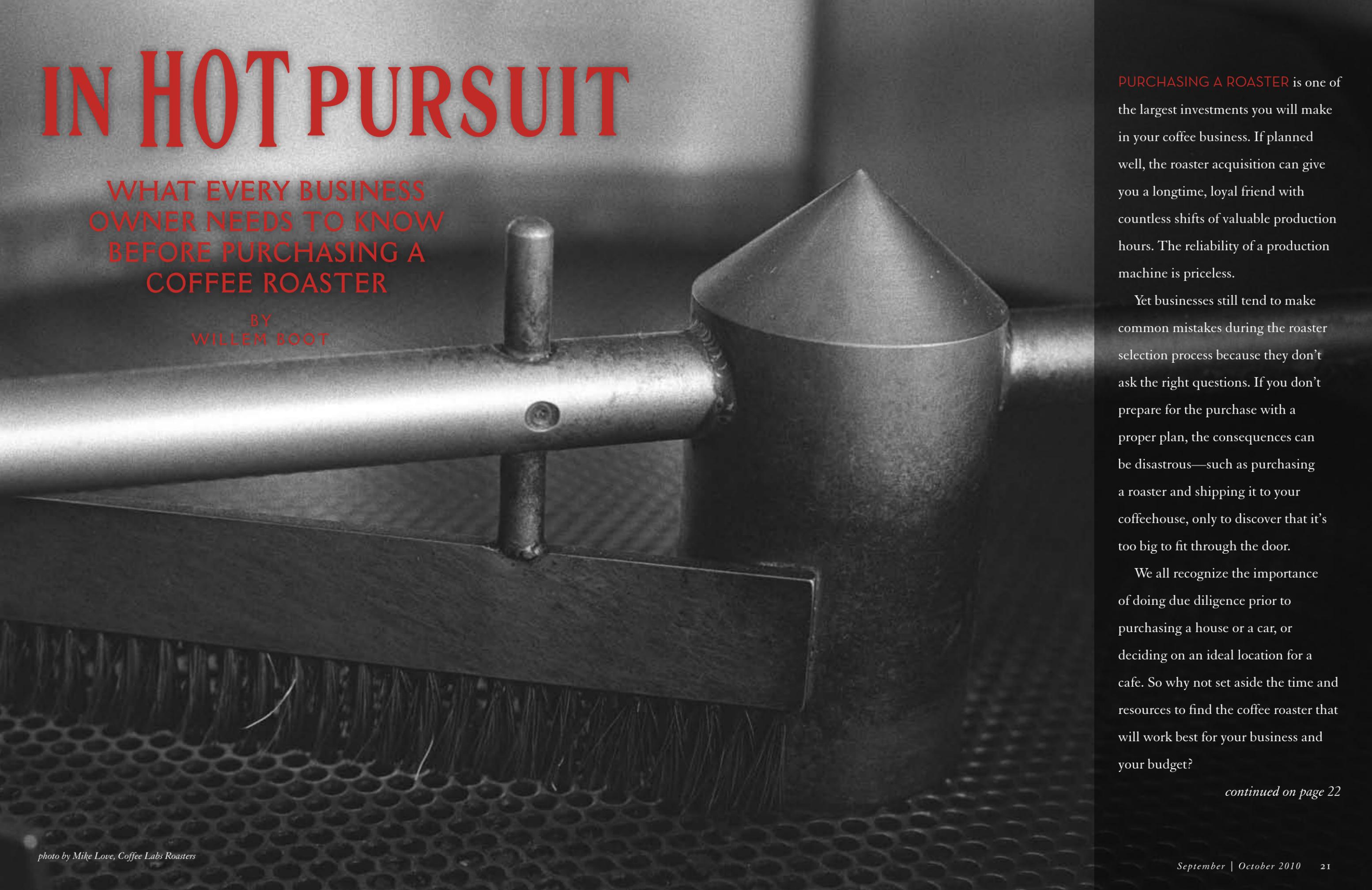


IN HOT PURSUIT



WHAT EVERY BUSINESS
OWNER NEEDS TO KNOW
BEFORE PURCHASING A
COFFEE ROASTER

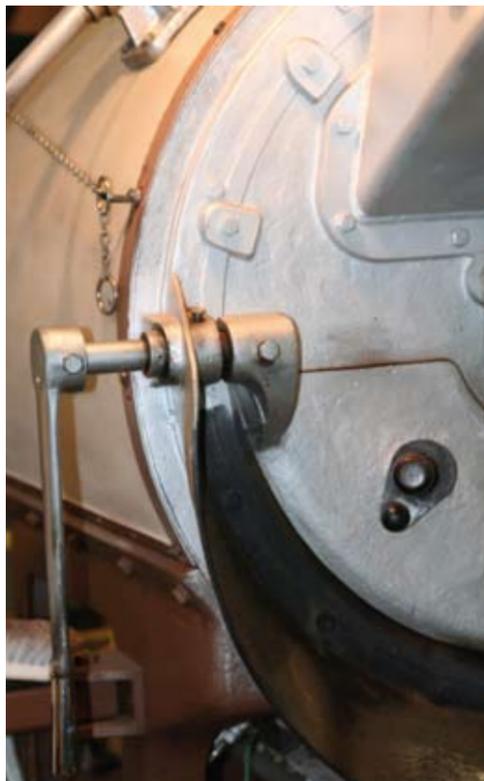
BY
WILLEM BOOT

PURCHASING A ROASTER is one of the largest investments you will make in your coffee business. If planned well, the roaster acquisition can give you a longtime, loyal friend with countless shifts of valuable production hours. The reliability of a production machine is priceless.

Yet businesses still tend to make common mistakes during the roaster selection process because they don't ask the right questions. If you don't prepare for the purchase with a proper plan, the consequences can be disastrous—such as purchasing a roaster and shipping it to your coffeehouse, only to discover that it's too big to fit through the door.

We all recognize the importance of doing due diligence prior to purchasing a house or a car, or deciding on an ideal location for a cafe. So why not set aside the time and resources to find the coffee roaster that will work best for your business and your budget?

continued on page 22



PLANNING THE PURCHASE

Those looking to buy a roaster must diligently prepare for the purchase by devoting sufficient time to inspecting different machines, using specific qualification criteria. If you want to prevent major post-purchase surprises, develop your own checklist of questions and issues that need to be addressed during the selection and procurement of a machine.

It's a daunting task to compare the specifications of all of the roasting systems on the market. Only a decade ago, the diversity of machines with smaller batch capacities was limited to less than 10 brands. Now, more than 20 different manufacturers and suppliers have machines on the market, and this number is steadily increasing.

