

# Successful weight loss



Responding to stricter diesel-emissions standards and weight requirements of the new Euro 6 regulation Schmidt Group has fitted its dry-bulk fleet with MH6 Series Screw Compressors (inset) from Mouvex and Hydrocar

*When Schmidt Group was looking to reduce truck weight for its dry-bulk fleet it found the answer in Mouvex screw compressors*

**I**t has been more than two decades now since new European Union (EU) directives began regulating the amount of emissions that on-road diesel-powered trucks can emit into the atmosphere.

The first, Euro 1, came into being in 1992, and the EU has now progressed to Euro 6, which governs all trucks that have been manufactured for on-road use in European countries since the beginning of 2014. That said, most of the trucks that currently traverse Europe's roads are of the Euro 4 or Euro 5 variety, whose regulations came into effect in 2005 and 2008, respectively.

Specifically, these EU directives, no matter their stage, put limits on the amount of carbon monoxide (CO), nitrogen oxides (NOx), hydrocarbons (HC) and particulate matter (PM) that can be expelled into the atmosphere through the exhaust of diesel-powered trucks. Over the years, these limits have become stricter as EU members have looked for ways to lower the amount of impurities that find their way into the continent's air.

For example, in Euro 1 the CO, HC, NOx and PM thresholds were 4.5, 1.1, 8.0 and 0.612 grams per kilowatt hour (g/kWh), respectively. By comparison, the specifics of the Euro 6 regulation place the amount of CO emissions at 1.5 g/kWh, HC at 0.13 g/kWh, NOx at 0.40 g/kWh and PM at 0.01 g/kWh.

These constantly changing emission thresholds have caused truck fleet owners to re-examine how their vehicles are outfitted. In addition to new engine models that are designed to reduce emissions, an ancillary consequence regards the actual weight of the vehicle and its payload, which is also governed by EU regulation.

## Tipping the scales

"Euro 6 is a regulation for limiting exhaust in Europe, and we are really taking care of pollution," explained Sascha Pachnicke, product manager for Dienstleistung Warenwirtschaft Spedition (DWS) GmbH, Heppenheim, Germany, a distributor of compressor equipment for use on dry-bulk trucks, trailers and silo containers since 2006.

"Through these regulations to control exhaust there is less space on the truck left because the exhaust system on a Euro 6 truck is much bigger and heavier than on the Euro 5, for example. The Euro 6 regulation was created to have cleaner air coming out of the exhaust, yet you are only allowed to carry 40 tons. If the truck is heavier, you have to reduce some of the weight."

That has created a balancing act for the trucking fleets that transport dry bulk materials and products across the continent.

Specifically, most truck chassis that are outfitted with transport tanks have a maximum weight limit of 14 tons. Meanwhile, most customers request from their shippers the ability to handle a minimum payload of 25 tons. Much more than the upper limit of either threshold and you are bumping up against the 40-ton regulatory ceiling.

The trick, then, is to use a truck and trailer that is as light as possible, allowing it not only to carry at least 25 tons, but often more. This is a benefit for both the end user, who gets more product shipped at one time, and the shipper, who realizes an economic benefit from being able to ship larger payloads.

One bulk logistics company that has been threading the needle of the EU directives regarding diesel emissions since the dawn of the Euro 1 era is Schmidt Group. Founded in 1948 in Heilbronn, Germany, where its corporate headquarters remain, Schmidt Group offers transport services via road tankers and silo containers, which are contracted to ship all types of dry bulk goods, including, but not limited to, plastic pellets, cement, lime, starch, powder, sugar and animal food.

Schmidt has grown to comprise a fleet featuring 800 trucks, 150 of which are used to transport hazardous chemicals, 5,000 intermodal containers, 28 subsidiary locations situated throughout Europe and eight regional dispatch centres. In total, Schmidt Group annually delivers 4.6 million tonnes of dry bulk products.

A member of the Schmidt group family for nearly half its existence or, to be exact, 30 years, Michael Hoyer is the company's fleet manager and has responsibility for the entire fleet of rolling stock, including ensuring that all vehicles meet the tenets of the various EU diesel-emission directives.

