

MEURA NEWS

TRADITIONALLY PIONEERS SINCE 1845

N°15
MAR. 2011

Dear readers,

For many years the technology of fine milling associated with the membrane assisted thin bed filter has enabled the customers of MEURA to achieve substantial savings in extract.

In addition, the CLARISAVER technology – which is the only technology on the market which enables the recycling of a non-oxidised trub – enables our customers to make additional extract savings without sacrificing the quality of the wort.

Today, more and more customers also want to make major energy savings in the brewhouse while improving the quality of the produced wort.

The ECOSTRIPPER technology makes this objective fully feasible.

I invite you to discover – among other subjects addressed in this Meura News 15 – all the advantages of the ECOSTRIPPER!

Happy reading.



Christian De Brackeleire
Chief Executive Officer



CONTENT

➔ Full Sail
Brewing co.
p 3

➔ Brakina
Brewery
p 4

➔ Meura
Mills
p 5

➔ EcoStripper
p 6

➔ Angkor
Brewery
p 7

➔ Current
News
p 8

PROSPECTIVE IS A STATE OF MIND



Jean-Baptiste Meura,
inventor of the mash filter in 1901.

Pioneer by tradition

When Jean-Baptiste Meura had his first mash filter for the brewing industry patented in 1901, he could not have imagined that he would succeed in passing the innovation virus on to all his successors within the Meura team. Since then Meura has become a world leader in the manufacturing of brewing equipment, and especially of mash filters.

And it is in this visionary spirit that in the last few years Meura has developed a series of technologies that are both innovative and revolutionary for each stage of the brewing process.

The Meura brewhouse develops around the fine grist that makes it possible to obtain very high extract yields. For several years Meura has been manufacturing the **Classicmill** (hammermill with horizontal shaft) and has extended its range of mills with the **Carbonmill** (hammermill working under CO₂) and the **Hydromill** (Discmill under water).

Then, for transferring the mash to the mash tun, Meura developed the **Mechamasher** (mechanical mashing-in device) which makes it possible to preserve a non-oxidised mash (low shear force) and avoid the formation of lumps.

In the mash tun, in addition to its very high-performance steam jacket, a unique system for heating the mash by direct steam diffusion called the **Aflosjet** was invented and patented by Meura.

The mash is then pumped toward the famous Meura 2001 mash filter, recognised throughout the world for its unequalled performance.

In 2010, after intense research focused on improving this filter, Meura launched a new version: the **Meura 2001 Hybrid** mash filter which, thanks to reduced sparging (<2.2 litres of water per kg of malt grist) makes it possible to obtain an even denser and higher-quality wort while keeping the laboratory extract yield level with a productivity of 14 brews per day.

In parallel to the conventional boiling processes (with internal or external boiler), the innovation of the **Ecostripper** (wort stripping) is meeting with enormous success these days among brewers looking for a system for the heat treatment of the wort that is simultaneously economical and ecological.

And for brewers that want to recycle a non-oxidised trub, Meura has created the **Clarisaver**, an exceptional alternative to the traditional whirlpool that makes it possible to reduce the extract loss linked with trub separation to nearly zero.

Finally, with the objective of offering a complete solution to brewers, Meura has developed the **Meurabrew**, a revolutionary concept of a continuous brewhouse bringing together in a single place all the leading-edge Meura technologies.

No doubt, at Meura, prospective is a real state of mind!

TRADITIONALLY PIONEERS SINCE 1845

MEURA

Full Sail Brewing co.



Full Sail Brewing Company is a craft brewery located in the Columbia River Gorge in the city of Hood River, Oregon, USA, currently recognized as the world capital for wind and kite surfing.

The brewery was launched in 1987 by Irene Firmat and James Emmerson, who immediately took the option to invest in professional equipment in order to produce top quality beers.

Full Sail produces an impressive range of different brands, using a diversity of raw materials and methods. And Full Sail's Session was named best lager at the 2010 World Beer Awards!

At the beginning of 2010, in order to increase their extract yield as well as their production capacity, Full Sail Brewing Company decided to retire its old lauter tun and placed an order with Meura for a 2001 Carbo+ mash filter equipped with 29 chambers and a Classicmill CLM1 hammer mill.

