THE BEST FUEL HANDLING SOLUTIONS IN THE WORLD

The BMH fuel handling solutions are simply the best in the world. The expert reader will come to the same conclusion just by viewing some of the facts, figures and references presented here.

In a nutshell, BMH solutions are based on thorough knowledge of all biomass, long experience and on-going product development, robust products manufactured by ourselves to ensure quality and long working life plus, of course, high professionalism in safety and environmental matters.

Not only are our solutions excellent along with the layout and automation expertise, but our project know-how is also first class. We have been at hundreds of sites all over the world, often simultaneously with several other constructors, and we always deliver.

You can get the whole fuel handling system from us, in a turnkey delivery. And you can be sure that every part of the solution fits together completely.

Highest availability
BMH fuel handling solutions give you the highest availability in the business. We’ve gathered experience for over 60 years. We’ve tried out every sensible new technology, material, routing, speed and structure. And we’ve kept the best. We will forever keep on looking for even better solutions. You can rest assured: the solutions we’re offering you are the most secure and reliable in existence. Therefore BMH has the courage to promise you the highest availability.

Proven technology
Ever since our first deliveries to pulp and paper mills, which must run 24/7 all year round, it has been crystal clear to us that our technological solutions just simply cannot fail. Ever. The same applies even more to power plants. And we’re proud to say our reference list is filled with satisfied power plant customers who fully rely on our expertise.

It just works better
Supposing you shopped for fuel handling solutions from several different places: receiving from one place, preparation from another, and maybe even a third supplier for the conveyors. The savings may look fine on paper but what is the actual reality? You may end up with junctions and joints that fall into no man’s land and when they need repair, problems lie ahead. We at BMH know our products inside out. We know where to place the maintenance hatches and walkways. We know how to manufacture and install the parts that need to be replaced or cleaned and make them easily accessible. All this makes a smoothly running system with easy and money-saving maintenance.

Whatever your fuel, we have a solution
All fuel is not equal. Different fuels demand different solutions. With long experience and know-how of the intertwined issues of handling solutions and fuel quality, BMH offers exactly the right solution for every need. We have a widespread experience with all solid fuels that there have ever been, such as woodchips, stumps, forest residue, sticks, energy willow, peat, pellets, bark, straw, agro biomass, coal and SRF.

Minimised electricity consumption is achieved through optimal motor size, process automation, compact lay-out solutions, and materials chosen for the best functional and environmental properties and so on. Basically, it’s all due to BMH’s long experience in the field.
**RECEIVING SOLUTIONS**

- the answer to any need

Receiving stations are the first step on the fuels’ journey. Sometimes they constitute a small temporary storage as well. Receiving must be quick, it must allow for a big capacity and it must be a safe and dust-free closed system.

No dust is a must
Dust is not just the slight inconvenience that it might be inside your house. In a high-tech process, it’s a much more serious matter, causing jams, production breaks and even risk of fire. BMH aims for dust-free fuel handling. It starts with receiving, where our role is to make sure our unloading processes keep the trucks and the area clean, paying close attention to the ATEX issues.

Correct sample, correct price
Manual sampling typically tends to err by 5–10%. BMH has developed an EU-standardised, automatic sample-taking system. It gives exact information, precludes contamination, homogenises the load, and gives the right price to the fuel. Weighing can be integrated with identifying and sample-taking.

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Safety first
Drive-through rear unloading and rear tipping facilities are provided with safety covers. Typically the unloading is controlled from the monitoring room, not allowing human presence in the actual unloading point.

Do they last forever?
No human-made equipment does. But we at BMH can be proud of the lifetime of our machinery. There are receiving stations still working perfectly, dating from times when most of the readers of this text weren’t even born. Robust structure, easy maintenance, simple replacement of parts subject to wear, the choice of materials, all designed to give you a permanent, carefree solution.

Some examples of BMH receiving solutions delivered

Szczecin, Poland
PGE Zespół Elektrowni Dolna Odra S.A. power plant is situated at the harbour, which is one of the country’s largest. This 100-year-old company opened its first biomass power plant in 2012. The BMH receiving solution allows for unloading from ships and trucks for a variety of biomass fuels, such as forest residue, wood pellets and agro biomass.

