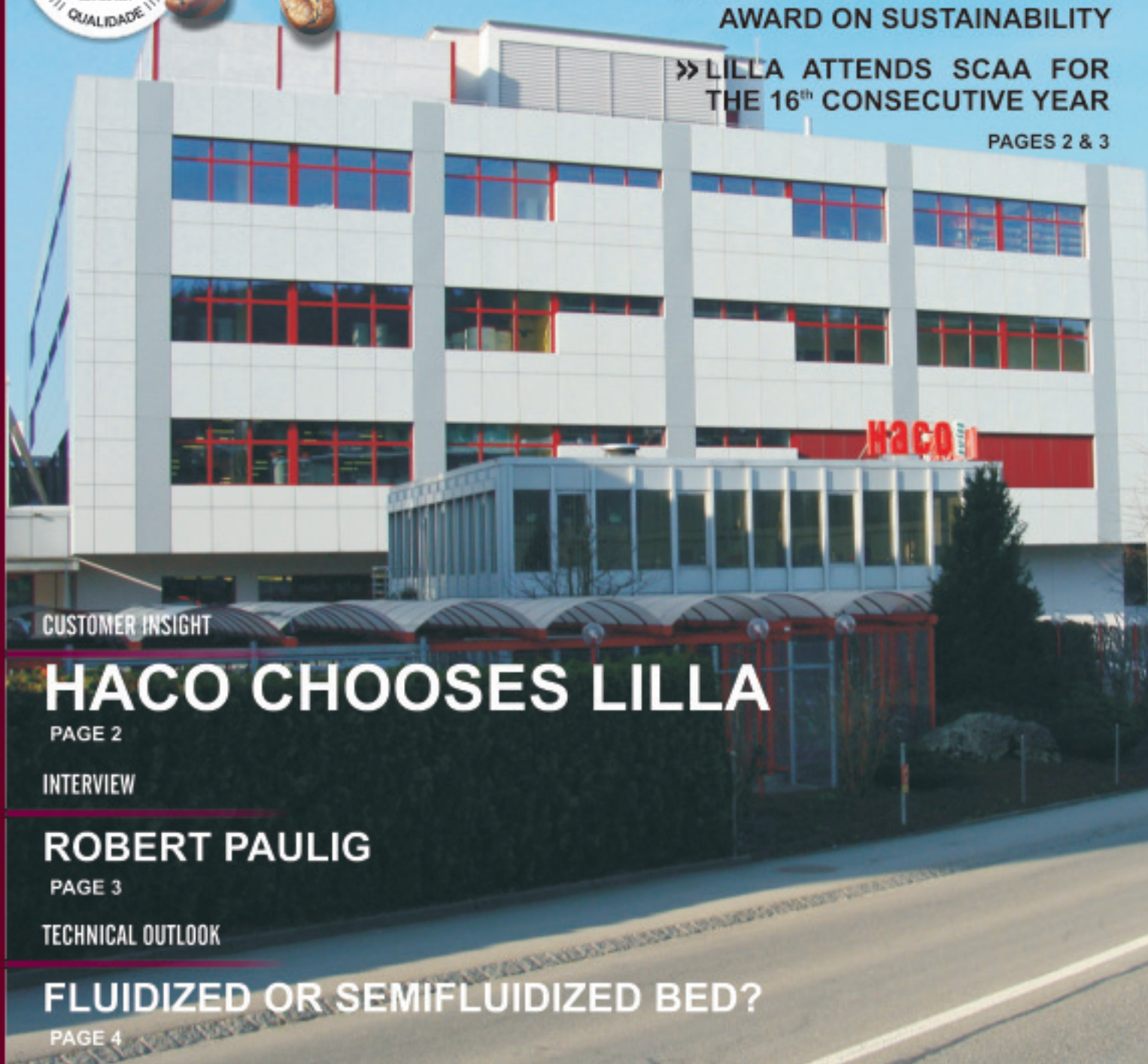


LILLA GAZETTE

NEWS

- » LILLA CUSTOMER RECEIVES AWARD ON SUSTAINABILITY
- » LILLA ATTENDS SCAA FOR THE 16th CONSECUTIVE YEAR

PAGES 2 & 3



CUSTOMER INSIGHT

HACO CHOOSES LILLA

PAGE 2

INTERVIEW

ROBERT PAULIG

PAGE 3

TECHNICAL OUTLOOK

FLUIDIZED OR SEMIFLUIDIZED BED?

