



## The Environment in Focus – CO<sub>2</sub> Neutral Roasting

Page 6

Roasting can be climate-friendly. Despite CO<sub>2</sub> emissions during the roasting process gas can be significantly reduced using various methods. In best cases even a CO<sub>2</sub> neutral roasting is possible. PROBAT shows approaches for making a positive contribution to the environment.

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Tracking and Tracing – Quality Management Part II



Christian Beckmann  
Product Management

### Technology for the Future

## “Setting the Right Course”

Dear readers,

Setting the right course means deciding on where you are heading! That presupposes decisions on where you want to go. PROBAT focuses on emerging technologies – not only to the benefit of our customers but also for the environment. In product management we have a strong responsibility for that.

We can set the right course for our environment if we act responsibly and invest both in today's technologies as well as emerging ones while also using them to protect the environment. The roasting process offers a lot of potential here. In that process it is possible to significantly reduce or even completely prevent CO<sub>2</sub> emissions using energy saving methods or alternative fuel sources. Read more on page 6 on approaches and implementable solutions for becoming active in this area.

In the area of product quality it is also possible to set the course. Tracking and tracing are quality management instruments with which we can retrace practically each single coffee bean along the whole process chain of coffee production and refinement. In the second part of our series on quality management on page 7 you will find out how to control logistics processes using this instrument.

Product quality is a key issue too in the option packages of the new NEPTUNE 1500 drum roaster. On page 8 you can read about what packages we have created for your →

individual adaptation and how you can thereby achieve savings potentials.

In this edition the Coffee World section deals with coffee cups and glasses and the various alternatives with regard to material, form and function. Glass or porcelain – does it really make a difference? For some good answers LEONARDO also interviewed the World Barista Champion of 2002, Fritz Storm. You will find his responses on page 4. Our customer portrait introduces you to Sara Lee, a leading supplier of coffee and tea products such as the well-known brands “Douwe Egberts” and “Senseo”.

We hope you find the magazine stimulating and informative reading.



Christian Beckmann  
Product Management

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Cups: Attractive and functional

## The Right Cup for Good Coffee

For coffee enjoyment to be perfect the right drinking vessel is essential.

LEONARDO examined what is important.

A lot of know-how and experience are necessary for developing a top-quality product within the trilogy of coffee. For that reason the precious result gets a special touch when it is served in a vessel that combines several features. If you look at the diversity of drinking vessels you will find that the classic coffee cup is made of porcelain. Porcelain manufacturing goes back to the year 620 in the Chinese Empire. It was only in 1710 that the first European porcelain manufacturing company was founded in the German town of Meissen. The beneficial properties of the so-called white gold are what make porcelain attractive as a drinking vessel for coffee. The material can be preheated easily and an unlimited creativity regarding design leaves the door open for individual forms and requirements.

### Glass as an alternative

But the alternative glass too has been on the advance as a vessel for coffee during the last couple of years. The crema and colour of an espresso can, for instance, be served in an optically appealing way using the glass variant. In terms of heat insulation, too, modern glass can keep up. In this way, a Swiss company called Bodum developed double-walled glasses that are particularly well insulated against loss of heat. At the same time, the outside of the glass can be

touched without any difficulty, without burning your fingers. With latte macchiatos glass vessels have been first choice for a long time as they allow the layers of milk froth, warm milk and espresso to be impressively orchestrated. But because of its classical benefits, thick-walled porcelain is still the most important vessel material for coffee enjoyment. Porcelain manufacturing companies such as Meissen in Germany or d'Ancep in Italy translate practical functions into stylish design.

### Enjoyment and function should harmonise

In the production of its porcelain cups and glasses for coffee, the German company Rastal, too, besides paying attention to design, puts a strong focus on function. In this way, the designed cups undergo a series of extensive tests. An espresso cup, for instance, was compared with other cup models currently available on the Italian market. It had to be measured against the technical espresso-testers' cup that has been developed for coffee tasting by the Centro Studi Assaggiatori (Research Centre for Coffee Testers) in collaboration with the Istituto Internazionale Assaggiatori Caffè (International Institute of Coffee Testers). Transporting brands and corporate designs is another intelligent function a cup can fulfil. A difficult task that time and again is a challenge for production. ■

## Talking to Fritz Storm

LEONARDO talked to Fritz Storm, the 2002 World Barista Champion, about alternatives regarding coffee drinking vessels.