This article doesn't contain recommendations for certain machine brands or models. Instead, it outlines some clear guidelines and tips that can

be indispensable during the buying process of your new or used roasting machine so you can develop your own proprietary requirements for the purchase.

For the sake of keeping this article brief enough to fit in these pages, the article is geared toward those who are considering the purchase of a drum roaster. However, roasters who are looking into air- or wood-burning roasters can use many of the same tips to help make an educated decision.

To discover which roaster is right for you, be prepared to ask lots of questions. Take the time to quiz roaster manufacturers, other roasters and, most importantly, yourself. Your questions will fall into three general categories: business, technical and practical.

KNOW THY OWN BUSINESS

Buying a roaster is a major investment. Unlike a t-shirt, you can't take it back

if you change your mind. Take a realistic look at your business and ask yourself some key questions.

What size roaster will you require, and what is your budget? One roaster can be five times the cost of another. Once the roaster arrives, what is the cost to install it, and who will install it? Closer tech support means that you'll have easier access to manufacturers.

Investigate additional equipment that you may need to buy to complement your roaster. A powerful roaster may require an equally impressive afterburner. Figure out how you will handle (and budget for) extra equipment before making a purchase.

When budgeting, figure in the cost of maintenance and labor. If you need to replace a part on the roaster, procuring a spare part requires not only cash but also a slowdown (or worse, a complete standstill) in production. The length of time you can wait between ordering and receiving a spare part may steer you toward certain manufacturers.