PAGE 4

HACO SWITZERLAND BUYS LILLA

A GIANT IN THE EUROPEAN FOOD INDUSTRY, HACO CHOOSES LILLA'S 3RD GENERATION TECHNOLOGY

After extensive research, one of Europe's largest players in the food industry has found the great advantages of Lilla's 3rd Generation technology and considered it to be the best amongst its competitors. After acquiring an Opus 40 3G Roaster, HACO will bask in the benefits of Lilla's Profile Roasting System. With low shrinkage rates, low fuel consumption, smoke-free operation, self-cleaning duct systems, variable batch capacities, among many other features, they'll be able to yield up to 2700 kg of perfectly roasted coffee.



Haco's building in Switzerland

History

HACO was founded in 1922 as a production and distribution site for specialties of the Bernese pharmacy Haaf & Co. (which later became HACO). One year later, the company acquired the TexTon factory in Gümliigen, Switzerland, including the manufacturing process of soups and bouillons. Thus HACO was active both in the pharmaceutical and food industries. HACO's pharmaceutical research became a great success. As HACO's employee, Prof. Dr. T. Reichstein discovered the synthesis of vitamin C as well as the Cortine and Cortisone, and was awarded the Nobel Prize for medicine in 1950. In 1965, HACO ceased its pharmaceutical production and focused its efforts on the ever-growing food industry. Since then, Haco became known for its top-quality products. Haco's milestones in the last decade:

- 1994** Certificate of approval for quality standards ISO 9001. Extension of the NARIDA production plant. Production of freeze-dried tea extracts
- 1997** Start-up of new dry-blending plant
- 1998** Certificate of approval for environmental standards ISO 14001
- 2000** Replacement and enlargement of freeze and spray-drying facilities at the site in Gümliigen
- 2002** Extension NARIDA and installation of new production technologies

- 2004** Certificate of approval for all manufacturing processes in accordance with IFS (International Food Standard). Founding of HACO ASIA PACIFIC Snd Bhd, a production plant in Malaysia
- 2005** Start-up of the high rack warehouse in Gümliigen
- 2007** Acquisition of a manufacturing plant of dressing and sauces in LA (USA)
- 2009** Acquisition of a manufacturer of cereal bars in Traismauer (Austria)

The Future With Lilla

Since its beginnings HACO has had a commitment to invest in new technologies. This is the reason why they have chosen Lilla's Opus 40 3rd Generation Roaster. As HACO states in its website, *"we evaluate our suppliers carefully, we know them well and rate them regularly. We seek to maintain with them a business partnership and aim at long-term cooperation"*.

Emphasizing on quality, customer service and reliability, HACO has continually grown its operation since its foundation in 1922. Now with Lilla's OPUS 40 3rd Generation Roaster, they'll be led to new heights and experiences regarding coffee production.



Haco's brand new Opus 40 3rd Generation Roaster

NEWS

LILLA'S CUSTOMER EARNS A PRIZE ON SUSTAINABILITY

It is well known that Brazil is one of the leading countries in developing programs on sustainability and carbon footprint reduction. Recently, the respected Brazilian Coffee Association, ABIC, has granted a prize on sustainability to Café do Centro, one of Lilla's customers. Café do Centro is Brazil's largest gourmet and specialty coffee producer, and presently owns Lilla's Opus Roaster. The prize came in the form of a new seal to be put on every coffee wrapping, thus informing the customers that through its chain of methods and processes Café do Centro was able to present high standards on ecological and sustainable coffee production.



