Separator's Digest

Special Edition

The Magazine of Westfalia Separator AG

BRAU 2000
Long-Term Success Assured by Comprehensive Quality Management

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BRAU 2000

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IMPRINT

Publisher:
Westfalia Separator AG
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Westfalia Separator AG, archive

A Clear Commitment to Quality

When the Bavarian Duke Wilhelm IV issued a decree in 1516 with the following wording: "How beer is to be served and brewed in the region during the summer and winter", he was certainly by no means aware of the fact that this purity precept would still be applicable almost 500 years later. The decree specified precisely that beer was permitted to be brewed exclusively from barley, hops and water (the ingredients were subsequently extended to include yeast, which was unknown in Europe at the time this law was promulgated). This enabled Bavarian beer to occupy such a leading position among beers that other regions of the German empire very quickly also adopted this "quality standard".

Whatever the reasons may have been behind the decision of the Bavarian duke, he was acting in an extremely quality-conscious and customer-oriented manner. This customer orientation also was very beneficial for the Treasury of Ducal Bavaria.

Another standard is now applicable throughout the world. The purity precept of 1516 is now no longer used as the uniform standard throughout the world for making beer. We now brew on the basis of many standards throughout the world. Does this mean that we also have to apply many standards as a partner of the brewing industry? This may well be the case, but we are also employing a clear as well as simple strategy. By contributing to the success of our customers, we also achieve success at Westfalia Separator.

Does this mean that quality is able to hold its own? This involves developing the right things at the right time and implementing them rapidly. Entrepreneurially-minded employees, innovative products, cost and technology leadership and last but not least customer-oriented research and development will enable us to continue to strengthen and expand the leading position of our company in the world.

But let us return to our starting point, namely beer production, because the brewing industry recognised at an early stage that the use of separators has advantages which are now essential in economic terms. For instance: higher yields, shorter throughput times, consistently reproducible beer quality, CIP capability, hygienic design and full service.

We look forward to discussing the above advantages with you. And we would also like to discuss how you can reduce your costs with the aid of the latest separating technology and also improve your profitability. These talks would also involve discussions of how to dispose of your waste water, as our decanters are also able to reduce your costs in this field. Clarified waste water results in lower charges and has a beneficial effect on the environment.

We look forward to discussions with you, for instance at the BRAU 2000 in Nuremberg.

Jürgen Arnold,
Chief Executive Officer

Stefan Rehnert,
Executive Director,
Chief Financial Officer

BRAU 2000

Long-Term Success Assured by Comprehensive Quality Management

➤ With around 1,600 exhibitors and 37,000 trade visitors, the BRAU 2000 held between 15 and 17 November in the exhibition centre in Nuremberg is the international meeting point for everyone wishing to obtain information relating to the worldwide range of products for beverage production and marketing.

Quality management is one of the topical themes at the exhibition. Quality management nowadays goes far beyond beverage quality, which is assured by high-quality raw materials, careful processing and production. A holistic quality assurance system for the beverage and brewing industry also involves active environmental management. For companies, this means that operations have to be optimised in all respects, in other words higher efficiency and more environmental protection. Numerous companies in the beverage industry also use their successful commitment to the environment as a positive competitive factor. Ecological quality will become a criterion of success in future. Ecological pressure is becoming greater – we only need to think of the prices that are paid for waste water, that are currently running at between DM 10 to 13 per cubic meter in Germany.

With improved separator technologies specifically designed to meet the needs of the brewing and beverage industry; ranging from hot trub removal and cold wort clarification, beer recovery from tank bottoms right through to processing of bottle washing lye and in the production of fruit and vegetable juices – Westfalia Separator makes a contribution, not only to cost-effective methods of operation which are gentle on the products treated, but also to environmentally friendly operations.

At the BRAU 2000, you will find Westfalia Separator together with other affiliated companies from the GEA group on a common stand in hall 6, stand 334-344. ■

When the BRAU 2000 turns Nuremberg into the international meeting place for the beverage branch, Westfalia Separator is naturally right in the middle of the bustle of the fair. In hall 6, stand 334.

Peak Performance

New Beer Separators for High Capacities and Maximum Clarification Efficiency

➤ Westfalia Separator Food Tec has developed a new generation of separators specifically for high-capacity beer clarification. In this configuration, it is unique on the market. The three models HSB 200, HSB 300 and HSB 400 fully meet the higher demand for high-capacity brewery separators.

With an equivalent clarification area of up to 450,000 m^2 and capacities of up to 1,000 hl/h, all three have impressive clarification performance and are able to handle high levels of solids content. They have a solids holding space of up to 25 litres which can be emptied every minute.