The answers to these questions will be unique to your situation, so take your time and make sure you are comfortable with your budget before you get serious about your hunt for a machine.

continued on page 24

BUSINESS QUESTIONS TO ASK

- ▶ What size and type of a roaster do I need?
- ▶ How much does the roaster cost?
- ▶ If I outgrow it, what are my options?
- ▶ How much will it cost to crate and ship the roaster?
- ▶ How much will it cost to install?
- ▶ Does the manufacturer have a warranty? If so, what is it?
- ▶ Does the manufacturer have a reference list with roasters of a similar size?
- ▶ Will I need any other equipment to operate this roaster (afterburner, loader, etc.)?
- ▶ How much will it cost me to roast a batch of coffee (energy and labor)?
- ▶ What are my options for financing the purchase?
- ▶ What is my time frame? Some manufacturers take up to a year to fabricate a roaster.

DEDICATED TO COFFEE



K30 Single Espresso Grinder K30 TWIN Espresso Grinder

MAHLKÖNIG grind-on-demand technology supports baristi worldwide and guarantees sensational espresso, cup by cup!

More than 80 years of German engineering and the philosophy of manufacturing our grinders by hand stand for quality leadership and innovation.

www.mahlkoenig.com
www.mahlkoenig.de



The professional art of grinding
since 1924

NEW ADDRESS: MAHLKÖNIG USA, Inc., 4416 Bennett Memorial Road, Suite 104,
Durham, N.C. 27705, USA, Phone +1 -919-593-0622, info@mahlkoenig.com





An initiative from **syngenta**.

NUCOFFEE is dedicated to generations of great coffee.

We're committed to connecting roasters and growers sustainably, for the long term. NUCOFFEE works with farms in all of Brazil's growing regions to meet the needs of roasters worldwide, no matter how big or how small.

At the same time we promote environmentally responsible farming on a local level. From water source restoration to promoting fair labor practices, NUCOFFEE helps farmers keep great Brazilian coffee flowing for years to come.

Learn how you can buy in to this great initiative at nucoffee.com.br.

In the US, call +1 954 797-0078 for more info.



Enio Miari of Fazenda Araras, in the region of South of Minas, Brazil is part of the NUCOFFEE initiative.

follow us on twitter @nucoffee

GET TECHNICAL

Next, you'll need to consider the technical aspects of the machine.

As a first step, ask the machine vendor for a technical diagram of the roaster. Make sure you're talking to the right person. With smaller manufacturers, the chief engineer of the company often owns the business, and

this would be the ideal person to speak with. The technical diagram generally shows the combined product flow and airflow of the roaster. It should list which motors are part of the system and how all parts are mechanically interconnected. Once you have the technical schematics, you're ready to start asking about the specifics.

Those considering purchasing a roaster should talk to other roasters—not only

those who have dealt with certain manufacturers, but also those who roast or have roasted on similar machines. Roasters generally are all too willing to discuss what delights and irritates them about certain machines, reveal modifications they have made (or been forced to make to overcome shortcomings or achieve desired results), talk about maintenance issues and discuss the difficulty or ease in repair or finding replacement parts. Ask them what they would do differently if they could do it over again.

Some roasters may even be willing to let you run a few batches on their machines. Rather than relying solely on the testimony of a manufacturer, use other roasters as additional references to help make an informed decision.

Let's review a few key technical questions:

■ Describe the unique benefits of this machine. Why did you choose this specific design?

The best manufacturers know exactly how to answer this question. This doesn't necessarily mean that their system is superior, but at least it provides proof of their knowledge of the roasting system. A good engineer will have a plausible explanation for the design choices that were made in the development of the machine. In addition to speaking with the manufacturer, the buyer should also seek out another roaster who is using one of the company's machines. What are the pros and cons of the machine, from another roaster's standpoint?

■ How does the process of heat transfer differ from other brands?

The issue of heat transfer is at the core of fundamental roasting discussions. Most roasting machines use three different types of heat transfer: convection, conduction and radiation.

Convective heat is transferred by a continuous flow of preheated air. In order to make this work, the roaster must have a roaster fan that moves the air along the burners and subsequently through the bed of coffee. Increasing the speed of the airflow can significantly shorten roasting times.

The second type is conductive heat, which is transferred through the contact between the beans and the hot parts of the machine (the wall of the roaster drum and the veins of the roasting chamber). Some conductive heat also travels from bean to bean.