Gothenburg, Sweden
A BMH turnkey delivered plant for biomass fuel, Göteborg Energi AB. The receiving takes place from side-tip trucks in an underground bin. Double-sided stoker dischargers allow for several trailer trucks per hour.

The most conspicuous aspect about this picture is: not much to see. That’s correct. BMH receiving stations mean the yard stays clean, the trucks stay clean.

Side tipping and overdrive reclamer table for fast and efficient unloading.

Sample-taking is a multistage process to make absolutely sure the sample is representative of the load.

A vacuum keeps the dust in the pit. The trucks are 'sealed' in an almost air-tight state while unloading.

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PREPARATION SOLUTIONS
– exactly the fuel the boiler needs

BMH preparation solutions constitute a compact system with no conveying. The purpose of the system is to guarantee the quality and particle size suitable for each particular boiler. The requirements of the boiler and the quality of biomass vary a great deal. It means that different actions, different equipment and different lay-outs have to be applied for different clients. Our experience ensures that the boiler will get exactly the fuel it needs for optimal results.

Fuel quality control
The screen is the secret. And so much so, that we will not hang a detailed picture here for the competition to see! The point is to separate impurities, such as sand, stones, metal and of course oversized material, which continues as sand, stones, metal and of course paper and other packaging material, etc. The teeth are of special steel, turnable and easy to change. The crushers’ slow operation mode also diminishes possible damage caused by metal and stone.

One of the latest innovations is the disc screen developed for demanding fuels such as demolition wood and SRF. TYRANNOSAURUS® Bioscreen is a compact, reliable, dust-tight, cost-effective and robust piece of equipment which cleans itself and has low operating costs. The screen is also designed to ensure that the fuel is correctly processed and does not clog or create an arc.

When necessary, impurities are separated from fuel particles during fuel production. BMH delivers the necessary separating equipment such as magnets for metal separation, eddy current separators for non-metallic metals and TYRANNOSAURUS® Air Classifiers for heavy particles such as stones.

Fuel preparation
If actual making of solid fuel is in question, the preparation starts with a chipper or a crusher (in case of wood-based or forest residue) or shredder (for household, commercial or industrial waste). This typically gives a particle size of less than 60 mm, which then is processed further.

The heavy-duty TYRANNOSAURUS® Biocrusher is a safe, economical and efficient way of crushing wood-based residue or stumps as well as cardboard, paper and other packaging material, etc. The teeth are of special steel, turnable and easy to change. The crushers’ slow operation mode also diminishes possible damage caused by metal and stone.

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The preparation unit
The purpose of the unit is to improve and upgrade the fuel quality. BMH solutions ensure that impurities are removed, particle size is correct and clogging is avoided. Dust removal in the screening system and the casing of the equipment keeps the service points and walkways clean as an ATEX non-classified space.

BMH has a long experience in the screening of biomass. The chart shows the permeability of the screen with varying length and fuels.

Screening capacity with different fuels

**Some examples of BMH preparation**

**Rovaniemi, Finland**
This chipping station way north from the Arctic Circle has to endure, in addition to normal hard work, months of below zero temperatures. And it does. The chipping station enables Rovaniemen Energia Oy to use the material from logging and first thinning in electricity and heat production.

**Rauma, Finland**
This Biocrusher at UPM Rauma has been working since 1992. Not such a pretty sight, but every bit as efficient as he ever was. And not by far the oldest BMH-manufactured crusher that is still working.
STORAGE AND CONVEYING SOLUTIONS – where experience counts

BMH storage solutions are the outcome of intense product development. Whether we are talking about an A-frame storage or a silo, or even an outdoor storage facility for non-dusty material, even flow in and out is an important factor. The structure itself is designed to prevent the fuel from forming an arch. The conveying system bringing the fuel from the preparation unloads evenly, avoiding clogging or jamming. And of course the storage is dust-proof.

First in, first out
BMH storage is designed to homogenise the fuel. The fuel coming from preparation is evenly unloaded to avoid clogging. The reclaiming is automated and adapted to the following process requirements. TYRANNOsaurus® Screw Reclaimers are of a heavy-duty construction to guarantee a long lifetime. They are designed to reclaim material evenly from all parts of the storage to even further homogenise the quality. The screws are set with easily replaceable teeth for quick maintenance. Maintenance is facilitated by easy access to service points, and automatic lubrication takes place through a central lubrication unit. The screws have specially furnished linings and are made of materials according to fuel characteristics.

