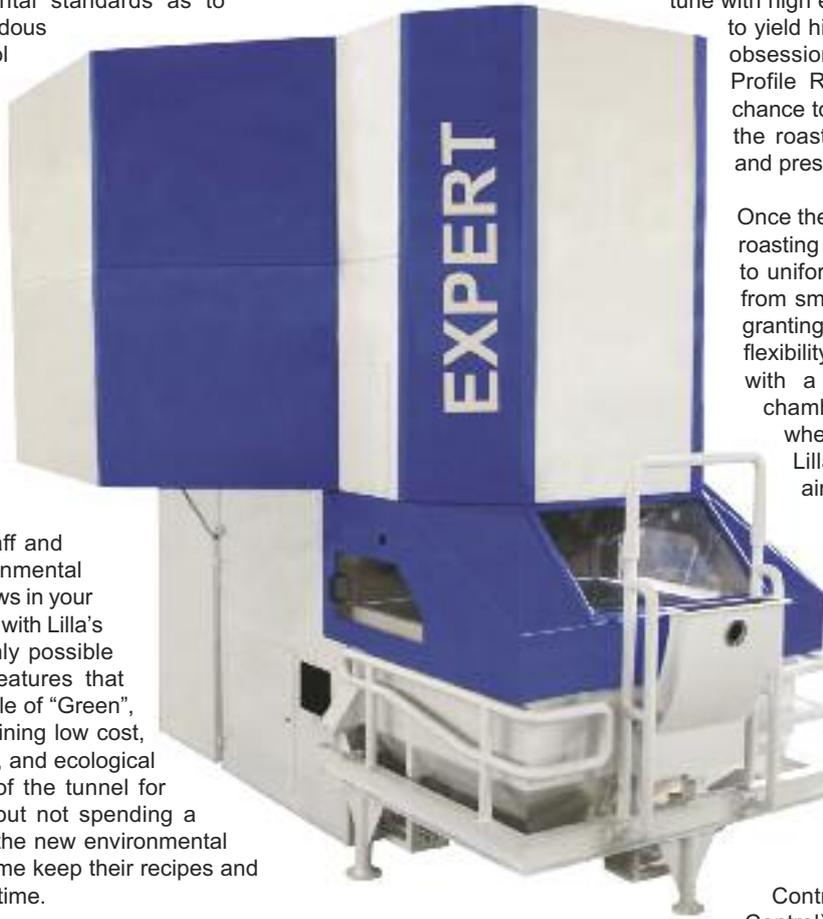
That means that one will spend less fuel (reducing emissions and saving considerably on fuel, since there's no need of a chimney afterburner) and no smell, chaff, or smoke will be seen coming out of the chimney. Only CO2 and vapor of water will be released into the atmosphere.

Lilla was not only worried about granting producers the chance to be in tune with high environmental standards. The ability to yield high quality products has been Lilla's obsession for the last 94 years. Expert's Profile Roasting System will give you the chance to control the variables that influence the roasting process, such as temperature and pressure of the roasting chamber.

Once the Expert works under the principle of roasting by convection, this equipment is able to uniformly roast all types of raw material, from small, broken, to big, specialty beans, granting consistence in every batch and high flexibility. Its strong airflow, when combined with a perfect rotation of the roasting chamber (thus creating a bean curtain, where the hot air passes through), gives Lilla's Expert one of the highest air-to-bean ratios in the market.

Stopping the roasting process at the right time is also extremely important to keep color and flavor consistency in every batch. Expert is equipped with a water quenching system, where it uniformly sprays water at the beans, and at the same time a cold air inlet door is open, thus stopping the exothermic reaction that keeps roasting the beans even after the process is finished.

Controlled by PLC (Programmable Logic Control), our Expert Roaster can be easily operated, and as you opt for the full automatic version, one won't have to worry about hiring operators to look over the machine. It does its job very well, all by itself, at a fair price.