**Mr Storm, you have prepared a lot of coffee in your life and even became the World Barista Champion in 2002. Does it actually make a difference whether espresso is served in a glass or in a porcelain cup?**

*Fritz Storm:* First of all I would like to say that I am not an engineer, meaning that I look at this purely from a Barista point of view. Normally porcelain is a bit thicker, and that helps the drink to keep a constant temperature. Another thing is, porcelain does a better job than glass in keeping temperature. All in all, porcelain is better regarding temperature stability so that I would say that particularly an espresso will be better if served in a vessel made from this material.

**Which vessel forms are best suited for which drinks? Posed differently, do certain forms enhance coffee enjoyment?**

*Fritz Storm:* Regarding the aroma of the coffee, a conically shaped cup or glass gives a better sensation. Meaning you will sense more of the aromas with these types of glasses.

**Conversely, are there cups or glasses that are less suitable because they do not, for instance, allow the development of a nice crema?**

*Fritz Storm:* If we take an espresso or cappuccino cup it is very unsuitable if it has a flat bottom. The crema will very easily break because of the way it is built up in the cup and you will thus lose a lot of aroma sensation. The crema is lost if it adheres to the cup's wall. If you instead have a rounded bottom you will experience a much thicker and smoother crema.



Fritz Storm in action during a showing

**Is there a trend towards glass with espresso?**

*Fritz Storm:* Yes, and I think in general that we are seeing more and more glasses in the coffee shops around the world. Sometimes it makes the drinks look nicer.

**What would your ideas be if you were to contribute to designing a coffee or espresso cup?**

*Fritz Storm:* I would try to use new material, make a good handle and then really try to make a good aroma sensation in the espresso cup. I would work with a conical shape, thickness and colour.

**In your experience, do the material and the form of a coffee cup influence the perception of taste?**

*Fritz Storm:* I think good material as well as a nice shape and decoration can make a good coffee experience even better. But, looking at it the other way around, you can never make bad quality coffee taste better by serving it in an excellent cup. Personally I think you will only feel even more offended by that.

**Mr Storm, thank you for the interesting conversation. ■**



Double-walled: Warm inside, cold outside



Optically appealing: Espresso in a glass



Classically functional: The porcelain cup





## CO<sub>2</sub> Neutral Roasting in Practise

**Roasting can be climate-friendly. Despite CO<sub>2</sub> emissions during the roasting process gas can be significantly reduced using various methods.**

Climate change and its impact on the environment is an all-pervasive and an ever more pressing issue. This fact led to thinking on the part of PROBAT on what contribution coffee processing can make to CO<sub>2</sub> reduction. CO<sub>2</sub> is released from the coffee beans during the roasting process and stems from the fuels used and the electrical energy required for processing. Today, carbon-trading certificates already give us an opportunity for at least compensating our own CO<sub>2</sub> emissions. Several roasting companies support climate protection projects in developing countries in this way. Although this is certainly a creditable approach, PROBAT looked for ways of preventing the detrimental gas from even developing in the first place.

Due to the growth process of the coffee bean CO<sub>2</sub> enters and is bound by the bean during photosynthesis. During the roasting and grinding process the gas is released so that these processes are in sum neutral. **The decisive issues are therefore energy consumption and energy sources.** PROBAT's roasters today already enable an up to 70 percent savings in required energy. A further step is the use of CO<sub>2</sub> neutral electricity made from renewable energy sources such as water, wind and sun. Conditions permitting, you can produce this energy yourself or buy it as "green electricity" – by the way, this makes it possible to roast in a CO<sub>2</sub> neutral way for electrically heated shop roasters! Alternatively, you can switch to renewable resources such as rapeseed, oilseeds, biogas, wood or other renewable fuels for obtaining combustion heat. Heating PROBAT roasters with biogas is already now technically possible. You can also switch to natural gas, as modern burners with double-systems are equipped for two kinds of gas to guarantee process reliability. Several countries already use biogas gained from the fermentation process of coffee

berries for drying green coffee. The PROBAT Group recently equipped large industrial roasters in Brazil with modern wood-burning heat generators that use wood shavings coming from coffee plants and eucalypt trees. The whole heat generation process is embedded in a modern roasting control unit that includes state-of-the-art features in use today. This means that we currently already have the option of using renewable energy sources to run the roasting process in a CO<sub>2</sub> neutral way. A further emissions-prevention approach: using the heat released during the roasting process. Options here are, for instance, heat exchangers that use the waste heat for district heating systems, for steam or hot water generation or for preheating burner air. Hence, a roaster optimisation by itself can already have a positive impact on the CO<sub>2</sub> balance of a coffee roasting company. PROBAT will be continuing to conduct its research and development activities in this area to retain its position as a pioneering market leader. Initial approaches and ideas concerning the application of bio diesel to heat burners or for using waste heat to operate fuel cells are presently underway. ■

