BAUER
FOR A GREEN WORLD

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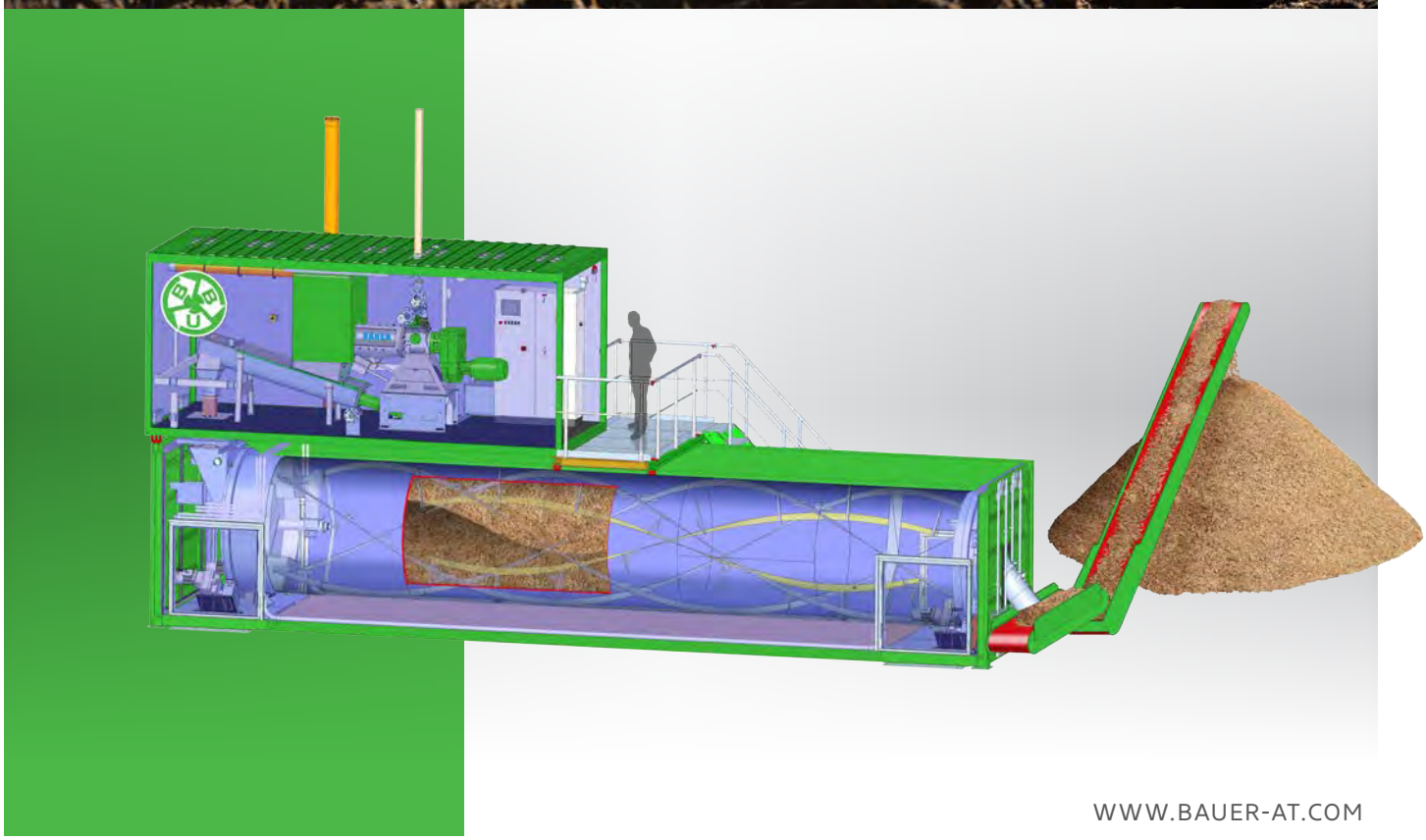
WASTE WATER TREATMENT

BBU 400 / 1000 / 2000

PRODUCE FRESH ORGANIC BEDDING EVERY DAY



BBU 400 / 1000 / 2000

Use the available resources and produce your own bedding material.