Gentle Feed

Westfalia Separator presented the first prototype of this series, the separator type HSA 400, at the BRAU '99. At that time, this model was already destined for the Guinness brewery in Dublin, Ireland, where it has now been running in practical operation for several months. The B-series is now complete and the BRAU 2000 in Nuremberg will be the first time that it will be available in the performance classes 200, 300 and 400.

All three HSB models are based on the fundamental design of the separator type HSA 200, which has demonstrated its worth in numerous brewery applications. A new gentle feed system optimises the hydrohermetic feed which Westfalia Separator has been using for around 10 years. The gentle feed with acceleration system clearly minimises the shearing forces and prevents the particles from being damaged. The clarification efficiency is substantially increased, particularly in the fine particle range.

Hygienic Design

The type HSB separator series has been designed with hygiene requirements in mind. During the design process, a great deal of consideration was given to ensuring that the number of gaps was minimised and that the number of seals required was kept as low as possible. Spray nozzles installed at all exposed positions guarantee optimum chemical cleaning (CIP = Cleaning In Place) – a requirement of breweries which is becoming more and more important. However, the minimised number of seals also translates into greater ease of service. A cartridge system ensures that the upper part of the bowl can be removed easily, without bolts, for easy access. The maintenance intervals are long, and an annual check of the bowl is generally sufficient.

The hood and solids catcher are completely enclosed, feature double-wall design and can be cooled in all positions. This prevents the product from being heated and also allows the machine to be cleaned more easily. The condensation effect of the cooling system creates a humid atmosphere in the gap between the bowl and the hood which would otherwise be heated as a result of air friction, and thus prevents any potential caking of yeast. The solids are discharged more easily and the cleaning process is more efficient.

Hydrohermetic Seal

The tried-and-tested hydrohermetic seal functions in the same way as a labyrinth seal over a disk filled with water - it is wear-free and CIP-friendly. It ensures that the product does not come into contact with the ambient air. Oxygen consumption is generally below 0.02 mg/l.

All machines operate with a flat-belt drive. This is particularly important in brewery applications, as the solid freight levels can differ considerably in the course of a day. During start-up of a new tank, the separator has to discharge more frequently, in certain cases every 45 seconds; a gear would rapidly reach its wear limits under such conditions.

Low-Noise Operation

The closed solids discharge feature is not only extremely important for the hygiene and CIP capability of the separator; it is also a major factor behind the low-noise operation. The noise level is generally lower than 85 dBA. To avoid electricity peaks, all machines have been equipped with frequency converter motors, instead of the heavy-duty start-up motors fitted previously. A separate oil lubricating unit has replaced the forced oil lubricating facility, and ensures the necessary supply of oil even during the start-up procedure.

The new series of type HSB separators has now replaced the familiar type HSA 200 separators at Westfalia Separator; the new series also meets the increasing demand for high capacities with optimised clarifying performance. ■

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The Sweetness of the Tropics

Exotic Fruit Juices

➤ There are no more pineapples in Hawaii. This is not quite true in the same way that it is not quite true that there is no beer in Hawaii. But there is some truth to this statement. During the 1920s, companies such as Del Monte and Dole established huge pineapple plantations on Hawaii and started to process and market the fruit flesh and the pineapple juice. Most of the plantations have now been cleared to make way for the emerging tourism and golf industries. Pineapples are now grown primarily on the Philippines and in Indonesia, Thailand, eastern and western Africa and Central America.

Pineapple Processing: Fewer Process Stages

Processing technology has also altered in line with the world-wide expansion of cultivation. Whereas, several screen machine finishers of various sizes had been installed upstream of the separators until the 1970s to separate the coarse fibres, these process stages were soon replaced by a decanter. It accordingly became much easier to produce pineapple juice – which had usually been a by-product of canned fruit manufacture. This simplification process continued and the separator was also replaced by a decanter.

A further stage followed. Presses are still used to juice the fruit flesh. However, as with other types of fruit and vegetables, this task could likewise be handled by a modern decanter with a downstream separator for adjusting the turbidity level. This means that two centrifugal separating stages would be sufficient instead of three-fold pressing, three-fold finishing and an older type of separator: two process stages instead of seven. This is without doubt the way ahead.

All Bananas

The banana is by far the most grown fruit in the world. However, around two thirds of all bananas are used for local consumption. Far more than 90% of all bananas, either vegetable or fruit bananas, are consumed fresh. The "small" remainder is used for marketing three different products. A banana puree is used as semi-finished product in the fruit juice industry. A puree with low pulp content, a kind of cloudy banana juice, can be obtained by adding enzymes; the low viscosity of this

puree means that it can be added to beverages in high quantities. A third method, which is associated with somewhat higher cost, is to produce clear banana juice concentrate, an extremely sweet product with a very pronounced aroma, which is used as a niche product in the confectionery and baking industries.