Model Expert	Capacity per Batch Lb (Kg)	Production per hour without Pre-Heating (Green Coffee) Lb / H (Kg / H)	Production per hour with Optional Pre-Heating (Green Coffee) Lb / H (Kg / H)	Roaster Dimensions			Approximate Net Weight Lb (Kg)	
				Roasting Times (Min)	Length (A) Ft (mm)	Width (B) Ft (mm)		Height (C) Ft (mm)
350	65-130 (30 - 60)	660 (300)	770 (350)	6 to 18	13' - 5" (4100)	8' - 6" (2600)	12' (3650)	9590 (4350)
700	130-260 (60-120)	1320 (600)	1540 (700)	6 to 18	15' - 3" (4650)	11' (3350)	13' - 11" (4250)	13118 (5950)
1400	275-550 (125 - 250)	2750 (1250)	3080 (1400)	6 to 18	18' - 9" (5720)	13' - 7" (4140)	15' - 3" (4650)	17968 (8150)
2800	550-1100 (250- 500)	5500 (2500)	6170 (2800)	6 to 18	21' - 9" (6600)	16' - 9" (5100)	17' - 9" (5400)	24582 (11150)

NEWS

2012 – SCAA Portland, Oregon

Lilla is once again taking part in the world's most famous Coffee Exposition: Special Coffee Association of America. This year, SCAA is being held at the Oregon Convention Center in the city of Portland, OR, USA.

We invite everybody to stop by our booths n° 4040-4042 to see our newest releases, as well as to talk to our staff about anything related to the coffee's world.



TRESMONTES LUCCHETTI CHOOSES LILLA

Tresmontes Lucchetti, a Chilean company engaged in the food and beverage industry, owner of well-known brands such as Café Tempo®, Café Gold®, Monterrey® and Coronado® - a barley-based hot drink – chooses Lilla to provide its factory's infrastructure with state-of-the-art Opus 20 Second Generation.

Chilean factories have been looking for technologies with low levels or total absence of pollution rates in the past few years, in order to fulfill the country's environmental regulations, which follows the global trend on this issue. During the first Industrial Revolution in the 18th and 19th centuries, industries were working day and night to obtain high levels of productivity by using coal as their primary source of energy. Environmental impacts were not considered at that point and the consequences were accumulated throughout the decades. It was only later on that governments, business owners and international organizations began to realize that this progress should be sustainable, otherwise the Nature would not stand the amount of disposals thrown irresponsibly around the Planet.

Tresmontes did realize that its commitment to our planet's well being was not a choice but rather a must. After investigating Lilla's reliability in the market, two representatives of the company decided to come all the way from Chile to Brazil to study even further the advantages of Lilla's machines. The trip and the thorough analysis made by Tresmontes payed it off. Lilla could show all the environmental friendly performances of its roasters, based on technologies such as the Profile Roasting System, that intend to bring the best roasting results according to the customer's local taste, low energy consumption and other features that make Lilla's products uniques.



Now Lilla is looking forward to reaching out to other companies that, just like Tresmontes, are interested in contributing to the well-being of world population and keeping our planet safe for posterity.

ROBERT'S COFFEE RENEWS PARTNERSHIP AND ADDS AN OPUS 6 TO EXISTING PLANT



Robert's Coffee, a traditional Finnish coffee roasting company and coffee shop chain present in several countries such as Azerbaijan, Turkey, Moldova, Estonia, Sweden, Singapore and Japan, decided to invest even more on its business by purchasing another of Lilla's roaster: Opus 6, with capacity of roasting 360 KG of coffee per hour.

got another of Lilla's state-of-the-art roasters.

It is well known that in order to keep customer loyalty, not only a company needs to sell its brand but it also has to offer a high quality product, which is usually acquired by a combination of research, production, proper handling and storage. Lilla has definitely been taken into consideration when it comes to the second factor, after all, Lilla's bread-and-butter business is to manufacture roasters that make its customers happy with the results of their final products, with minimal fuel and power consumption.



Mr. Robert Paulig, who also manages the company "by Robert Paulig" – which serves the market with gourmet and premium coffee - saw his decision of buying a Lilla's machine pay off the investment made back in 2009 and

If you ever are in Finland, Sweden or Estonia take the time to visit one of Robert's Coffee cafés and taste the delicious specialties this company provides.

KOPI BALI - LILLA CUSTOMER SINCE 1993



The Indonesian-based company Kopi Bali celebrates its success in the Asian market by commercializing specialties like Kopi Luwak. The Tjahjadi family started their coffee business in Bali around 1935. They did it by purchasing coffee seeds from farmers, processing them, and selling them at their shop - Bian Ek - in

competition and sophisticated promotional media. However, Bali Coffee has managed to remain competitive in the international coffee market. The rapid growth in Kopi Bali has been possible due to the quality of products as well as the huge number of customers, who regard Kopi Bali as their first choice. The great success of the business is also thanks to the family's commitment to quality processing and improving their coffee flavours. This makes them deserved of their nickname 'The Legend'. What's more, their early coffee outlet BIAN EK, which has been re-named into BHINEKA JAYA, is still found on Jalan Gajah Mada, Denpasar.