The BAUER Bedding Unit BBU is an efficient system for recovering organic bedding from the undigested fibrous material in liquid manure. A single system consisting of a press screw separator and a stainless steel processing drum produces up to 48 m³ of bedding per day right on your farm and eliminates the need for storage space.

BBU
400 / 1000 / 2000
FULLY-AUTOMATIC
TO ORGANIC
BEDDING

System components

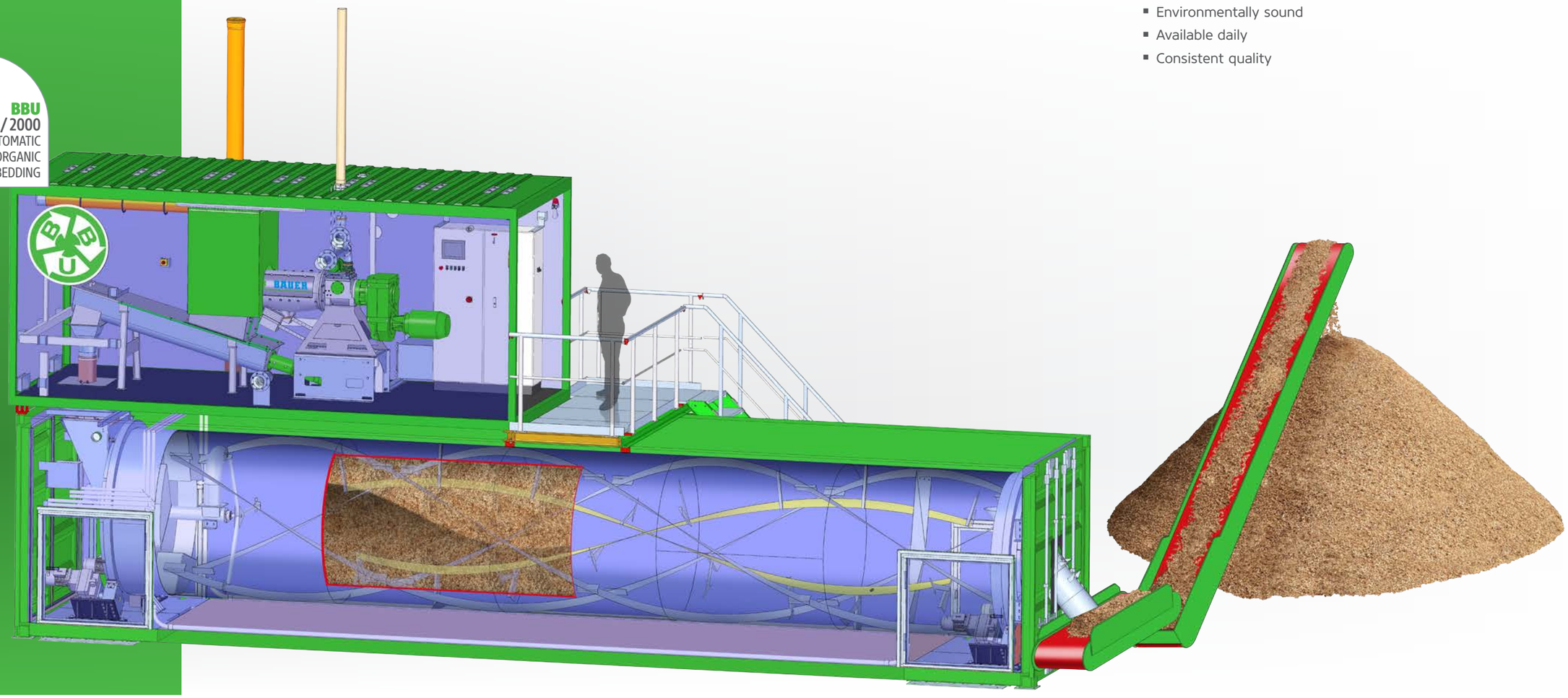
- Submersible motor chopper pump and stirrer (optional)
- BAUER press screw separator of type “Bedding”
- Screw conveyor
- BAUER drum dryer in an insulated container
- Air extraction with automated speed regulation
- Conveyor belt (supplied by customer)