ROBERT'S COFFEE AND OPUS 4: GOURMET AT ITS BEST



Due to its versatility in the business of roaster making, Lilla is able to reach all types of producers: since giant coffee roasting plants to vintage-looking coffee shops. And the best way to describe Lilla's newest customer is a little bit of both: A traditional Finnish coffee roasting company and a chain of cozy coffee shops, spread over several locations in the Nordic countries of Europe as well as Asia. That's Robert's Coffee.

Mr. Robert Paulig, through his companies, operates the "Robert's Coffee" and "by Robert Paulig" brands that serve the gourmet and premium coffee markets. Robert's Coffee was founded in 1987 by Mr. Robert Paulig in the Katajanokka district of Helsinki, Finland. Roasting, storing, and management facilities are presently located in Malmi, Finland. Robert's Coffee is now the largest coffee shop chain in the Nordic countries with its own gourmet coffee roastery. Robert's Coffee is currently present with its coffee shops in Finland, Sweden, Estonia, Denmark, Turkey, Moldova, Azerbaijan, Singapore, and later this year, Japan. Now Lilla is proud to say that its Opus 4 Compact Roaster is an active part of Robert's Coffee history.

The "by Robert Paulig" brand serves the retail, HoReCa and office coffee segments on the domestic Finnish market. The selection of products includes original coffees, coffee blends, espressos, flavored coffees, stomach friendly coffees, decaffeinated coffee and tea. The selection also includes coffee berry soft drinks, coffee berry wines, coffee and tea-related gifts, supplementary products for coffee and tea making, and flavored syrups.

Mr. Robert Paulig was kind enough to share with us some of his thoughts regarding his business:

Lilla Gazette: What made you get into the coffee business?

Robert Paulig: My coffee roots actually come from 7 generations ago, when my ancestor Anders Byström, at the time mayor of Helsinki, started roasting coffee back in the 1750's. Until the 1980's my family held over 70% of the voting rights in Finland's largest coffee producer, Oy Gustav Paulig Ab, which my father, Hennik Paulig, rebuilt after the second world war. However, after my father passed away I felt that the passion and hand crafting spirit had been lost. This is when I decided to branch out and start my own gourmet coffee company with a focus on quality and a true passion for coffee, a philosophy we can guarantee through our own coffee shop chain. The future of coffee lies in quality!

LG: And What keeps you going in this competitive market with other big players roaming around?

RP: Much of this question is already answered above. However I would also like to add product innovation as a key driver for me. I feel that there is so much yet to be done in this quite conservative industry. For example, the utilization of not only the coffee bean, but also the coffee berry, has given rise to several new products in our product range, including coffee berry soft drinks and even coffee berry wines.

LG: What exactly do you seek when you're roasting your coffee?

RP: When roasting coffee the most important element, besides the coffee, is the instrument. Like a composer perfecting his symphony, a coffee roaster needs his instrument to be as accurate as possible in order for him to achieve his masterpiece.



One of many "By Robert Paulig" cozy coffee shops

LG: Since you're looking for just the right roast, what caught your attention in the Opus 4 Compact?

RP: Of course the quality of the machine, but also the fact that Lilla is a Brazilian manufacturer. I have always had plans to start a coffee roastery amid the coffee plantations in Brazil.

LG: Was that the reason why you chose the Opus 4?

RP: A couple of years back I visited Brazil and Mr. Giro Lilla himself. During this visit, we tasted both wines and coffee. During our discussions we discovered that we have very similar views on coffee and how the industry should be developed. This visit gave me great confidence in Lilla as a company and also contributed to the decision of going for a Lilla roaster.

LG: What are your expectations regarding the future of Robert's Coffee?

RP: In the future I see Robert's Coffee as a gourmet coffee roastery with a wide international coffee shop chain, while "by Robert Paulig" is a leading brand on the domestic premium coffee market. I see a great opportunity for developing our stomach friendly coffees for wider markets as problems with heartburn and stress are set to increase even further in the future. This venue also provides a tool for the industry to increase coffee consumption, especially in the more mature coffee markets.