Jalan Gajah Mada, a business center in the heart of Denpasar Town in the island of Bali, Indonesia.

This experience and development has led Bali Coffee to develop their 'one stop coffee shopping' at Bali Coffee House. The house sells not only a variety of coffee from Bali, Java, Toraja, Mandailing and many other parts of Indonesia, but also from Colombia, Kenya and many other countries. The house also sells various kinds of coffee machines, roaster cups, and other coffee items. Finally, there is also a coffee class cafe.

The family has produced coffee with unique flavours, and Bian Ek's Bali coffee has become a favorite coffee for the Denpasar community. Though the family's business grew well, they were never satisfied with their efforts, and kept improving the processes and methods of serving Bali Coffee. As a result, Bian Ek's Bali Coffee has become a high quality drink.

Kopi Luwak and the Asian Palm Civet

Also known as civet coffee, Kopi Luwak is a coffee with a very peculiar taste and a particular characteristic: before being sent to the coffee common process of roasting, the beans are eaten by the Asian Palm Civet (*Paradoxurus hemaphroditus*) and other related civets, a type of animal that eats the coffee berries, sometimes wrongly referred as a cat by some people. The coffee seeds are expelled out of the animal digesting system and are caught by people who carefully eliminate the undesirable material from the coffee seeds and then proceed with the normal coffee roasting and griding process.



Bian Ek, the first generation, was soon replaced by a second family generation, and Bian Ek Bali Coffee became the number one coffee on the island. It was Mr. Djuwito Tjahjadi who brought the business into the new world where modern coffee processing machines and marketing techniques were introduced. The family then continued to promote their fine coffees from their clean and efficient processing unit, where hygiene is guaranteed.

After using Lilla's technology for almost 20 years, Kopi Bali decided to expand its roasting capacity by purchasing our renowned Opus 6 roaster, which brings incredible features such as Programable Logic Computer, Profile Roasting System, Self-cleaning System and others. These unique characteristics are those found in large scale roasters. Kopi Bali definitely wants to keep the quality of its coffee and that is the reason why the company has chosen Lilla one more time.



Mr. Djuwito Tjahjadi

Soon the coffee business was handed over to the third generation, more precisely to Wirawan Tjahjadi, one of Mr. Djuwito's sons. Under Mr. Wirawan the business has experienced significant growth and widened its operations considerably. Coffee Bali has now entered the international markets through its special packaging designs. These are available in Duty Free Shops as well as prominent cafes and star-rated hotels throughout Indonesia.

Marketing the business has become more of a challenge because of tougher

MAILLARD INFLUENCE ON COFFEE ROASTING - PART 1



Louis Camille Maillard

Maillard is one of the most important categories of reactions in the processing food industry and it concerns not to one by to a huge set of chemical reactions. It is responsible for that wonderful smell coming from the bread that has just being backed or for that delicious aroma that comes from the barbecue. It is also accountable for others so diverse fragrances like chocolate or even rose smell which may be present in processed food.

Nevertheless it is crucial that we do not

confuse these reactions with the pyrolysis which in most of the cases has a concomitant role in the food processes used in the industry. This discernment, along with its possible uses in the coffee roasting development, is what this article is all about.

The Maillard reactions involve, not exclusively, two kinds of chemical components: amino acids and reducing sugars. ---Therefore these reactions consume amino acids, so reducing the food proteic value. On the other hand, it has a great potential to produce flavors and aromas which makes cooking and the food processing science to become an art.