### Advice and information

Talk to us, as we would be glad to advise you on solutions for CO<sub>2</sub> neutral roasting as well as compute the CO<sub>2</sub> percentage of your roasting process.

#### Contact:

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## Tracking and Tracing – Quality Management Part II

The traceability of a product or a commodity is a decisive aspect of quality assurance. Using PROBAT's control technology all relevant production data is available at the push of a button.

Tracking and tracing are part of an electronic system of tracing consignments whereby the term tracking pertains to the detection of the current status of a product, i.e. in what condition it is and in what part of the production process it is located. The term tracing means that the precise course of a consignment including all important occurrences is reconstructed. In other words, tracing can at any time determine when, where and by whom a commodity was produced, processed, filled, stored, or used. Tracking and tracing are crucial prerequisites for undertaking a weak-point or vulnerability analysis of logistics processes.

We distinguish between downstream tracing (i.e. from producer to consumer) and upstream tracing (from consumer to producer). Downstream tracing allows the producer to callback products with quality flaws in order to preclude damages and possible product liability claims. Upstream tracing allows consumers to trace a product's complete supply chain back to its producer and identify ingredients or special process and product features.

In the food sector a European Union directive concerned with the traceability of foodstuffs has been in force since January 2005; it defines documentation responsibilities for all processing steps. Businesses certified in accordance with the International Food Standard (IFS) also have detailed responsibilities relating to the documentation of production data. All data underlying external monitoring needs to be recorded for each single product batch in order to ensure a complete traceability along the whole process chain.

In coffee refining this means: The path of the coffee bean can practically be traced from the palletised coffee bags to production – which entails roasting, grinding and packaging – to the coffee plantation. Using PROBAT's control technology this is possible at the mere push of a button. With automatic systems, production data is collected by special documentation software and is available on call. The only prerequisite is that clearly defined measurement or data points can be allocated. ■



The product number guarantees the traceability of a coffee batch from the plantation right up to the shop shelf

### Quality criteria

The following parameters, amongst others, can be queried during the various phases of the refining process:

#### Supply

- Lot number
- Sort
- Delivery date/time

#### Lab

- Moisture
- Quality

#### Blend

- Blend
- Weighing date/time

#### Roasting/Roast coffee weighing

- Roaster
- Roasting time
- Shrinkage

#### Ground coffee

- Degassing time
- Packing line
- Package number

## Seven Strong Option Packages

**The NEPTUNE 1500's configuration packages offer individualised configurations. Appropriate packages have price advantages too.**

On the basis of the modern NEPTUNE 1500 drum roaster it is now possible for the first time to get an individually configured roaster via selectable option packages. "With the packages, we have created a clear structure for our customers, a structure that offers a quick and sensible enhancement", explains Christian Beckmann, Head of Product Management at PROBAT. Until now, various options were often included within the standard configuration and thus required a higher initial investment. Or the unit was delivered without options and was later upgraded. "The option packages are put together sensibly and also offer attractive savings", adds Beckmann. In this way the bundled options are lower-priced than the sum of individual options. The following graph gives you an overview of the individual packages:



### More safety

The option package "Safety Basic" offers greater safety and was conceptualised with recirculation especially for the NEPTUNE 1500. The recirculation technology used in PROBAT roasters for saving energy feeds back roasting gases into the system. The enriched CO concentration can be continuously monitored with a CO monitoring unit. Advantage: In cases of excessive concentrations the system shuts down the roaster's heater and, if appropriate, also the catalytic converter. Workers and machines are thus ideally protected. Further elements of the package: safety features in the roasting cyclone for identifying chaff stagnation and for automatic emergency water quenching in cases of excess temperature.