By acquiring Lilla's Opus 4 Compact Roaster, Robert Paulig is now able to keep up with the recipes that made it famous over the years. With the Opus Compact Series, Lilla was able to bring to small roasters the very same controls and profiles before available only in large-scale roasters. And that was exactly what Robert Paulig sought: Small machines, perfect results.



Mr. Robert Paulig

NEWS

SCAA 2010 – Anaheim, California

Since 1994, in Houston, Texas, Lilla has been part of one of the world's largest coffee business exhibit, the Specialty Coffee Association of America. For the 16th consecutive year, in Anaheim - CA, our team was able to meet many long-term and new partners and friends, make hundreds of new contacts, and share precious technical information with hundreds of producers and admirers of the coffee industry. We are sure that those who visited our booth were enriched by the information given on coffee roasting solutions. It was a joy for us to pass on all the knowledge and skills that have been acquired over the last 92 years in the coffee roasting business. Going back to where Lilla first attended this great show, we'll wait for your visit at the SCAA 2011, in Houston, Texas.

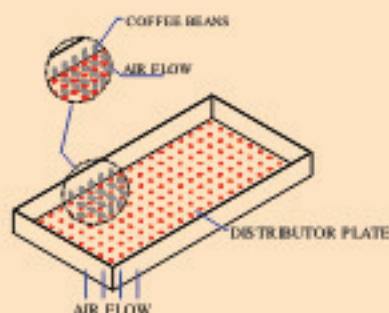


THE MAIN DIFFERENCES BETWEEN FLUIDIZED AND SEMI-FLUIDIZED BED SYSTEMS

Which roasting system is better, considering the necessity, in certain moments in roasting, for sudden and intense heat variation?

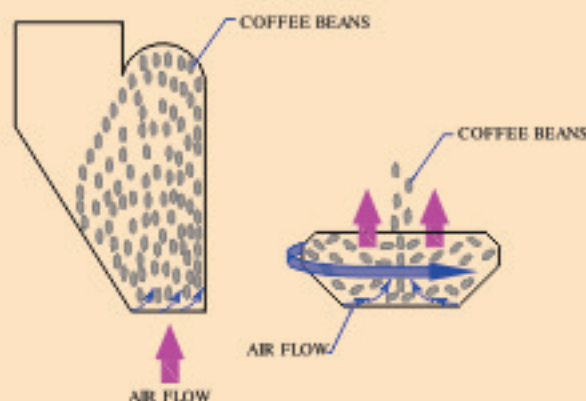
The Origin of the Names

The origin of the names "fluidized" and "semi-fluidized" is directly related to the movement resulted from roasting using a bed dotted with small holes. Such processes are not unique to only roasting coffee. For example (see picture 1), here is a system where mineral coal powder is burned on a bed dotted with small holes, allowing the combustion air to pass through the powder. The volume of air used in such a system suspends the coal powder, making it float over the bed's surface, while it's being burned. The movement made by the coal in such conditions reminds one of the movements of liquid substances, thus giving this process the name of "fluidized bed combustion"



Such systems have been utilized on many coffee roasters over the last century, where the coffee was spread over a perforated bed, and floated due to the airflow resulting from the influx of combustion gases underneath it. The system used in these roasters received the "fluidized bed" name due to the coffee beans making a "fluid-like" movement, when compared to the movement made by the coal powder mentioned previously. However, as time went by some roaster manufacturers have used this very same name to denominate systems in which the coffee does not present a fluidized bed movement. We will understand how it happens in the following explanation:

Fluidized bed roasters require a much higher airflow than that used in conventional roasters. Therefore, roaster manufacturers started creating projects different from the original design, using the same large amount of airflow in the roasting process, and naming such roasters after the fluidized bed movement system. Such nomenclature became common among all types of roasters, where the beans were moved around the roasting chamber exclusively by pneumatic force. Please see below examples of these projects.