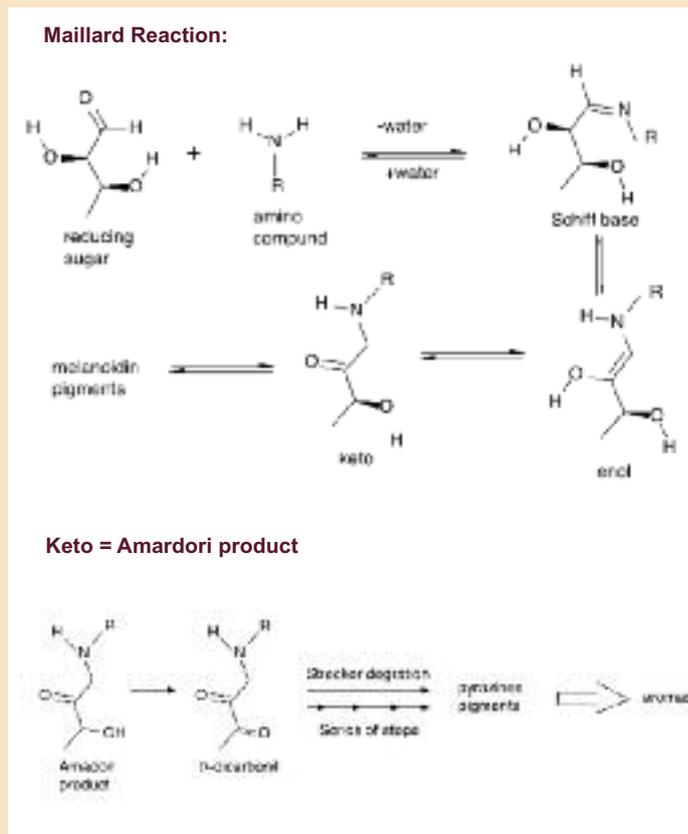
These chemical transformations may occur under ambient temperature, but they are accelerated and modified when foodstuff is heated. The Maillard that outcomes under ambient temperatures are undesirable and they are responsible for the food spoiling when they are stred for long periods. The Maillard positive results come when foodstuff is heated while we cook, fry, bake or roast vegetable or animal origin products.

There are several similarities between Maillard and pyrolysis, including some equivalent products produced by these reactions, nevertheless it is important to be aware of the differences which are, in some aspects, remarkable. Maillard reactions happens in a slower rhythm than pyrolysis, but usually requires lower temperatures: depending on the amino acid the reactions gain intensity from 60 °C or less, what is essential for cooking transformations that uses hot water to heat the food. On its side, the pyrolysis gains intensity from temperatures of 160 °C and higher. It is interesting to notice that many food transformation processes happen in temperatures lower than 160 °C as in the cases of boiled and many baked and fried food. In all these cases it is important to bear in mind that the temperatures we are talking about are the inner food temperatures and not the oven hot air temperature or the temperature of the oil used for frying.

There is another important difference that distinguishes Maillard from Pyrolysis: the first one combines reactive elements. Although Maillard gathers a quit intricate set of chemical reactions which is still being unveiled nowadays, this entire complex starts with chemical combinations between amino acids and reducing sugars. Pyrolysis, on the other hand, is essentially a chemical thermal degradation. It also contains an intricate complex of reactions where we can find combination of chemical elements, but what most defines pyrolysis is the chemical elements decomposition when exposed to high temperatures. Among the pyrolysis processes there are the sugar transformations that starts after their fusion which

happen from temperatures of 150 °C and higher. Many other pyrolyse reactions require even higher temperatures.

We theoretically study both kinds of reactions separately, but in the actual world, most of the time, they work in conjunction. What happens, in some cases, is the predominance of one of them. The following examples contain many food transformation processes, with its respective aromas, where the Maillard reactions are preponderant: baked bread (typical aroma), boiled vegetables (herbaceous aroma), grilled steak (barbecue typical aroma) and roasted peanuts, among others. These aromas are usually more dependable on the amino acids present in the raw material than on its sugars.



The following list has some typical examples¹:

- Cysteine: meat like flavor
- Methionine: vegetable or stewed notes
- Proline: cracker or bread notes
- Glutamine: chocolate aroma

We can certainly find some of these aromas in the roasted coffee and it surely comes to our mind the importance of controlling such reactions in order to improve our coffee flavor. In our next edition, we will continue this article analyzing the possibilities of Maillard use in the coffee roasting process.

¹ P.A. Finot, H.U. Aeschbacher, R.F. Rurrell, R. Liardon. (1990) The Maillard reaction in food processing, human nutrition and physiology – 4th International symposium on Maillard reaction.



***Fernando Fernandes** is Executive Director of Cia Lilla de Máquinas, where he has developed his career in the last 20 years. He is often invited to give speeches at events and international symposia in Brasil as well as in other countries, exposing his knowledge and researches on the roasting process, chemical reactions of pyrolysis, the profile roasting and other subjects concerning the coffee industry. He has a degree on Mechanical Engeneering by the **Escola Politécnica da USP** and a MBA by the **Fundação Getúlio Vargas**, two of the most prestigious institutions in Brazil.