This technological choice required some major modifications to the brewhouse layout, a challenge that was met without problems thanks to excellent coordination from both sides. The equipment was installed in October and commissioned in November 2010 with the help of a local automation company, following Meura's functional description and assistance.

Even though the tremendous rapidity of filtration achieved for most recipes offers new prospects for capacity expansion, the main reason for implementing the mash filter technology is rather in the commitment to a sustainable and more environmentally friendly way of producing beer. As an example, "By current estimate, we'll save nearly 1,000,000 gallons (about 40,000 hl) of water this year," declared James Emmerson.

The commissioning offered the opportunity to test the mash filter's performance on a variety of brands, including Indian

Pale Ale, Amber, Session Lager, Session Black, LTD#4, Henry's Blonde and Hefeweize.

"The mash filter yields have consistently exceeded 98% (OBY values) of fine grind as-is extract, with some brews coming in above 100%," James Emmerson explained. "The wort quality from the mash filter is excellent, very clear and within brewery specifications."

CONCLUSION

The brewery is currently seeing an increase in brewhouse efficiency across all brands.

The mash filter's well-known abilities to produce a very bright wort with laboratory yield, using less water and with a dryer spent grain, combined with increased flexibility and productivity, all prove this to be a master choice for the future of the Full Sail Brewing Company, thereby confirming that a constant search for the best equipment is rewarded in the end result.

"Dealing with Meura was a pleasure, and their Mash Filter is an excellent addition to our brewhouse!" James Emmerson, Full Sail's Executive Brewmaster



Brand	cycle time	Mash pump filling speed	first run gravity	last run gravity	OBY (%)
AMBER	117 min	550 rpm	21.9 °P	1.1 °P	98
IPA	100 min	600 rpm	21.8 °P	1.5 °P	98
SESSION	92 min	600 rpm	22.0 °P	0.5 °P	100
LTD#4	88 min	600 rpm	21.8 °P	1.0 °P	98
HENRY'S BLONDE	86 min	600 rpm	21.7 °P	0.5 °P	102
HEFEWEIZE	98 min	600 rpm	22.6 °P	1.3 °P	98



BRAKINA
Brasseries du Burkina Faso

BRAKINA BREWERY

Burkina Faso, a beautiful country in West Africa bordered by Mali, Niger, Benin, Togo, Ghana and Ivory Coast, produces an annual volume of beer in the order of 750,000 hectolitres (2009), 47 litres per inhabitant. It was in 1962 that the Ouagadougou-based Brakina Brewery, then called Bravolta, purchased its first Meura mash filter (throw of 2,200kg).

After almost 50 years of trouble-free operation, the brewery decided in 2010 to invest in a new brewhouse. The original equipment had in fact become obsolete and the time had come to replace it, so as to enable the brewery to continue to meet demand in an ever-growing market.

Highly satisfied with its first mash filter, the brewery had no hesitation in turning once again to Meura for the supply of a new filter: the Meura 2001 Hybrid, Meura's latest development in mash filtration technology.

The equipment supplied for this project was:

- a malt feed hopper
- a Classicmill CLM2 PCV (Pneumatic Conveying Version)
- a malt grist bin
- a corn grist bin
- a Mechamasher with a capacity of 40 tons of malt per hour
- a 94-chamber Meura 2001 Hybrid mash filter (throw of 8,300kg)
- an Ilobox

The order was signed on 9th April 2010 and barely 6 months later the erection at Ouagadougou was already up and running. Erection had lasted a mere 2 months and commissioning was completed on 20th December 2010.

After a very short period of downtime (just 60 hours!), necessary to disconnect the old filter and connect up the new one, the brewery was able to resume brewing without the slightest problem.

Thanks to this equipment modernisation, the brewery has increased its total capacity and can now produce up to 14 brews per day (a load of 7,200kg of malt-equivalent per brew)!

We would like to thank the Brakina Brewery for placing its trust in Meura technology, and we wish the brewery another 50 years of total satisfaction with their new Meura 2001 Hybrid mash filter!



Old Meura vessel dated from 1962.