Fuel know-how
The key is to thoroughly know different fuels and environmental conditions. That will partly determine whether to apply belt, chain, tubular belt or screw conveyors or – if space is at a premium – elevators. The idea is to minimise electricity consumption and maintenance costs and to maximise the lifetime. This is achieved by ‘counting backwards’, i.e. starting with the boiler’s requirements. This in turn determines the needed capacity and speed of the conveyors, while taking into account the properties of the fuel. We at BMH know all about conveying and always provide our customer with the best solution that gives them additional value and profit.

Some examples of BMH storage and conveying

Czestochowa, Poland
BMH has a long experience of executing projects simultaneously with many other suppliers. Here at the Fortum Czestochowa S.S. site, the dust-enclosing steel roof of the silo is lifted in one piece to save valuable construction time.

Yorkshire, UK
Drax Power Ltd is the biggest power plant complex in Europe. Here we have the largest biomass co-firing project in the world, in which renewable biomass is burnt alongside coal to produce electricity.

Suselas, Portugal
Cimpor Indústria de Cimentos S.A., the biggest cement manufacturer in Portugal, and active in 10 other countries as well, uses increasingly biomass in production.
INTERNAL FEEDING AND ASH HANDLING SOLUTIONS – to any type of boiler

Every moment the boiler is not doing what it should costs a lot of money. Therefore the boiler manufacturer and the owner of the power plant are particularly careful in choosing the supplier of the internal feeding system. BMH Technology has delivered internal fuel feeding solutions to all the major fluidised bed boiler manufacturers: Metso Power, Foster Wheeler, Austria Energy, plus many others. We will continue to be worthy of that trust. In addition to providing original systems, we have also modernised many existing systems. In addition to fuel feeding systems, BMH provides limestone and sand feeding solutions.

Where there are no excuses
What the boiler wants, the boiler gets. This is the place where no weakness or failure in the equipment is acceptable. Everything just has to work. Any chance of fuel blockage must be excluded. The BMH fuel handling solution ensures this state of affairs starting from the very beginning, the receiving station, but here we apply yet other methods of being absolutely certain. Even feeding is achieved by the correctly designed and manufactured buffer bins and feeding screws. The level measuring technology is absolutely accurate and highly automated, subordinated to the boiler automation.

Ash handling
Bottom ash is removed from the boiler and is usually collected by water-cooled screw or drag chain conveyors. The cooling screw is very effective. It is based on watercooled jacket and shaft. The screw keeps the ash moving, thus maximising the cooling effect. The bottom ash itself is not watered. Afterwards it is conveyed to reuse, usually in the civil engineering or fertilising industry. The sand collected in the process is fed back to the boiler.

Fly ash is handled in an air-tight casing to keep the dust inside and to avoid burns and other possible safety problems. Fly ash can be reclaimed from the silo to the truck in either a dry or wet condition.

The wet reclaiming is carried out by ash humidifiers developed by BMH.

Just as all fuel is not equal, ashes are different, too. Even if the basic idea and purpose remain the same, each ash handling solution needs to be designed and built exactly to the demands of a particular power plant. BMH has delivered ash handling solutions to serve the boilers of all major manufacturers.

The bottom ash can start at 800°C. The water-cooled screw gives the most efficient cooling, lowering the temperature to 200°C before the ash is moved to the container.

Taking care of your investment
BMH fuel handling solutions are the best in the world. Even the best is exposed to wear, but less than others, because BMH has a comprehensive knowledge of the process as a whole.

Regular control, inspection and preventive maintenance guarantee the high availability of your production.

The fuel quality stays maximised, impurities minimised and you are in complete charge. Who better to take care of your investment than the people who designed it?

Availability is king.

BMH Service crowns your fuel handling solution.
BMH Technology Oy specialises in turnkey deliveries of SRF (Solid Recovered Fuel) production plants and solid fuel handling systems for power plants and cement kilns. We do it all: design, build, install, service.

We have the latest technology to meet the increasing demands for quality and availability, and for environmental, operational and maintenance requirements.

Delivery of comprehensive turnkey installations worldwide is guaranteed by our experience and know-how. We manufacture all key equipment, like big shredders, separation equipment, screw reclaimers, etc. in our big, modern, well-equipped workshops. This means high quality and reliable delivery times.