

Introducing the

 **PUTZMAUS®**

The world's best boiler tube cleaning system



-  Automated Cleaning System
-  Safe & Easy Operation
-  Low maintenance
-  Reliable Performance
-  Increases Tube Life
-  Compact Design
-  Environmentally Friendly
-  Air Driven
-  Interchangeable Tools
-  European Engineering
-  10 Years of Proven Industrial Use



With Putzmaus® tube cleaning equipment commercial boilers are more efficient and last longer saving money and the environment!



The Putzmaus® tube cleaning system is fast and easy - ideal for ship boilers.



The Putzmaus® tube cleaner works on any straight pipe giving it numerous industrial applications.



## The Facts

Soot builds up in boiler fire tubes regardless of what fuel is burned.  
Soot has five times more insulating power than asbestos.  
Enough soot can build up in just a few weeks to cause significant loss of fuel efficiency.  
1/8th of an inch of soot in a tube can increase fuel consumption by 8½% and result in 47% heat loss.  
Even more significant is the overheating and corrosion caused by soot build up, resulting in tube damage.  
Boiler repairs can cost up to 10 times more than preventative maintenance.

**“By far, the greatest number of forced outages in all types of boilers are caused by tube failures.”\***



## Purpose Built – History of the Putzmaus® Tube Cleaning System

In the late 1990's, Jäger Technik, a European furniture manufacturer, established several district biomass combustion plants in factories throughout Europe. They discovered that even minor ash deposits on the heat exchange tubes led to significant losses in efficiency. In addition to higher fuel consumption, the units downstream of the heat exchangers broke down more quickly due to the extremely high exhaust gas temperature. They quickly recognized the economic importance of cleaning more frequently.

Boiler manufacturers typically supply a pole several meters in length affixed with brushes for cleaning tubes. This manual cleaning method is time consuming drudgery and does not produce effective cleaning results. Jäger Technik experimented with automatic devices but was not satisfied with the results, so developed a tube-cleaning system of their own – the Putzmaus®.

The Putzmaus® worked so well, that word of mouth alone brought in requests from around the world for this remarkable device. With many different industrial applications discovered (steam boiler pipes, oil and gas kettles, hydraulic cylinders, etc.), more than 10 years later, the Putzmaus® continues to be manufactured by Jäger Technik and is made available worldwide through distributors like SAACKE Marine Systems.

\* U.S. Dept. of Energy, Energy Efficiency and Renewable Energy, Federal Energy Management Program; [http://www1.eere.energy.gov/femp/operations\\_maintenance/om\\_blrkeycomponents.html](http://www1.eere.energy.gov/femp/operations_maintenance/om_blrkeycomponents.html); accessed June 4, 2009

## Consider the Options



There are four basic options to compare to the Putzmaus®.

1. Rotating Systems that use an electric motor (or other driving force), a flexible shaft and rotating milling heads. Drawbacks to this method are the high purchase price and physical effort needed, usually requiring at least two people to operate. The greatest disadvantage though, is that each milling that produces a reliable cleaning also contributes to material wear of the tube. Since their function determines that heat exchange pipes be very thin-walled, water ruptures at the boiler can occur even after only a few years resulting in expensive repair costs.
2. High Pressure Cleaning with Water can be expensive and makes quite a mess. As a result the job is avoided and cleaning frequency is reduced creating a high soot build up and reducing boiler efficiency.
3. Chemical Procedures are more expensive, and worse, can be extremely harmful to people and the environment.
4. Automatic Blow-off Devices attached to the heat exchangers came onto the market a few years ago and are available from almost every boiler manufacturer as an accessory. It has become evident though, that while these extremely expensive devices do contribute a great deal to an efficient boiler cleaning a mechanical cleaning of the boiler pipes is still needed at least several times a year.



## The Putzmaus® in Contrast

There are many reasons why the PUTZMAUS® has become the most sold tube-cleaning apparatus in the world for biomass heat exchangers, and is emerging as the premier cleaning tool for boilers and numerous other apparatus. All the drawbacks associated with other cleaning methods are eliminated with the PUTZMAUS®.

1. It's the least expensive automatic tube-cleaning apparatus available.
2. It's the most easily operated automatic tube-cleaning apparatus.
3. It's the most robust automatic tube-cleaning apparatus.
4. The PUTZMAUS® produces an efficient result without damaging the pipes or tubes.
5. It's light, compact, driven by compressed air and can be used by a single person.
6. The PUTZMAUS® is made mostly of stainless steel and titanium and is therefore very strong.
7. A special vibration system allows the PUTZMAUS® to use softer stainless steel brushes effectively without material degradation.
8. The only wearing part of the PUTZMAUS® is the brush.
9. The PUTZMAUS® requires minimal clearance space.
10. Four sizes of the PUTZMAUS® are available, depending on boiler size and brushes can be customized for a perfect fit with any pipe diameter.

**A 1 mm deposit layer on a pipe decreases efficiency by 8 to 10%.**

**That means, for example, that a 3 MW heating system with clean pipes can save between \$20,780 and \$103,920 per year (depending on the type of fuel).**

**With this kind of savings a PUTZMAUS® kit can pay for itself in only 10 days.**

### From This



### To This



-  **Soft stainless steel brushes won't scratch or scar giving tubes years of additional use**
-  **All residue and corrosion is removed restoring tubes to a high polish and maximum efficiency**
-  **Air-driven hose feeds and returns automatically- anyone can use it**
-  **No gauges to monitor**
-  **No pre-cooling required- high-temperature hose is rated to 400°C**
-  **Residue is pushed to far end of tube and remains there for easy vacuuming**
-  **Minimal clearance space required**
-  **Compact design makes it easy to carry and store**
-  **Economical pricing**
-  **Volume discounts on purchase of five or more units**

## Ordering Information

Specifications for the four models of Putzmaus® tube cleaning kits are summarized below:

Model	Putzmaus®Mini	Putzmaus®Midi	Putzmaus®Large	Putzmaus®X-Large
				
Suitable for Tube Size (depending on brush size)	Ø 34-41 mm 1 3/8 - 1 1/2 inch	Ø 42-51 mm 1 1/2 - 2 inch	Ø 52-64 mm 2-2.5 inch	Ø 52-140 mm 2-5 inch
Weight (Kg / Lbs)	1.000 / 2.2	1.220 / 2.69	1.275 / 2.81	3.050 / 6.72
Air Pressure (Bars / PSI)	7-8 / 100-115	7-8 / 100-115	7-8 / 100-115	7-8 / 100-115
Air Consumption (Litres Per Minute / CFM)	130 / 4.6	170 / 6	180 / 6.4	280 / 10
Time Forward & back on 300 cm Tube	19 sec.	18 sec.	16 sec.	08 sec.

\*The X-Large is faster and stronger. This unit is required for pipes over 2 inches (52mm) in diameter or 8 ft. (2.5 m) in length.

### KIT CONTENTS

Every Putzmaus® tube cleaning unit is delivered as a complete set including:

Metal storage case

3 stainless steel brushes

Maintenance unit (oiler and water separator)

Oil for compressed air

Regular 4m compressed air hose

4-6m high temperature compressed

Tool kit

Safety equipment

Replacement parts

#### Save Money



Lower your heating costs by running an efficient boiler and lower your maintenance costs by cleaning it the easy way.

#### Save the Environment



With the Putzmaus® tube cleaning equipment commercial boilers are more efficient, produce less Co2 and last longer.

#### Save Time



The Putzmaus® tube cleaning system is fast and easy. Once you use a Putzmaus® you'll never go back.