MEURA'S FINE DRY MILLING TECHNOLOGIES



The Meura 2001 mash filter has been developed to facilitate the production of clear high gravity wort with short filtration cycles, independently on the presence of husk material within the mash and with an extract yield in excess of the laboratory yield. These performances can only be obtained when using fine grist. This fine grist can be produced with hammer mills. Meura was the first company in the world to industrially use the hammer mill to mill barley malt. At the introduction of the Meura2001 filter, two hammer mill types existed: one type with a vertical shaft and one type with a horizontal shaft. Thanks to our experience, Meura was able to select the most efficient technology: the hammer mill type with a horizontal shaft. Meura has subsequently developed both mills especially for the beer brewing industry. Today, Meura supplies two dry milling technologies: the **Classicmill** and the **Carbomill**.

With the **Classicmill** the first impact of the grains is on the hammers and the second impact is on the **breaking plates**. The sieves are therefore protected against early wearing or early damage by the possible presence of stones. In the mills with vertical shaft, the first impact is on the hammers but the second impact is directly on the sieve with an early sieve wearing as consequence. Indeed, for example with Meura's CLM 3 mill (9 T/h), the replacement of all wearing pieces

– namely the hammers, the sieves and the breaking plate – costs **less than 1,500€ for 25,000 tons of malt**, which is equivalent to a 1 year malt consumption in a 1.5 Mio hl brewery.

Meura's Classicmill is an **air ventilated mill**. The forced air ventilation limits the temperature increase and evacuates excess humidity in the milling chamber, which allows working with grains of high humidity (15% and even more). The air ventilation also forces the grist to pass through the sieves and overmilling is avoided, which is not the case with the other hammer mills.

Mills with vertical shafts do not have such ventilation and consequently the grist has a tendency to stay too long in the mill with an overmilling as result. Too fine grist leads to an increase of the filtration pressure and a subsequent increase of the occupation time of the mash filter. Furthermore such mills are not recommended for adjuncts with high humidity levels (e.g. barley) since with the absence of a ventilation the temperature in the mill chamber is increasing, free water becomes vapor and a paste will be formed on the sieves. Meura's **Carbomill** is like the Classicmill (a mill with horizontal shaft), but with the milling process and grist storage under CO₂ atmosphere. The major difference is the CO₂ atmosphere which reduces potential grist oxidation.

The grist granulometry is of the utmost importance regarding the performance of the mash filtration. That's why Meura is continuously investing in further developments of its milling technologies.

CLASSICMILL

Type	Motor power (kW)	Rpm	Capacity (tons malt/hour)
CLM 1	37	3000	4
CLM 2	55	3000	7
CLM 3	75	3000	10
CLM 4	110	1500	14
CLM 5	160	1500	20
CLM 6	250	1500	30

CARBOMILL

Type	Motor power (kW)	Capacity (tons malt/hour)
CRM 90/6	90	6
CRM 110/9	110	9
CRM 132/12	132	12
CRM 160/15	160	15
CRM 200/20	200	20

Two more orders for the Ecostripper!

Meura is proud to announce that it started the year 2011 with two new orders for the Ecostripper technology. Star brewery in Madagascar and ATE brewery from Peru (SABMiller) decided to install a 300 hl/h and 1000 hl/h Ecostripper respectively.

Wort boiling represents 20% to 30% of the total amount of thermal energy consumed in a brewery. Today, it is a major concern for each brewer to reduce their energy consumption and CO₂ emissions in the brewhouse. The Ecostripper is the most efficient technology on that market and has several industrial references.

Conventional wort kettles combine two main operations in one step:

- a **heat treatment** required for sterilization, enzyme deactivation and several chemical processes (hop isomerisation, protein denaturation, ...)
- an evaporation phase, required to **remove unwanted volatiles** and, in the case of a lauter tun, to reach the required wort density.

The most state-of-the-art conventional wort kettles need at least 4% evaporation to achieve the required heat treatment and volatile removal. Meura's Ecostripper technology separates the heat treatment from the volatile removal process. The concept consists of 3 separate steps: **formation, trub separation and wort stripping.**

During the formation step (could be adapted from existing wort kettle), wort is kept at 100°C for 30-40 minutes with a minimum evaporation (about 0.75%). This is followed by a trub separation step. This clarification can be performed using a whirlpool or, even better, a Clarisaver. In the last step, the wort loaded with unwanted volatiles passes through the Ecostripper. These unwanted volatiles are stripped out thanks to a steam counter flow (about 0.5% w/w of steam, i.e. 5 kg of



AB InBev, Povolzhe Brewery (Russia), 600hl/h Ecostripper.

steam per ton of wort). The Ecostripper is the last unit prior to the wort cooling. It means that when the stripped wort leaves the Ecostripper it is immediately cooled down. This avoids de-novo synthesis of unwanted volatiles present in a conventional brewhouse while waiting in the trub separation step.

