Haver & Boecker
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Weatherproof and durable – the new HAVER ADAMS®

HAVER ADAMS® fills powder-type building materials and minerals with challenging flow properties into tight, water-resistant PE bags

It all started with a customer's request to pack his cement into tight, water-resistant PE bags – a challenge that HAVER & BOECKER, specialist for packaging and processing technology, was more than happy to accept. The result is a form-fill-seal system named HAVER ADAMS®. Since its market introduction, the FFS packaging system has been continuously optimized to enter an array of new application areas. While the system initially only packed powder-type products, micro-granulates and powders into PE bags, the new generation is also able to gently fill products with challenging flow properties. Almost 60 systems have already been installed in different branches all over the globe. The new HAVER ADAMS® is set to make its mark in the building materials and minerals industry.

Who would have imagined some years ago that cement and other powder-type construction materials could be filled into compact and weatherproof polyethylene bags in an environment-friendly process? Almost ten years ago, HAVER & BOECKER, headquartered in Oelde/Germany, took the initiative in cooperation with a bag manufacturer. The result is called HAVER ADAMS®: a form-fill-seal (FFS) packaging system that fills powder products into PE tubular film bags. At first, the industry was skeptical about the development. The machine not only implemented an unusual bag concept, it took the idea to the next level by changing the entire filling process to FFS technology. The HAVER ADAMS® set out to conquer other sectors. Today, the filling system also achieves peak performance for customers in the building materials and minerals industry.

The fine art of bagging

FFS packaging systems are used for filling and packaging bulk material into bags. The bag is formed inside the filling machine, which obtains the continuous PE tubular film from a reel. The product is then transported into the bag via specifically adapted dosing and weighing systems, while the bag is formed and sealed in the packaging unit.

Packaging granulated and grainy products with FFS machines has been part of daily production routines for a long time. But ultrafine products face completely different challenges: "They have a very high dust content. At the same time, compaction is the most important prerequisite for clean and efficiently bagged products," explains Burkhard Reploh, head of the building materials and minerals division at HAVER & BOECKER. To ventilate granular products in PE bags, the foil is normally needled or micro-perforated. "This is not possible for powder products, because they can even leak through micro-perforated foil. Subsequently, the long storage time required for hygroscopic construction material cannot be ensured," says Reploh.

Powder products like cement, on the other hand, have a packing factor of up to 1.6; the volume must be reduced by 60 percent before the bag is sealed. If this is not the case, the bag might be damaged during transportation. Apart from insufficient outdoor storage possibilities, the inacceptable damages that occur during filling and transportation were the main reasons for the industry to start looking for alternatives.

Based on these requirements, HAVER & BOECKER teamed up with cooperation partners and developed a new bagging and filling concept. The PE bags are now not only clean, tightly closed and weatherproof; their compact size also facilitates space-saving transportation and storage. Reduced material loss is equally easy on environment and budget. The PE bags also offer several advantages for marketing activities: they allow for multi-color full-surface printing, for instance with photorealistic images, product information or barcodes.

FFS technology re-interpreted

The first HAVER ADAMS® was an intermittent, rotating packer with eight filling spouts and a performance of 1,000 to 1,200 bags per hour, depending on product fineness. "A list with all challenges formed the basis of our development work. We solved one item at a time, scientifically validated each point, and ended up

with a compact machine," Burkhard Reploh explains. Different versions derived from this machine have established an entire product family, whose output begins at 200 bags per hour for stationary units and goes all the way up to 1,200 bags per hour for rotating machines.

When manufacturers started demanding even higher output and speed, HAVER & BOECKER sounded the bell for the next level of development. The objective was to achieve filling performances of minimum 2,000 bags per hour for bag weights of 5 to 50 kilograms, making the machine attractive for mass-oriented markets and companies. Up to this point, the multi-spout machine had operated in intermittent mode. The new continuous operation was able to increase performance from 1,200 to more than 2,000 bags per hour.

Based on components from the rotating packaging machine HAVER ROTO-PACKER®, the engineers developed a new filling module with gross weighing for shorter filling times. The bag handling modules that place and remove the PE bags on the new filling spouts are also new. The rotating modules have two gripper units each, which ensure highly accurate transfer.

Air or turbine units can be used as filling modules. The combined control and weighing electronics MEC®, an in-house development by HAVER & BOECKER, provides for exact filling quantities; internal and external vibrating units ensure the required product compaction. Thanks to micro-vibration, the air bubbles inside the product automatically move to the top. The main advantage of this mechanical procedure is its very high availability. In contrast to vacuum systems, micro-vibration does not suck off any fine particles. The filled bags are safely sealed in low-maintenance pulse welding stations and then transported to the bag forming section. If required, a head seam cleaning and cooling system can easily be integrated.

The modular configuration of the HAVER ADAMS® makes it possible to use between one and twelve filling spouts. This significantly increases the circle of applications. All products that are filled in valve bags and have a minimum bulk density can now also be filled in PE bags.

Service has top priority

Apart from high performance, ease of operation and noise protection range amongst the key features of modern filling systems. The complete enclosure of the HAVER ADAMS® keeps noise development at a low level, leading to high noise insulation as well as significantly reducing dust. Thanks to the HAVER Service Pad (HSP), remote support is accessible at the push of a button. The system, consisting of a touchpad and integrated camera and software, enables operators, service technicians and specialist workers to directly communicate via a high-speed internet connection. The result: short reaction times and higher machine availability.

At present, almost 60 HAVER ADAMS® machines from HAVER & BOECKER are used all over the world. Just recently, a HAVER ADAMS® was sold to a titanium dioxide filling plant. The filling system offers optimum product protection and extended storage times, even in case of adverse weather conditions. The machine delivers resilient packaging and a clean logistics chain in all fields of application. With its compact dimensions, the HAVER ADAMS® is suited for all production environments. For the building materials and minerals industry this means: an entirely new, yet well-tried process FFS filling of powder-type products and products with challenging flow properties into PE bags.

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Images and captions

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The HAVER ADAMS® packaging machine achieves

performances of up to 2,000 bags per hour.
After having been formed, filled and sealed 2,000

compact, tight and water-resistant bags per hour leave the packaging unit.
They shrug off bad weather: PE bags for powder-type bulk material and products with challenging flow

properties.
Operators, service technicians and specialist workers can directly communicate via a high-speed internet connection.

About HAVER & BOECKER

HAVER & BOECKER is a traditional - conscious, family-run,mid-sized company with headquarters in Oelde, Westphalia, Germany. Under the umbrella of HAVER & BOECKER OHG, one finds the Wire Weaving and Machinery Divisions. Together with over 50 subsidiary companies on all five continents, they make up the HAVER Group which has more than 2,550 employees and 150 representatives. In 2012 the HAVER Group posted a sales turnover of 402 million euros.

The Wire Weaving Division produces woven wire mesh and processes it into engineered woven wire products. They are used for screening and filtration by the chemical, plastics, automotive, aviation, aerospace, electronics, foodstuffs and feed industries, as well as for architectural applications and analysis sieves.

The Machinery Division specializes in packing and weighing technology. It develops, produces and markets systems and plants for filling and processing loose, bulk materials of every type. The product range includes packing and loading systems for powder-type and granulated materials, packing machines for filling food and animal feed, as well as filling stations and complete filling lines for liquid and pasty products. The product range is supplemented by screening machines, machines for washing, pelletizing plates, agitators, mixers, palletizing and loading systems, silos, ship loading and unloading equipment.