### Protection against power failure

"Safety Plus" was put together to ensure a controlled cooling in the case of power failures and water shortages as well

as to ensure extinguishing of the roasted product in case of fire. The system ensures the process and emergency water feeding of the roasting machine via a water chamber unit. A battery cache unit prevents water feeding in cases of short-term power failures whereby the end product remains intact. The control unit is powered for up to 8 minutes and can thus carry the roaster over into a safe operational mode.

### Thermal cleaning

The option package "Easy Clean" offers a minimisation of necessary deposit-induced cleaning time by way of its thermal cleaning of the recirculation pipes and its ideally selected cycles. Advantage: Increased production time and minimisation of down times. The option package "Stainless Steel" is included in the consignment.

### Comfortable overview

The "Comfort" package's components store data on total consumption and consumption per batch with respect to gas, water and electricity. Besides continuous consumption monitoring, process malfunctions can be identified early on and down times can be minimised. Moreover, the "Easy Reflex" function is included in this package as an upgrade for PROBAT roasting control units (more on this in Issue IV). Also, this package allows for a recipe-dependent adjustment of the performance of the high-suction destoner that enhances separation efficiency depending on the sort of coffee.

### Dark roasts

Higher quality dark roasts require more than a mere extension of roasting time or increase in roast supply air temperature. The specially developed option package "Dark Roast" significantly improves roasting results: The roaster can be operated on a full, part or almost non-recirculation basis – which gives you the greatest possible flexibility.

### Acoustic insulation

The option package "Low Noise" significantly reduces noise emissions induced by the roasting process and thus contributes to environmental protection.

### Stainless steel components

Customers who select the "Stainless Steel" package get a roasting system whose pipes as well as cooling sieve floor and cooling sieve inner edge are made of stainless steel. Besides the advantage of increased resistance against corrosion the roasting system has a high quality, modern as well as clean appearance. ■



# Talking to Sara Lee

**LEONARDO talked to Eng. Carlos A. B. Scheffer, Manufacturing Manager at Sara Lee, on the many years of collaboration with PROBAT.**

## How long have you been working with LEOGAP?

Answer: One of the companies purchased by Sara Lee do Brasil, called Café do Ponto, has been a client of LEOGAP for approximately 15 years.

## Which LEOGAP units/products do you operate?

Answer: Sara Lee already consolidated its operations into one facility that started activities in 2006 in the county of Jundiá – about 50 kilometres from the capital city São Paulo – where all production is concentrated. This unit has processing machinery from green coffee to feeding of the packing equipment, 100 percent LEOGAP/PROBAT.

## On your site you already have an external green coffee silo for 1,000 tons; can you describe how you made the decision to get a new one for 1,600 tons?

Answer: The first silo, constructed with a storing capacity of 1,000 tons, is also a blending silo. The second silo, for 1,600 tons, is being constructed side by side and has the same dimensions, but will be used only for storage. The space occupied by the scales and by the gravity fall tubulation was used by a storage body and by mechanical transport, allowing for a larger storage capacity.

## What were the most important criteria for you, for which LEOGAP had to be offering a solution?

Answer: As LEOGAP is part of the PROBAT group, the largest worldwide producer of coffee equipment, we were confident in adding their know-how to the know-how of our technical team, with a view to obtaining optimised solutions.

## What do you think of the operability of your installation?

Answer: The concept of this new facility was to obtain a high level of automation, where the whole process is being controlled by means of a supervising system that permits diagnosis and correction in a fast and safe manner.

## In your eyes, what are the advantages of the new installation?

Answer: Equipment of high yield and capacity permit operation with high productivity.

## What do you like about working with LEOGAP?

Answer: Due to its dimensions and reduced delivery schedule, the construction of this new factory required a considerable



Sara Lee plant in Brazil

effort in team work where objectives and goals were established and constantly checked, with a view to surmounting any obstacles that might appear.

## On the basis of your experience, how would you assess your work with LEOGAP?

Answer: The LEOGAP team dedicated itself to a project that was so far the largest ever implemented in Brazil and one of the largest worldwide, always with seriousness and professionalism. ■

## Brief portrait

Egberts Douwe and his wife Akke Thyssen opened their first shop, De Witte Os (white steer), specialising in coffee, tea and tobacco in the city of Joure, Netherlands, in 1753.