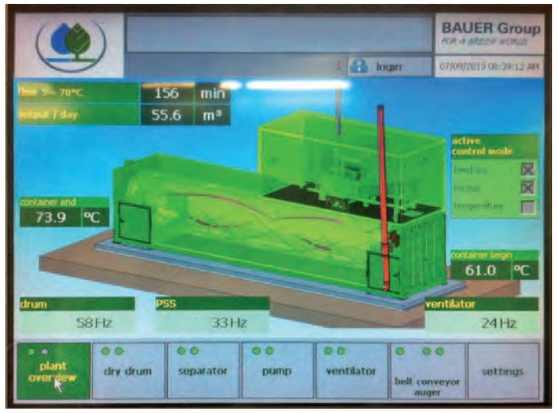
Financial benefits of using organic bedding (Manicow):

- No additional bedding is required
- Cost savings
- Increased milk production
- Lower manure processing costs
- No additional storage space required

The advantages of organic bedding (Manicow) are:

- Extremely high acceptance
- Improved comfort and well-being of the cows
- Low risk of injury
- Very clean cows
- Reduced skin irritation
- Low microorganism loads
- Easy handling
- Economical
- Environmentally sound
- Available daily
- Consistent quality





Central control of the fully automatic operation via touchscreen

The process is **entirely automated**. The liquid manure is pumped from the collecting pool into the **press screw separator.** The separated solid is transported by a screw conveyor to the **stainless steel drum, where it undergoes an aerobic process**. This takes place at a **temperature of 60 – 75 °C** without the addition of external energy. The biological process is monitored by temperature sensors, and the airflow is regulated.

Patent pending.

International application no.: PCT/DE2005/001995

Organic bedding (Manicow) produced at no expense from your own resources is perfect for ensuring healthy cows and increased milk production.

Disadvantages of traditional bedding methods

Typical bedding materials such as sand, wood chips, sawdust, straw, etc., generally come from outside the farm and have many disadvantages, such as:

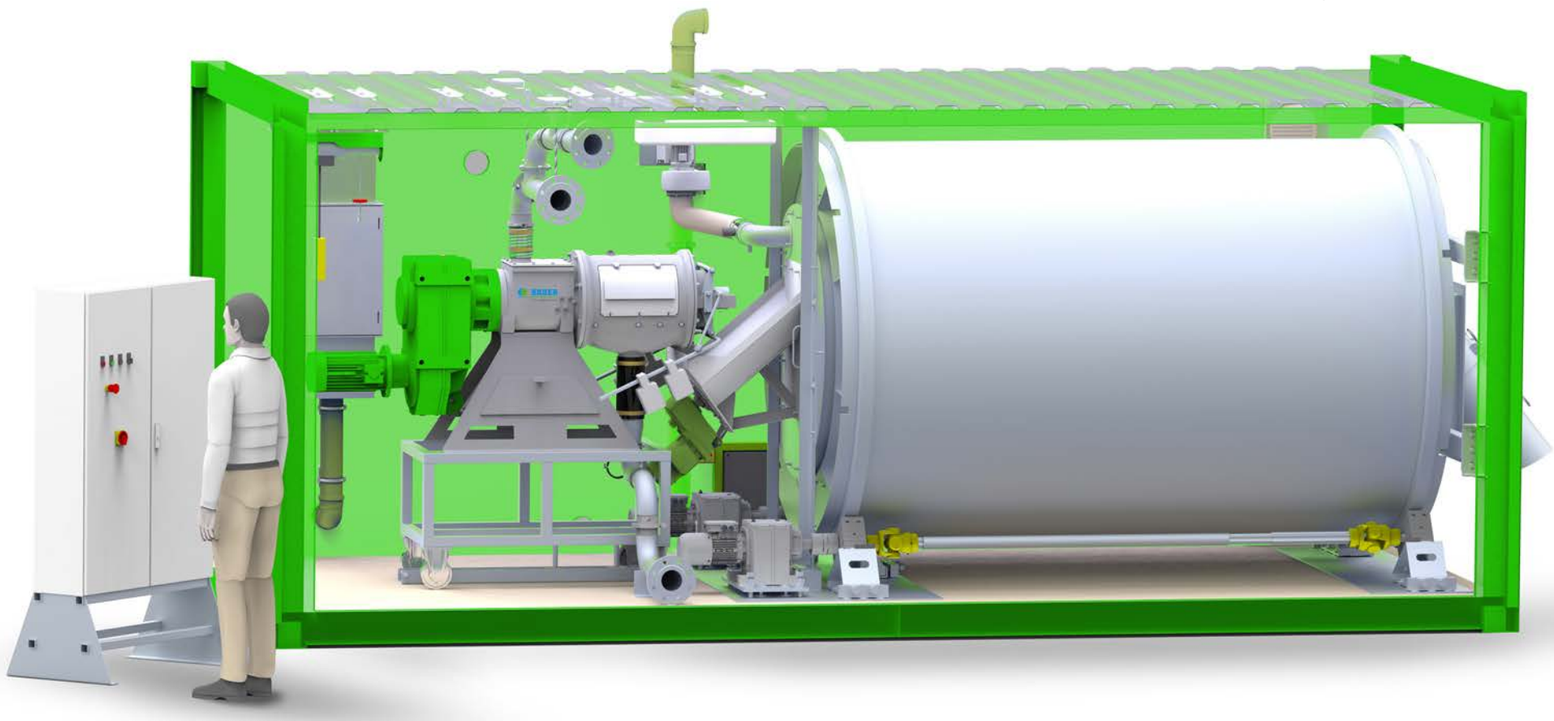
- Unknown microorganism loads
- High risk of leg sores on the cows
- Increased wear on equipment
- Not always available
- Difficult handling
- Material is sometimes too wet
- High storage costs