"There was a significant change when the Euro 5 emission systems came, but then by 2014 the new Euro 6 had arrived, which means that the same truck has a weight increase of 200-300 kg," said Hoyer. "Therefore, Schmidt was looking for a technical solution to having the same payload while not reducing the benefits of the application or the size of the system. The main point was to find out how the minimum payload of 25 tons could be realized without exceeding the overall weight."

## Making weight

One area that Hoyer and Schmidt Group targeted for potential weight reduction was the truck-mounted compressors that were being used to load and unload the tanks and silo containers. The

compressors Schmidt was using were rather complicated to install and maintain, and required a mounting frame and bracket, and special shaft, which added to the overall weight of the system.

As luck would have it, a trip to a trade fair in 2013 led to the discovery of the perfect compressor solution.

"We were attending a trade fair and DWS presented us with the new MH6 technology from Mouvex and Hydrocar," recalled Hoyer. "A standard compressor has a weight of around 300kg, but the MH6 has a total weight of 80-100 kg, which delivers the required weight savings."

Specifically, the 'MH6' is the MH6 Series Screw Compressor, which Auxerre, France-based Mouvex developed in conjunction with

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1 Michael Hoyer, left, fleet manager for Schmidt Group, and André Saam, dry bulk fleet manager, have optimised the weight and driver comfort in the dry bulk fleet by switching to MH6  
2 Schmidt's truck fleet carries such diverse dry bulk products as plastic pellets, sugar, powder, cement, starch and animal food to end-users all across Europe  
3 Schmidt's Ludwigshafen facility features 60 storage silos, the contents of which the company's 800-strong fleet of dry-bulk trucks and trailers transport to customers all over Europe

Bologna, Italy-based power take-off (PTO) manufacturer Hydrocar in 2010. The MH6 is the world's first all-in-one screw compressor/PTO unit, and was developed as a weight-saving answer to the new Euro 6 regulations. DWS has been the official distributor for Mouvex equipment in southwest Germany since 2009 and was one of the first companies to put an MH6 compressor in the field.

In addition to the upwards of 70 percent weight reduction offered by the MH6, other operational benefits include the absence of free-turning drive parts, which increase operator safety; no need for additional installation space; no need for separate oil changes since the system is integrated into the truck's gearbox; no need for mounting brackets and frames, or cardan shafts; quieter operation; and compatibility with a wide array of truck configurations, from 4x2 short wheelbase to larger 6x2 and 6x4 designs. Flow rates range from 325-600 cbm/hr, and the MH6 can handle solids up to 15mm in diameter and 60mm in length.

Schmidt tested an MH6 compressor on one of its vehicles throughout 2013 and the results spoke for themselves. "At the end of the year, the MH6 showed in the day-to-day testing that what was promised was reached," said Hoyer. "The conclusion was that during the one year of testing we were very well supported by Mouvex and DWS, and had real communication with our drivers and fleet management on how the MH6 works, and at the end of the day, it was a good relationship. We came to the conclusion that this was the way to move forward, with the MH6."

The reduced weight of the MH6 is also holds ancillary benefits for Schmidt fleet drivers. "With the weight benefit, it was possible for

Schmidt to increase the size and comfort of the cabin to give more benefits to the driver to feel more comfortable, safer for long-distance driving with no risks in using the MH6," said Hoyer. "It was a target of ours to support the employees and motivate them for the global benefit of the organization and our customers."

The most successful weight-loss programmes are those that target specific areas to trim, then identify the best ways to reach those weight reduction goals without adversely affecting the whole organism. In that way, the MH6 Series Screw Compressor was the perfect weight loss solution for a dry-bulk haulier like Schmidt Group.

"Due to the weight reduction you can put more load on the truck so you can gain more money through transporting or unloading; that's an extra 200kg on one truck, which can also be used for more luxury in the cabin for the driver," said Pachnicke.

From his perspective, Hoyer is looking forward to the day when every Schmidt Group truck is fitted with an MH6 compressor, and has even offered to help Mouvex and Hydrocar field test the next-generation compressor, the MH10, which is currently in development.

"Schmidt is always looking for the newest technical solution for all of its equipment and because of the capabilities of the MH6 we are proud to work with the Mouvex and DWS organisations," Hoyer said. "The target is clearly to work with Mouvex in the future, to standardise Schmidt Group on these compressors."

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MH6 Series screw compressor

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