The third type is radiant heat. The radiation is emitted by the heavy, hot parts of the machine, like the face plate. To accomplish a more gentle radiant heat, some manufacturers make these face plates from cast iron.

Machines with relatively low airflow use more conductive heat transfer, though a roaster operator can increase conductivity by using slower relative drum speeds. Low-airflow roasters have the tendency to respond more slowly to changes in the applied heat. Simply stated, in this case it takes more time for the beans to register and react to the changed heat conditions. It's important to test drive your candidate roasting machine to determine the roasting style you prefer.

■ What is the maximum rated batch capacity?

This is often a tricky question because batch capacity can hinge on several variables, including installation and roast level. Potential buyers should verify the actual required roasting time and actual capacity with someone who currently uses one of the roasters.

■ What is the maximum roasting time per batch?

Roasting times longer than 20 minutes may produce baked flavors with a suppressed brightness and, at times, leathery aftertaste. Ideally, your candidate machine should have no problem completing a batch to the start of the second crack in 15 minutes or less. Most roasters can easily produce a faster roast, but keep in mind that defects such as scorching and tipping can occur when roasting beans too quickly.

■ What is the airflow of the system?

The airflow is generally expressed in cubic feet per minute (cfm). Airflow

is important in a roaster for several reasons. Convective heat transfer occurs when hot air flows through the roaster. But after the beans have been roasted, good airflow enables the beans to stop roasting quickly once they're emptied into the cooling tray. Without proper airflow in the cooling system, beans will not stop roasting immediately and can reach a darker roast level than the

operator intended. Poor airflow can be caused by dirty machinery, installation problems or other machinery that creates a pressure problem in the roastery.

The absolute rating of airflow is necessary to calculate the appropriate dimensions and design of an afterburner or other device for the cleaning of smoke and odors. Afterburner choice will also

continued on page 26

Protecting The Cups

October is National Breast Cancer Awareness Month

BaristaWorks.com will donate 1 penny for every Pink Ribbon Sleeve sold - in your honor - to the Susan G. Komen For the Cure® Fund. Help us reach our goal of 1 Million sleeves sold by December 31, 2011

- 1,200 pre-assembled sleeves per case
- Recyclable & Compostable
- Fit all standard 12 - 24 oz paper hot cups

BARISTAWORKS.COM

- CUPS & LIDS
- INSULATING SLEEVES
- STRAWS & STIRRERS
- BAGS & NAPKINS
- CARRIERS
- CAN LINERS
- TOWELS & WIPES
- GREEN PRODUCTS

Available at BaristaWorks.com

THE ELEGANT WAY TO MOVE COFFEE >>>

Tubular Drag Conveyors

- Proven over 40+ years
- 24/7/365 reliability
- Cable, chain and solid link options
- Multiple inlets and outlets
- Cable models offer long cable life
- No filters or cyclones

Spiroflow, serving the Coffee industry for over 25 years!
More Efficient, Labor Saving, Safer, and Contamination Free! Call us today.

SPIROFLOW
GLOBAL POWDER HANDLING SOLUTIONS

TEL: 866-676-7931
E-MAIL: info@spiroflowsystems.com
WEB: www.spiroflowsystems.com

affect airflow. Additional homework may be required to be certain of your airflow rates after final installation of the afterburner.

■ **How can I produce and repeat consistent roasting profiles?**

Ideally, the roaster should have two temperature-measurement points—one for the bean temperature and a second to measure the environmental temperature. On top of that, roasters should have some way of measuring the actual applied energy during the roasting process. Nowadays, various brands include a gas pressure gauge that measures the actual pressure between the main gas throttle and the burners. In this configuration, this gauge is a good indication for the level of heat you're using to roast.

Creating consistent roasting profiles can be an arduous task if you have to manage without these tools. Make sure that your machine supplier provides detailed information on the merits of automated profiling data loggers as well as full profile

control systems. Data loggers are used to compile the time and temperature data during the roasting process to assist the roaster operator in profile roasting, while a profile control system uses electronic process control hardware to manipulate the burner, airflow and drum rotation speed to produce consistent, repeatable roasts. Again, your best validation is to ask someone who uses the brand you're looking into.