Typical materials

- Cause increased solid concentration in the manure
- Are labor-intensive
- Are very expensive
- Are associated with higher manure processing costs

Conventional rubber mats and mattresses

- Have high purchase costs
- Require significant maintenance
- Must be replaced roughly every 10 years
- Require additional bedding to cover the resting area



Standard operating conditions

Process temperature in the drum	60 – 75 °C
Time in the drum*	8 – 22 hours
Produced organic bedding**:	
BBU 400	up to 12 m³ / day
BBU 1000	up to 24 m³ / day
BBU 2000	up to 48 m³ / day

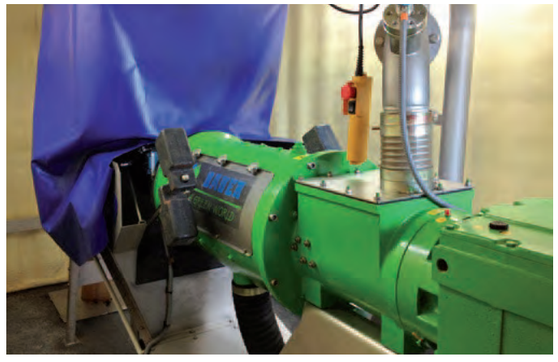
* Depending on the manure management

** Depending on the BBU

Bedding Recovery Unit on a farm with 2000 cows in the state of Winsconsin (USA)

Feeding of the system with a special submersible motor chopper pump

Transporting the prepared manure to the special press screw separator



Special press screw separator for BBU

Free organic bedding available every day

Organic bedding from your own resources

The BAUER Bedding Recovery Unit BBU produces organic bedding material in two steps:

Solid separation of the coarse solids from the liquid manure.

The first step in the process consists of separating the coarse solids and takes place in a specially designed press screw separator. The solids are primarily undigested, coarse fibrous residue from the feed, such as fibers from silage or hay. The separator presses out the solid and reduces the liquid content to a minimum. The BAUER drum dryer is continuously supplied with solid by a screw conveyor.

Microorganism reduction in the processing drum

The second step of the process takes place in the insulated BAUER stainless steel drum. Here the solids are dried in an intensive aerobic process at temperatures of 60 – 75 °C and the bacterial levels are reduced. This treatment ensures a homogeneous product that has been subjected to a controlled process. Treating the solids in this way helps eliminating mastitis pathogens that can be found in fresh manure. Multiple independent laboratory tests have shown that no detectable bacteria cells are present in the bedding.