The decanter handles important separating tasks in the production process for all three banana products. The decanters in the CA and CB series with a two-gear drive, process bananas into marketable products primarily in Central and South America. Separators are the best machines if the product has to be subsequently clarified.

"Ethnic Food" – Extremely Popular

The modern consumer has for many years no longer been content merely with pineapple or banana juice as a fresh tropical product. Indeed, the market for tropical products is driven

by consumer demand for more and more taste experiences. Tropical juices are also driving the trend towards "ethnic food".

The most important fruits in this sector are mangos, guavas and kiwis.

A New Taste Experience: Mango

Mangos are processed into puree which, depending on the particular type and process used, contains fibres of varying sizes or splinters from the central stone. These have to be removed, and decanters are ideal for this.

Pure Tropics: Guava

The guava is fascinating as a result of its very distinctive, pleasantly tropical taste as well as its slightly pink colour. Its high vitamin C content is a further benefit for the consumer. It is primarily marketed in Europe, the USA and South Africa as an independent product, e.g. as guava nectar.

The guava is processed in a two-stage process involving a decanter and separator. The decanter initially removes the small pips, and the separator then clarifies the cloudy guava juice. Westfalia Separator centrifuges are installed in process lines in South Africa, India and Brazil.

The Chinese Gooseberry: Kiwi

When the Englishman Robert Fortune introduced the Kiwi under the name of „Chinese gooseberry" as a decorative plant into Europe in the middle of the last century, he had no idea of how popular the fruit, which still bears the name of its country of origin, would become. However, the dissemination of the plant has been somewhat fortuitous. The New Zealander Alexander Allison received some seeds from a friend in China in 1906, and grew the first runners from these seeds. The breakthrough was only achieved in 1937 when the amateur gardener, Jim MacLoughlin, decided to set aside a large plot of land to cultivate this shrub-type runner plant. In the Bay of Plenty, he encountered ideal conditions for promising cultivation: sun, a mild climate, sandy soil and frost just before the harvest.

Despite the fierce competition, particularly from Italy, which is now the market leader in Germany, New Zealand has so far been able to maintain its position as the largest Kiwi producer in the world.

Demand for Kiwi juice is still relatively limited. This juice is produced in a way similar to that used for apples: the fruit is initially crushed, juiced in decanters and further clarified by separators. These processes are then followed by fining, filtration, evaporation for a concentrate or pasteurisation for direct juice. The aroma and colour of the kiwi juice are relatively sensitive to heat treatment. A particularly gentle process is therefore required.

Refreshingly Different: Maracuya

The Maracuya or yellow passionfruit is found throughout South America. The main producers of the fruit are Brazil, Peru, Ecuador and Columbia. The taste of the fruit can best be described as very unusual and exotically fruity.

Maracuya fruits are juiced in special extractors. Because the fruit comprises a large number of pips and a lot of skin, the juice still contains a relatively high level of solids even after the extraction process. This is a traditional clarifier task for the separator. Even the solids discharged from the separator can be used. The mass is then used as the basis of lemonade, etc.

Optimum Utilisation of Centrifugal Force

Every tropical fruit has its own history as far as application and processing are concerned. Industrial processing involves optimum utilisation of centrifugal force in separators and decanters for gentle and efficient separation of juice and fruit flesh. The reduction in the number of process stages due to the use of separators means that juice production from tropical fruits will in future be even more interesting. ■

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The Quick Cup

Market Moved by Instant Coffee

➤ It is said that the French author Honoré de Balzac drank up to 50 cups of coffee every day. Nobody loved life and was simultaneously as productive as this poet and bon viveur who was born precisely 201 years ago. He grouped together 91 of his books in the cycle "The human comedy" and thus created a literary panoply of human vanity.

A Segment for Genuine Innovations

Instant coffee was unknown in the age of Balzac. If it had been known, he would certainly have enjoyed trying out the wide variety of specialities. He would be following the practice of present-day consumers in their search for ever new products of daily life. At least in Germany, the land of coffee drinkers with a per-capita consumption of 160 litres per annum, instant coffee is at present the only growth segment in a coffee market that is otherwise declining.

This segment is open for genuine innovations and the industry and consumers take advantage of this situation. In addition to conventional pure instant coffee with sales of around DM 500 million in Germany alone, the past ten years have seen the arrival of a new product which is even stronger: namely coffee specialities with sales of around DM 600 million. Pure or aromatic Cappuccino is responsible for two thirds of this figure, and volume growth is still strong.