■ **What are the unique features of the drum design?**

Double-walled drums can help prevent scorching and tipping. Both of these roasting defects are undesirable as they can produce "off" flavors in the cups.

The drum's interior design and how the air moves through the drum can also impact the beans' heat absorption process. Some designs prohibit the beans from moving evenly throughout the drum, which can hinder the consistent development of flavor profiles. Ideally, the

drum includes a set of mixing veins, which allow for a consistent multi-directional movement of the beans.

■ **Does the roaster have separate roasting and cooling blowers?**

If the roaster works with only one blower, then it's generally impossible to roast and cool at the same time, which will definitely extend the cycle time per roast. Obviously, a dedicated fan will get the cooling task done much faster. For the sake of maintaining a consistent roasting performance, it's important to regularly clean your machine's interior system. Roasters are prone to developing residues of roasting particles, oils, tar and dust. Over time, these residues will alter the performance of your machine, specifically due to the fact that the roasting fan gets clogged bit by bit, which will reduce its output and—as a consequence—the airflow through the roasting system. Verify what types of blowers are used and find out whether they, and other parts, can be replaced locally. Also, find out how you can

get access to the roaster and cooler fans, and learn how to properly clean them.

■ **How long does the cooling take?**

Forget about how long it takes to cool the coffee to room temperature. The most important job of the cooling system is to halt the roasting process (see the question on airflow on page 25). Extended cooling times may produce unnecessary loss of sweetness and undesirable bitter flavor notes.

■ **Is the machine UL-approved? If not, are the parts UL- and AGA-listed?**

Buyers should ask this question to protect themselves from unforeseen surprises during the start-up phase.

There are numerous cases of roaster operators who have been hurt by their own machines. Most common are "normal" occupational hazards like first-degree burns, which belong to the least serious category of accidents. Usually, there is enough time to respond if you accidentally touch the hot plate of the roaster, and more serious burns can easily be avoided.

Other reported cases are much more serious; for example, when a finger or arm gets stuck near the moving parts of the cooler stirrer arm. If the machine isn't equipped with an accessible emergency safety switch or clutch, this can potentially cause serious injury.

TECHNICAL QUESTIONS TO ASK

- ▶ **How do I control the roaster?**
- ▶ **Can I roast and cool at the same time (separate blowers)?**
- ▶ **Why and how is your roaster different from your competitors'?**
- ▶ **Do I want a drum roaster or an air roaster? Can you explain the difference?**
- ▶ **What are the different control options for your machine?**
- ▶ **What is your drum made from, and why?**
- ▶ **What type of burner do you use, and why? What are the differences in the types of burners?**
- ▶ **Is there a difference between natural gas and propane (LPG) in the quality of the coffee?**

Inspectors can put your start-up on hold if there is insufficient proof that your roaster complies with the electrical and gas
continued on page 28

Energy saving up to **47.6%***

Plus 4 You the first eco-espresso coffee machine.



Plus 4 You helps you save energy, but that is only its first great advantage.

It is the first-born of the green line, a line of energy saving espresso machines by Astoria, which allows you to save up to 47.6% on energy and therefore on your electricity bill. Thanks to a dedicated innovative software which manages the automatic stand-by mode during non peak periods and at night, as well as the intelligent management of temperature settings, Plus 4 You only carries power when and where it is specifically required. You will thus obtain maximum flexibility, quality and consistency in the cup with remarkable savings, to help you conserve and sustain the environment.

Discover all its inherent benefits and features by visiting our website: www.plus4youtherevolution.com

A good coffee in every sense.

Plus 4 You is strongly committed to the Coffee Kids project which offers aid and funds for children from coffee-producing countries of Latin America and their families.







The Coffee Kids logo is sole property of Coffee Kids - Ground for hope. The Plus 4 You and the Green Line logos are sole property of CMA S.p.A.
* Data certified by Intertek, an independent body for security approval and product certification.

See us at
**Coffee Fest
Booth #901**



www.astoria.com
General Espresso Equipment Corporation
1-888-3-astoria

Grind Fresh for the Love of Coffee



BARATZA

Precision Burr Grinders

Baratza, LLC
425-641-1245
www.baratza.com
info@baratza.com



certifications that may be required by local authorities.