Clean, healthy cows produce more milk

Report on microorganism counts

Influence of temperature and time on the viability of pathogenic bacteria in bedding material

Typical environment and cow associated microorganisms

Several microorganisms living in the environment of dairy farms are pathogenic to dairy cows. These organisms can be transferred either from cow to cow or from the environment to the udder.

Environment associated microorganisms are for example

- **Streptococcus uberis, Enterococcus faecalis, Escherichia coli, Klebsiella pneumoniae**

Cow associated microorganism is for example

- **Staphylococcus aureus.**

Salmonella ssp. can either be an important factor for the health of dairy cows or milk hygiene.

Scope of research

Objective of our recent scientific study was to investigate the influence of temperature on the viability of the mastitis relevant strains mentioned above as well as of Salmonella ssp. over a predefined period in a given matrix that consists of bedding material.

Inactivation of mastitis relevant strains at temperatures higher than 65°C

Our experiments have shown that the mastitis relevant strains as well as Salmonella ssp. are inactivated respectively smaller than 100 colony-forming units (cfu) per milliliter (ml) at temperatures higher than 65°C.

According to the **COMMISSION REGULATION (EU) No 142/2011** of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive no pathogen microorganisms are found after thermal treatment at 65°C and 30 minutes residence time.

Streptococcus uberis

Inoculum: 2.15 x 10^7 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery rate in cfu/ml

t_0	t_{30}	t_{60}	t_{90}
$4.3x10^5$	<100	<100	<100

Salmonella ssp.

Inoculum: 5.56 x 10^8 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery (qualitative detection)

t_0	t_{30}	t_{60}	t_{90}
yes	no	no	no

Klebsiella pneumoniae

Inoculum: 2.8 x 10^8 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery rate in cfu/ml

t_0	t_{30}	t_{60}	t_{90}
$1.1x10^8$	<100	<100	<100

Staphylococcus aureus

Inoculum: 2.1 x 10^8 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery rate in cfu/ml

t_0	t_{30}	t_{60}	t_{90}
$1.9x10^8$	<100	<100	<100

Escherichia coli

Inoculum: 4.05 x 10^8 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery rate in cfu/ml

t_0	t_{30}	t_{60}	t_{90}
$1.6x10^6$	<100	<100	<100

Enterococcus faecalis

Inoculum: 6.0 x 10^7 cfu/ml matrix
Temperature: 65°C
Time: 0 to 90 minutes (t_0 to t_{90})

Recovery rate in cfu/ml

t_0	t_{30}	t_{60}	t_{90}
$6.6x10^7$	<100	<100	<100

GLOBAL SUCCESS STORY

Worldwide BAUER BBU-systems have been producing comfortable and economic bedding for more than 15 years.

Rick Kool, Denmark
The BAUER bedding system produces the cheapest bedding material. In addition to that, the material is very easy in handling, the cows are healthy and clean, and the material is available anytime all over the year.

Xu Lianhai, China
This system is fantastic! It transforms the waste product of slurry into a valuable bedding material and runs around the clock with absolute reliability. In addition, my animals are healthier with the BBU bedding material, resulting in increased milk production.

FEATURES SEPARATOR

Convincing arguments for successful separation

Automatic weight adjustment*

Automatic adjustment of the counter pressure of the output regulator in case of slight fluctuations of the consistency of the slurry in the inlet. This ensures a constant dry matter in the produced solids.

Support basket in the pressing area

A support basket in the pressing area of the separator housing ensures to produce high dry matter contents of up to 38 % in the solid matter, before brought into the process.

The wear of the screen mounted in the support basket is being minimized and the service life is being extended at only slightly higher maintenance.

Output measurement*

Measuring the output speed of the solid plug ensures a documentation of the volume of bedding material produced, while at the same time monitoring the dwell time in the process.