The complete Ecostripper technology from formation to wort stripping requires less than 1.5% of total evaporation rate from which almost 0.5% could be further recovered by installing a steam condenser on the outlet of the Ecostripper.

It is clear that the Ecostripper provides a unique economical and ecological solution to the brewing industry. But there is more! An extended study on an industrial level of the Ecostripper, presented by Mr Bruno Bonacchelli (Meura) at the EBC convention in 2007, showed a clear reduction in staling aldehydes. The Ecostripper consequently improves the flavour stability of the final beer! It is clear that the economical and ecological advantages combined with the product quality improvement makes the Ecostripper, the technology that a state-of-the-art brewery needs today.

We thank both breweries with the two new Ecostripper orders for their trust in our technologies. We hope that the several ongoing discussions with other breweries about the technology will add new members to the Ecostripper users club soon!

ECOSTRIPPER



ANGKOR BREWERY



The Angkor Brewery is located in Sihanoukville, Cambodia's main port city. It was built in the 1960s by the Cambodian Government and Carlsberg Group become joint venture partner in 2005. Among other products, the brewery produces Angkor premium beer, Bayon beer, Klang beer, Angkor Extra Stout and Black Panther Stout.

Less than a year ago, the brewery was still equipped with 2 mash filters. One was an old Nordon filter, a French company that stopped producing mash filters a decade ago, and the second was a 4 year old Chinese filter that could never reach the brewery's required performances.

When the brewery decided in early 2010 to modernise its brewhouse, it quite naturally placed the order with Meura, the leader in mash filtration technology, to replace its two filters with two new **Meura 2001 Hybrid mash filters**, thereby exceeding its initial production and yield targets. The order was signed in March 2010, and less than 9 months later the two filters were already fully operational!

For this project, Meura supplied 2 **Meura 2001 Hybrid mash filters**, each with 66 chambers extendable to 90 chambers (8 tons of malt throw), and the full automation of the installation.

For the fabrication of the 2 spent grain silos and the 2 expellers, Meura called on the services of Bocard Shanghai, a subsidiary of the Bocard Enterprises Group which also owns Meura. As always, this collaboration was highly effective and the brewery was extremely satisfied with it.

The **Meura 2001 Hybrid mash filters** are currently producing two times 12 brews per day, which has allowed the brewery to double its capacity, now standing at a total production of approximately 3.8 million hectolitres per year.

Meura is very happy to have been able to install its new mash filtration technology, the **Meura 2001 Hybrid** and would like to thank the Angkor Brewery team for its invaluable contribution to the success of this project.

Current news

Brau Beviale



Brau Beviale 2010

Last November Meura took part in the Brau Beviale Fair organised in Nuremberg. This event was once again a real success for Meura who met lots of brewers showing a deep interest in our state-of-the-art technologies. The highlights presented were **the new Meura 2001 Hybrid mash filter, the EcoStripper and the Meurabrew (Meura's continuous brewhouse)**. Missed this event? Meura will also exhibit at the next edition of Brau Beviale from 9th to 11th November 2011. **So don't hesitate to come and visit us there!**

IBD Africa



Claude Bauduin, Meura Area Sales Manager, together with Diego Sella, Meura's Sales Representative, exhibited at the IBD Convention organised in Uganda from 6th to 11th March 2011. Lots of interesting contacts have been made there and we take this opportunity to thank all our visitors!

UPCOMING EVENTS :

Always keen to present its technologies to brewers all over the world, Meura will take part in these upcoming events:



Craft Brewers Conference:
24th – 25th March
in San Francisco, USA
Booth 2208



VLB Mexico:
29th March – 1st April in Mexico



MBAA Caribbean section:
3rd – 7th May in Jamaica



EBC: 22nd – 26th May in Glasgow, Scotland / Booth 40



Brasil Brau: 5th – 7th July
in Sao Paulo, Brazil
Booth C09

Whether you need information about our technologies and services or just want to meet one of our Area Sales Managers, do not hesitate to come and visit us, we'll all be pleased to welcome you there!