Also take into consideration your state's regulated emission guidelines. If your machine does not meet the guidelines, you will not be allowed to install it.

Lastly, talk with other roasters to determine what machines work best based on the cup profile that you would like for your coffee. Those buying a new roaster should ensure that the burner has the capacity to produce their desired roast style. If you already own a machine and are looking to purchase a second roaster, make sure your new one will produce a similar taste style.

THE PRACTICAL PERSPECTIVE

Admit it—you've impulsively purchased a cool new gadget just because you liked the color or design. Avoid making a rash choice on a roaster by sticking to your budget and your list of priorities. And ask a level-headed friend to help talk through your options before you make a decision.

Remember the adage "measure twice, cut once" when shopping for a roaster. Figure out whether you'll be able to fit the roaster through the door of your coffeehouse or warehouse. Many otherwise intelligent roasters have neglected this step and suffered the embarrassing consequences. If you have a tight space, draw a map to show to manufacturers all of the hallways, turns and stairs that the machine will have to navigate to reach its new home.

How about the ergonomics? Roasting sessions can continue for many hours. During a production day, you and your machine should be able to collaborate in harmony. Ideally, the temperature displays and operational switches and handles should be located on one side. Preferably, the sampler should be mounted on this same side, and the sampler itself should be designed for a right- or left-handed operator.

Did the manufacturer address the risk of back stress as a result of lifting heavy machine parts and green beans? How many times does the operator have to bend over during the operation cycle?

Also consider how your machine will interact with its surroundings. Will the roaster interfere with traffic at your cafe

PRACTICAL QUESTIONS TO ASK

- ▶ Can I install it myself?
- ▶ If I can't install it, who can?
- ▶ Do I need permits? From whom?
- ▶ What is the impact of a roaster on my fire and liability insurance coverage and costs?
- ▶ If renting a space, how will adding a roaster impact the rent? If my lease will be up soon, will I be able to find another space that will accommodate the roaster?
- ▶ Do I need to season the drum?
- ▶ How long will it take for me to feel confident in my finished product?
- ▶ How long will it take for me to be consistent?
- ▶ Do you offer training?
- ▶ Do you offer start-up support?
- ▶ Is the roaster difficult to maintain?
- ▶ How do I get the roaster off the truck?
- ▶ Will it fit through my cafe door?

or warehouse? Measure where you'd like to situate the roaster, and then compare those numbers with the measurements of the roaster itself—do the math once, twice, even three times to make sure you've got it right. Don't forget to consider the placement of your gas pipe. If it extends into the room, then your machine's position will need to shift as well.

Looking at the big picture, adding a roaster may involve a permitting process to make sure your system is set up to code. Talk with your insurance broker about any changes to the business's fire and liability insurance, and discuss the roaster addition with your landlord—adding a machine may increase the landlord's liability and could impact your rent.

CREATE THE PURCHASE PROTOCOL

Once you have done your initial homework, it's time to get really serious by putting it all in writing. Establish a clear agreement with your supplier on the technical specifications of the roasting machine to minimize the chance of miscommunication.

When it's finally time to take delivery, inspect the machine at the supplier's shop if you have the budget to visit the manufacturer. While you're there, review step by step that all delivery criteria have been met. At this stage, it's still relatively easy to make modifications on the machine. Once your machine has been installed in your shop, making technical changes will be much more challenging.

USED AND REBUILT ROASTING SYSTEMS

Let's briefly discuss the selection and purchase criteria for a used or rebuilt roaster. Both options are usually, but not always, less expensive than purchasing a new roaster. Most new roasters come with a warranty and technical support, but you'll probably be on your own if you buy used.

Rebuilt roasters are typically older machines that have been disassembled, inspected and cleaned. Worn or faulty parts may have been replaced. Used roasters, on the other hand, are put up for sale in varying conditions. As with any fixer-upper projects, many used roasters will need some

continued on page 30

Built by craftsmen for the artisan roaster

THE SAN FRANCISCAN ROASTER



THE PERFECT BLEND OF ART & INGENUITY



111 FREEPORT CIRCLE | FALLON, NEVADA 89406 | CALL TOLL FREE 866.957.9233 | INTL 775.996.2280 | INFO@COFFEEPER.COM

WWW.COFFEEPER.COM

elbow grease to get them looking and working their best.