On request the BBU can be delivered without these features
* Only for premium version

BBU Comparision of models

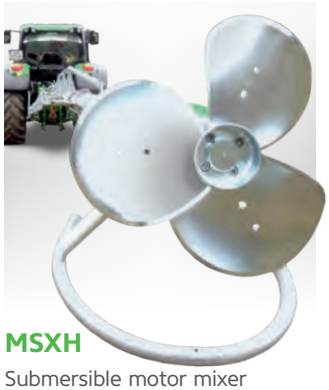
		BBU 400 Standard	BBU 400 Premium	BBU 1000 Standard	BBU 1000 Premium	BBU 2000 Standard	BBU 2000 Premium
Unit	Produced amount of bedding material MANICOW™ per day	10 m³		24 m³		48 m³	
	Process temperature	60 – 75 °C		60 – 75 °C		60 – 75 °C	
	Typical power requirement [kW] of the unit in operation	~26 KW		~30 KW		~36 KW	
Separator	Speed control by means of frequency converter	■	■	■	■	■	■
	Digital display of frequency and current consumption	■	■	■	■	■	■
	Oscillator	■	■	–	–	■	■
	Break through switch	■	■	■	■	■	■
	Automatic weight adjustment	–	–	–	–	–	■
	Pressure switch in the inlet (dry running protection)	–	■	–	■	–	■
Drum	Speed control by means of frequency converter	–	■	–	■	–	■
	Digital display of frequency and current consumption	–	■	–	■	–	■
	Level switch drum	■	■	■	■	■	■
	Oscillator inlet funnel	–	■	–	■	–	■
	Rotation monitoring drum	–	■	–	■	–	■
Ventilator	Speed control by means of frequency converter	–	■	–	■	–	■
	Digital dispaly of frequency and current consumption	–	■	–	■	–	■
	Automatic airflow control depending on precess temperature	–	■	–	■	–	■
	Manual air flow regulation by throttle valve	■	–	■	–	■	–

		BBU 400 Standard	BBU 400 Premium	BBU 1000 Standard	BBU 1000 Premium	BBU 2000 Standard	BBU 2000 Premium
Pump	Connection option / activating via control cabinet (up to 7,5 kW)	■	■	■	■	■	■
	Speed control by means of frequency converter	–	■	–	■	–	■
	Digital dispaly of frequency and current consumption	–	■	–	■	–	■
	Level monitoring pre-tank	■	■	■	■	■	■
	Leakage monitoring pump	Optional	■	Optional	■	Optional	■
Agitator	Connection option / activating via control cabinet (up to 15,0 kW)	■	■	■	■	■	■
	Speed control by means of frequency converter	–	–	–	–	–	–
	Leakage monitoring agitator	Optional	■	Optional	■	Optional	■
Discharge conveyor	Connection options/ activating via control cabinet	■	■	■	■	■	■
Control unit	Hand- & automatic operation of all components	■	■	■	■	■	■
	Operation via Touch-Display	–	■	–	■	–	■
	Display of current process temperatures	–	■	–	■	–	■
	Display of the current output [m³/h]	–	■	–	■	–	■
	Trend records (temperature, motor data, output)	–	■	–	■	–	■
	Display of current motor data of separator, drum, pump, ventilator	–	■	–	■	–	■
	Interval control agitator, auger, conveyor belt	–	■	–	■	–	■
	Restart on release of the level limit switch	–	■	–	■	–	■
	Restart with increase of the filling level in the pre-tank	–	■	–	■	–	■

BAUER

FOR A GREEN WORLD

PRODUCTS FROM OUR SLURRY PROGRAM

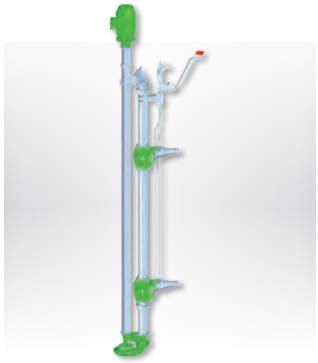


MSXH
Submersible motor mixer

MSXH
Submersible motor mixer

SEPARATOR
Press screw separator for solid-liquid separation

SEPARATOR PLUG & PLAY
System for portable slurry separation



MAGNUM LEE/LEC
Long shaft pump

MAGNUM SM
Thick matter pump gear unit design

MAGNUM CSPH
Submersible motor pump

HELIX DRIVE
Eccentric screw pump

MAGNUM SX
Thick matter pump gear and pedestal pump

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Röhren- und Pumpenwerk BAUER GmbH
8570 Voitsberg / Austria
T +43 3142 200-0
F +43 3142 200-320/-340
M sales@bauer-at.com
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