Clarification of Thin and Thick Extract for Maximum Coffee Enjoyment

Instant coffees have been available for several decades. These hot soluble rapid beverages experienced initial growth during the war years.

Following blending, the process of mixing various beans from different countries of origin, the beans are first roasted and then relatively coarsely ground, to allow good penetration with hot water in the subsequent extraction columns. Extraction under pressure and at temperatures of 190 - 200 °C produces yields which are comparatively higher than those available with the traditional method of making coffee.

Clarifiers are then used to separate the insoluble components. This clarification stage is not only responsible for ensuring that the consumer does not encounter deposits in his coffee cup, its method of operation also increases the service lives of the downstream evaporators – the bottleneck in the process of producing instant coffee.

During the process of concentrating so-called thin extract to 50 - 60 %

water content, other substances are precipitated. Separators remove these during subsequent clarification of the thick extract. After this second separation stage, the thick extract is dried, either by means of spray-drying using hot air in a counter-current process, or by the more gentle and costly method of freeze-drying at -40°C. During the production of instant coffee, the released aroma is drawn off and added to the finished product. This makes the instant coffee more aromatic.

Reliable Discharge: Forced Opening Chamber

The insoluble constituents, which accumulate in the solids holding space of the clarifiers during the separation process, are very viscous. The solids discharge therefore needs to be treated in a special way. Westfalia Separator has solved this problem by means of a new development. In the past, machines with the HydroStop bowl ejection system were used primarily. With this system, the solids are discharged in less than one tenth of one second. However, it has been established that, specifically during coffee separation, the solids are too "viscous" to be removed so quickly.

With a "forced opening chamber" it is now possible for the separator bowl to be kept open for a period of up to ten seconds. The solids thus have sufficient time to free themselves from the surfaces of the solids holding space and to be discharged easily from the bowl.

The initial seconds are used for emptying the bowl. A so-called 'water saw' is used in the final seconds with hot water fed into the opened bowl, where it displaces the remaining solids and performs optimum cleaning. A combination of controlled partial ejections (HydroStop system) and total ejections is also possible.

Secondary Clarification

To ensure that the solids are discharged reliably, more frequent ejection cycles take place during the coffee separation process although there would, however, still be sufficient space in the solids holding space. This avoids a situation whereby the solids become excessively compact. The result is trouble-free operation with long operating times.

Coffee extracts are valuable. For this reason the solid-extract mixture discharging from the separators is mixed with hot water and centrifugally clarified. The clarified coffee extract is recycled back into the process thus minimising losses.

Court Supplier for Well-Known Brands

Instant coffees conquer markets by way of their versatility. Cappuccino, espresso, vanilla, chocolate and amaretto flavours, etc. are the new favourites of the market. Whereas instant coffees in Germany still account for a modest figure of around 10 percent of the overall coffee market, the corresponding figure in the country of traditional tea drinkers (England) is more than 90 percent. Instants are also particularly popular in southern Europe and South America.

After mineral oil, coffee is the product with the second highest sales in the world economy. With its decades of experience and permanent process improvement for coffee separation, Westfalia Separator is a trusted supplier for world-renowned brands. ■

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New Separator Generation for the Low Capacity Range

The development of the new SG separator line for the bottom end of the capacity range features a particularly impressive price/performance ratio. It is specifically designed to fulfil the demands of small operations for high quality and to offer the benefits of a comprehensive service provided by a market leader with a worldwide sales and service network.

This cost-minimised model with self-cleaning bowl is based on a modular building block system. The tried-and-tested concept of piston valves allows short intervals between solid ejections. Initially, clarifiers with a hydraulic rated capacity of up to 15,000 l/h will be available for the lower capacity range in the beverage industry. The effective capacity depends on the specific application in fruit and vegetable juice clarification, wine or beer separation and the different associated solids content.

High-Performance Clarifier

Westfalia Separator has developed the high-performance clarifier type CSA 500 for removing fine and extremely fine solid particles from cold wort and beer upstream of the filter (i.e. for polishing). This machine is now being used very successfully in well-known breweries. With a clarification area of up to 650,000 m^2 and a g-force in excess of 10000 g, it separates particles with sizes of less than 0.5 µm and provides an hourly capacity of to 750 hl/h.