For many years they served only the local community. The expansion of De Witte Os started in about 1780, when Douwe Egberts, son of the couple, joined the business.

He took his products to other markets, and later gave a name to the company that obtained an international reputation as a synonym of excellence and tradition, principles that were perpetuated by his descendants.

The alliance with the Sara Lee Corporation in mid 1970 contributed to the fact that Douwe Egberts stands out as one of the three largest coffee roasting companies in the world.

Today, the group counts on a number of well-known brands in over 50 countries, like Café Pilião, which started to be part of everyday Brazilian life in 1978 and became a market leader, being the blend most often mentioned in all market surveys as the strong coffee in Brazil.



Christian Beckmann and Jens Roelofs (left) together form the Product Management Department

## Product Management for More Customer Proximity

The product management department is the interface between various departments and an important unit for customised customer requests. At PROBAT a new team is taking care of this important area.

Often the activities in the second row guarantee the smooth flow and the finishing stretch of the product on its way to the customer. As a melting pot for information from various areas such as sales, marketing as well as research and development – that's the function of the product management team established at the beginning of this year at PROBAT. Besides Department Head Christian Beckmann, Jens Roelofs supports the Department.

### Summary of scope of duties:

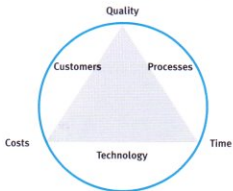
- Product innovation
- Brand policies
- Programme planning
- Process organisation

The strategic assessment of the product policy chosen with respect to investments is a further duty of product management, which always focuses on customer value. Product novelties and their further development can now be implemented more quickly as impulses of individual departments and their staff find their way into practical implementation more quickly.

### Relief and productivity

Relief in internal communication creates potentials for neighbouring departments and enhances productivity there. The result for the specialist departments: more space to concentrate on their core competencies.

In terms of assessing the market, too, with respect to customer needs and requirements regarding roasters, units and plants as well as single components the new department is a lever for more efficient working methods. This means that Emmerich has taken a further step towards improving customer proximity with respect to new developments. Reactions to market changes can now be more swift and upfront. ■



## Trade Fair Dates

Below you will find information on upcoming trade fairs and events.

13th–17th October 2007

**Anuga – Specialist trade fair for the international food and beverages industry**



[www.anuga.de](http://www.anuga.de)

19th–23th October 2007

**SIC – International Coffee Exhibition, Milan, Italy**



[www.host.expects.it](http://www.host.expects.it)

## New website with comprehensive information

With the complete revision of its website PROBAT has undertaken a further step towards providing more and better information on issues surrounding coffee. In the sections Roasting and Plant Technology, Gourmet World, Company and Know-how you will find a lot of information for customers and other interested individuals.

[www.probat.de](http://www.probat.de)  
[www.probat.com](http://www.probat.com)



## Brief Notes

### New representation in Dubai

PROBAT opened a new representation in Dubai on 1st July 2007. There, the company Integrated Packaging Systems (IPS) can help you with any queries in the area of industrial plants, lab equipment and shop roasters. The representation of the PROBAT-Werke encompasses the following countries: Tunisia, Saudi Arabia, Iran, Libya, Yemen, Afghanistan, Sudan, Oman, Pakistan, Lebanon, the UAE, Malta, Syria, Qatar, Cyprus, Jordan, Bahrain, Iraq, and Kuwait.



Visit and coffee training of representation delegations from across the world in Emmerich

### Biggest cocoa roaster in the world completed

Called FRD 6000/C, PROBAT has completed the biggest cocoa roaster in the world. The model can handle batches of up to 5,400 kilograms. In addition, the new model boasts numerous quality and safety improvements. Until now, the models available were the FRD 2000/C with a batch size of 1,800 kilograms and the FRD 4000/C with a batch size of 3,600 kilograms.



Last touches in the production hall in Emmerich on the Rhine



## Roasting is Our Passion



Research and development is our recipe for roasting machines, units and plants of the highest quality. Our customers value this as seven out of ten beans of coffee drunken worldwide is roasted on equipment produced by the PROBAT Group.

- Roasting machines, units, and plants for the coffee industry – from large roasting plants to shop roasters
- Research and development in our in-house pilot engineering section and lab
- Coffee knowledge and training courses: Conveying knowledge on the coffee trilogy

[www.probat.com](http://www.probat.com)



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