Meura's projects

Meura is on the move all over the world.

Here is a brief overview of Meura's current projects:

The most recent orders:

- 1. Sedibeng, South Africa:** ordered a Mechamasher, a Classicmill and a Meura 2001 Hybrid mash filter. It is the second identical project in the brewery.
- 2. VBL Danang, Vietnam:** A new Meura brewhouse will be installed.
- 3. Huyghe Brouwerij, Belgium:** Meura will supply a Meura 2001 Junior Hybrid mash filter, a Classicmill Junior and a Mechamasher.
- 4. Bralima Brewery, RD Congo:** ordered 2 hammer mills, a Mechamasher, a Meura 2001 Hybrid mash filter, a mash tun and a cereal cooker.
- 5. Nocal Brewery, Angola:** A wort preheater and a wort kettle will be supplied.
- 6. Star Madagascar:** An EcoStripper and an Aflosjet have been ordered.
- 7. ATE Lima, Peru:** Meura will be in charge of the brewhouse revamping (Carbomill, Mechamasher, mash tun, cereal cooker, double Meura 2001 Hybrid mash filter, EcoStripper, ...).
- 8. Moscow Brewing Company, Russia:** 2 Classicmill and a Mechamasher will be replacing the milling technology recently supplied by a competitor.

- 9. Al Arham, Egypt:** Meura will supply a Meura 2001 Hybrid mash filter, a Classicmill and an external cooker.
- 10. Compania Cervecerias Unidas (CCU), Chile:** ordered a Classicmill, a Mechamasher and a Meura 2001 Hybrid mash filter.
- 11. Sulimar Brewery, Poland:** The brewery has invested in a brewhouse modernisation with a Classicmill, a Mechamasher and a Meura 2001 Hybrid mash filter.

Major projects being carried out:

- 1. BGI (Hawassa), Ethiopia:** a complete brewhouse as well as a malt handling plant are being installed.
- 2. Chimay Brewery, Belgium:** Meura is erecting a whirlpool and a wort cooler.
- 3. SOLIBRA, Ivory Coast:** In addition to the revamping of the Meura 2001 mash filter Meura is installing a Mechamasher, a wort kettle and a wort preheater.
- 4. UBIO Chemicals Limited, India:** a Meura 2001 Hybrid mash filter and a Classicmill are under erection.
- 5. Brasserie du Congo (Pointe Noire), Congo Brazzaville:** Meura is supplying a complete brewhouse and the malt handling plant.

- 6. Waitemata Brewery, New Zealand:** A Mechamasher, a Classicmill and a Meura 2001 Hybrid mash filter are being installed.
- 7. Star Madagascar:** Meura is installing a wort preheater.

Major projects recently commissioned:

- 1. APB Guangzhou, China:** a Meura 2001 Carbo+ mash filter and a Classicmill.
- 2. Cambrew, Cambodia:** a double Meura 2001 Hybrid mash filter.
- 3. Full Sail Brewing, USA:** A Meura 2001 mash filter and a Classicmill.
- 4. International Breweries Plc. (Ilesha), Nigeria:** a new milling line with a Classicmill and grist bin.
- 5. Les Brasseries du Cameroun (Koumassi), Cameroon:** A cereal cooker and a mash tun.
- 6. Brakina Brewery, Burkina Faso:** revamping of the brewhouse and supply of a Classicmill, a Mechamasher, a wort kettle and a Meura 2001 Hybrid mash filter.
- 7. Beer Lao Brewery, Laos:** revamping of the Meura 2001 mash filter.
- 8. Tanzanian Breweries Limited, Tanzania:** a Mechamasher.

Editorial Department:

Editor-in-Chief:
Jeroen VANDENBUSSCHE, Sales and Marketing Manager

Managing Editor:
Bénédicte EVERAERT, Marketing Communication Manager

Design, layout & printing:
Ex nihilo - Belgium

MEURA

TRADITIONALLY PIONEERS SINCE 1845