Purchasing a used or reconditioned roaster can be just as tricky as buying a used car. Never buy a machine that hasn't been tested thoroughly before purchase, and always inquire with other roasting companies about the reputation of the vendor you are dealing with. Ideally, you should talk to the previous owner of the used machine. Those looking at a refurbished model should find and speak with the person who worked on the roaster to learn about what repairs were made.

In the business of used roasters, not all vendors are knowledgeable about the actual process of coffee roasting or about developing roasting profiles. The better you do your homework, the less chance there of getting your hands burned on the purchase of a mediocre machine that was either improperly rebuilt or that is operationally unsafe.

BUYING USED OR REBUILT— GENERIC ROASTER CHECKLIST

The following checklist was specifically developed for production roasters, and most questions can also be used for the majority of sample roasters.

- Who is the seller? Did they actually roast with this machine?
- What's the history of the roaster? What year was it manufactured? (This can usually be found on the serial plate.)
- Are there any signs of roaster fires? Check for a warped cooling screen or for other signs of charred components. In general, replacing a cooling screen can be a costly affair.
- When was the last time this machine was serviced? Who did the work? Can this person be reached to discuss what repairs were made?
- How is the general machine performance? Turn the machine on and listen for any unusual sounds. Locate the position of the roaster fan and the cooling fan. If you can inspect the fans, then



open them and check the cleanliness of the fan housing. Does the roaster fan make a rattling sound? If so, then the bearings might be ready for replacement. Are the motors noisier than normal? If yes, then the bearings of the motor might need replacement, or the motor might need to be rewound. In most large cities, you can find shops that rebuild electric motors, but keep in mind it can often cost more to rebuild an electric motor than to purchase a new one.



- Check the electrical specifications of the machine. European machines usually come as 220 volt at 50 cycles, while the conditions in the United States normally allow for 110 or 208 volt at 60 cycles. Due to the difference in cycles, the European motor will run 20 percent faster if used in the United States. Obviously, this will have an impact on the airflow and the drum's revolutions per minute, which can affect the process of heat transfer and may even cause scorching and tipping. In addition, it can have a negative effect on the life of the motors and make parts more difficult to replace, as the mountings and shafts are metric, not standard.
- Check the gas system of the machine. Does the gas installation have a safety valve? Under normal conditions, the machine must have a thermocouple that registers the presence of a flame after the burner is turned on. If for any reason the flame blows out, the sensor will immediately register the change in temperature and send a signal to the valve to turn off the gas flow.
- Does the roaster have a safe electrical system?
- Most importantly, can you test-roast with the machine? In general, it's risky to purchase a machine that you cannot test adequately. Visit the manufacturer or a nearby business that roasts with a similar machine, and roast at least two or three batches.

FINAL WORDS

Whether this roaster purchase is your first or your tenth, be assured that you will gain knowledge and become a more sophisticated buyer with each experience. Just remember to also use your palate while researching a roaster. Your roaster will likely become a longtime companion in your exciting quest for creating great-tasting coffees. With this concept in mind, it's essential to make the final choice for your machine on the cupping table.

~~~~~  
**WILLEM BOOT** is president of *Boot Coffee Consulting & Training*, a company specializing in hands-on training courses for specialty coffee roasters. He can be reached at 415.380.1999 or at [willembot@bootcoffee.com](mailto:willembot@bootcoffee.com).



MOMENTS OF TIMELESS PLEASURE®

## SWEET GROUND CHOCOLATE AND COCOA WITH PEPPERMINT



*We start with cocoa from the finest cocoa beans; blend just the right amount of sugar, real vanilla and peppermint to achieve the perfect balance of flavors. An excellent alternative to peppermint syrup providing cost savings and a consistent flavor across all beverages. Makes exceptional peppermint mochas, cocoas and blended cold drinks.*

*To order a free sample of Ghirardelli Sweet Ground Chocolate and Cocoa with Peppermint please call 1.800.877.9338 ext. 2627 [www.ghirardelli.com/foodservice](http://www.ghirardelli.com/foodservice)*