Another variation of this type of system was created after the fluidized bed, where roasters use an amount of airflow large enough to partially move the beans around the roasting chamber, but also utilizing mechanical help to move the beans, such as paddles or any other moving element inside the drum. Because these systems don't depend exclusively on the airflow to move the beans around, they are commonly referred to as "semi-fluidized bed". Now here comes the big question: Which system is the best? Traditional, fluidized or semi-fluidized? We'll help you with the answer.

The Best Roasting System

The disadvantages of conventional roasters rest upon their limitations regarding the amount of heat they are able to produce. Due to the fact that these roasters utilize relatively low amounts of airflow, they do not have the necessary conditions to provide high heat transfer rates. The only resource left in such roasters in order to increase thermal transfer is to increase the temperature of the airflow, which by itself is limited to the thermal resistance of the roaster's components, once high temperature reduces the lifetime of the roaster's internal parts. Alternatively, fluidized bed roasters can, even with lower air temperatures, transfer more heat to the beans, once they work with a much higher airflow.

So what is more important? More or less heat transferred to the beans? The answer lies in the flexibility between both: A high amount of heat transfer in some moments, and a lower amount in others. This principle is related to the theory of Profile Roasting. On the basis of numerous experiments made in this area, the conclusion is irrefutable that large heat variations are necessary so that one may be able to control features such as acidity, bitterness, body, density, soluble extractability, and many others. Further reference about research in these areas may be found on edition # 7 of the Lilla Gazette, or at www.lillaroasters.com. Without flexibility in heat transfer, the application of the Profile Roasting System will have little or no impact in the final product's quality.

The necessity for flexibility mentioned previously goes against some limitations of fluidized bed roasters. Due to the fact that the movement made by the beans in such roasters happens exclusively through pneumatic force, the airflow volume is always very high, thus not allowing the roaster to conduct lower heat transfer rates. In theory, it would actually be possible to have the roaster working in such a temperature that would allow heat transfer rates to be as low as desired, even with high air-through-put rates. However such an action would cause extremely high fuel consumption, and be excessively costly. This is especially so for eliminating smoke, since the high volume of relatively cold air would require additional high volumes of fuel to reheat the exhaust, along with an unusually large oven chamber to allow the necessary retention time for smoke elimination as to meet general environmental standards. The result of such high operational costs is that fluidized bed roasters typically limit the design to only work with medium-to-high heat transfer rates, resulting in a roasting time not longer than 9 or 10 minutes, with relatively narrow roast profiling parameters. Nevertheless, the crucial factor to stress here is not roasting times per say, but the limitation of not being able to cause fast reductions in the heat transfer during specific moments, such as the first and second cracks. The ability for sudden and abrupt changes in heat transfer rates is crucial in many roasting profiles in reaching the most of each coffee's potential.

We can conclude then that semi-fluidized bed roasters offer a more flexible control and thus are a better option for demanding roasting curve profiling, required nowadays. Combining the coffee movement inside the drum with a mix of adjustable mechanical and pneumatic processes, it is possible to vary the two features that have the greatest influence upon thermal transfer: temperature and air evasion rates. These two parameters are the cornerstones that allow roasters to work with a much broader range of heat transfer rates with the precision and control necessary for better roasting results.

Conclusion

There are drum roasters out there that work with a sufficiently high airflow as to generate the semi-fluidized bed effect. This type of roaster brings a remarkable advantage: different from other cases, the beans are fully and perfectly moved by the drum and its paddles' rotation. Such advantage allows roasters to work with high airflow rates, taking advantage of high heat exchanges that the semi-fluidized bed system offers, or, at a given moment, reduce the airflow at extremely low levels when very low transfer rates are required. In this last case, once the mechanical motion is perfect, the lack of a higher airflow does not compromise the final results, allowing huge flexibility for the roaster to work with the most varied roasting curves, maximizing the effects and results upon the final product's quality.

Fernando Fernandes