Tried-and-tested Product Series for Large and Small Breweries

The separator type SC series for breweries covers the entire capacity range for all sizes. Trub wort separation starts at 2 hl/h with the separators type SC4 and SC6, and green beer clarification starts at 15 hl/h. These models are suitable for pilot breweries and microbreweries The separators type SC 20, SC 35 and SC 70 are particularly suitable for mid-size breweries where capacities of 50 - 250 hl/h have to be pre-clarified upstream of the filter. The separator type SC 100, and the separator type SC 150 (which is only one year old), are in the category up to 550 hl/h. The SC separators are robust "work horses" with a universal area of application, a high clarification efficiency, highly concentrated solids discharge and a patented HydroStop system for rapidly discharging the solid content.

Effective Capacities of Brewery Separators in hl/h

Process / Model	Hot wort	Trub wort	Cold wort	Green beer	Pre-clarification before filter	Beer Recovery
SC 4	5	2	4	15	12	---
SC 6	8	2	4	25	20	1
SC 20	40	10	20 - 40	70	60	4
SC 35	110	25	30 - 80	180	150	10
SC 70	220	60	60 - 220	300	250	20
SC 100	300	90	80 - 250	520	500	25
SC 150	380	120	100 - 300	620	600	40
HSB 200	500	---	200 - 500	750	700	---
HSB 300	500	---	200 - 500	850	900	---
HSB 400	---	---	200 - 700	950	950	---
CRA 160	---	---	120 - 300	---	120	---
CSA 500	---	---	500 - 700	---	700	---

Do you Lead a Healthy Life? A Really Healthy Life?

➤ Are you aware of the well-known saying: "Everything which I really like to do is either illegal, immoral or makes me put on weight?" And have you ever felt guilty after enjoying a particularly tasty piece of cake or a rich and possibly greasy meal followed by a drink or two?

If you can answer "yes" to the above questions, why do you allow your enjoyment to be spoilt? If your answer is "no", it would appear that you enjoy a healthy life. But let's return to the first group: think of the words of Ingmar Bergman: "Some people believe that a guilty conscience is an additional component of enjoyment". Even more importantly: Why do you always listen to people who try to convince you that you should have a guilty conscience? It used to be said that "a clear conscience is a soft pillow". Do you sleep less well after you have really enjoyed yourself? I don't!

Is Enjoyment a Question of Conscience?

Something is evidently not quite right with these conscience preachers who are constantly attempting to spoil our enjoyment. But what is the matter? Is it perhaps only envy because they themselves are no longer really able to enjoy themselves? Is it an attempt to go easy on our pockets, because enjoyment is always very expensive (we only have to think of prices in luxury hotels and five-star restaurants)? If we argue in such a way, we completely fail to recognise that enjoyment does not have to have anything to do with money. It is frequently the case that small things often make life really worth living.

And this brings us to beer. Perhaps you may now ask yourself what is the connection between beer and enjoyment? Should we be able to enjoy beer, this "drink of the plebs"? It is only possible to enjoy wine with its endless variety of taste, regions, vintages, etc.

O sancta simplicitas! Would then the matter were so simple. Anybody who asserts the above proves only that he knows nothing. It is of course possible for beer to be merely swallowed without a second thought (I sometimes also do not want to think when I am drinking; if I am thirsty and if I wish to quench my thirst, then I do not need to think about the particular brewing method, how much hops or malt has been used for brewing the beer, or whether the beer is recent and stable in terms of foam. Nor do I need to think about bitter entities). Beer is, fortunately, a drink of the people, otherwise every citizen of Germany would not on average be drinking 127.5 litres of beer in a year. Moreover, the corresponding figure for wine is just 18.5 litres, and more than half of this figure is imported. But we can (and also should) deal intensively with beverages of the people. This is a rewarding occupation.

Chine of Suckling Pig with a Beer-Cumin Creamy Sauce

I still have a fond recollection of the "lightly smoked jelly of carp" which was served with a wonderful smoky beer; I also recollect the "chine of suckling pig with mushrooms, raviolis of potatoes and beer-cumin Sabayone sauce", which was accompanied by a strong beer. And I also recollect the "almond soufflé with a beer sabayon" with a tremendous wheat beer. I did not miss wine at all during this meal. We enjoyed a completely new taste experience and combinations of taste which we had previously never considered.

Why don't we simply organise a beer tasting session? Anybody who has ever deliberately tasted different types of beer and has attempted to identify the various tastes and the various aromas will certainly never again say that beer is a nondescript drink without any special features. And he will certainly enjoy himself.

Now that we are talking about enjoyment: do not allow other people to spoil yours. As proven by every test, only people who are able to enjoy have a healthy life. ■

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Westfalia Separator AG

Take the Best - Separate the Rest

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9997-0806-000/1000 EN. HO

Printed in Germany