



An aluminum diesel tank of a heavy commercial vehicle next to a rotomolded adblue tank.

E-MOBILITY

A Concern for Rotomoulders Producing Diesel Tanks?
Or Not Yet?

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Rotomoulders attending ARM meetings throughout the world have a common subject to talk about: What will the future of rotomoulding be? Will rotomoulding be sustainable with competing new technologies entering the market? Will some of the products being rotomoulded disappear in time?

When one thinks about the newest possibilities of vacuum forming and robotic welding of large items, blow moulding technology for bigger-volume products, lower-cost injection moulds with faster CNC machines, additive manufacturing of commercial articles entering the market, etc., one can say that there is a reason for concern. But the good news is there are vast possibilities for rotomoulders who will always find niche items to produce. The exciting part is that a rotomoulder can and should be flexible enough to fit the situation. ARM meetings and magnificent networking among rotomoulders throughout the world set the plot for useful networking activities.

Water Tanks

Blow moulding nowadays certainly provides stiff competition to rotomoulding in the water tank sector. Tanks up to volumes of 10,000 liters can be produced by blow moulding with new machinery. However, we hear every day – especially from the Indian market – that rotomoulded tanks are mostly preferred to blow moulded ones because of quality issues. Although the quality problems of blow moulding for this preference is not proven, one can say that you can melt “anything” in the extruder of a blow moulding machine, but rotomoulding does not allow the producer to use “any” raw material.

Infrastructure

For example, we see an important competition to rotomoulding in infrastructure products. Manholes of all kinds for electrical, telecommunication, sewage, and water system connection boxes, produced up to 15 years ago always with concrete, have been converted to rotomoulding. Suddenly, within the past few years, we find injection moulded products in this area. However, can injection moulding comply with the versatility of rotomoulding? Many such items need outlets with various diameters, different angles, and different heights. Obviously, rotomoulding is the only way to produce tailor-made niche and expensive products. Injection moulding's high production numbers certainly cannot cope with rotomoulding's possibilities.

Automotive

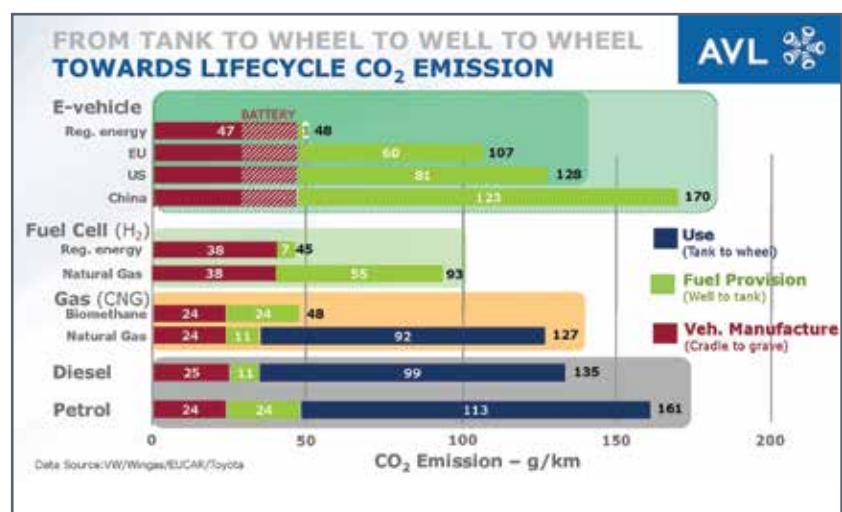
Automotive parts are an important market for rotomoulders. Rotomoulded diesel and AdBlue tanks today are indispensable products for OEMs. But for how long? Today, the environmental awareness of the world population is growing, and since the main actors are the developed countries, all



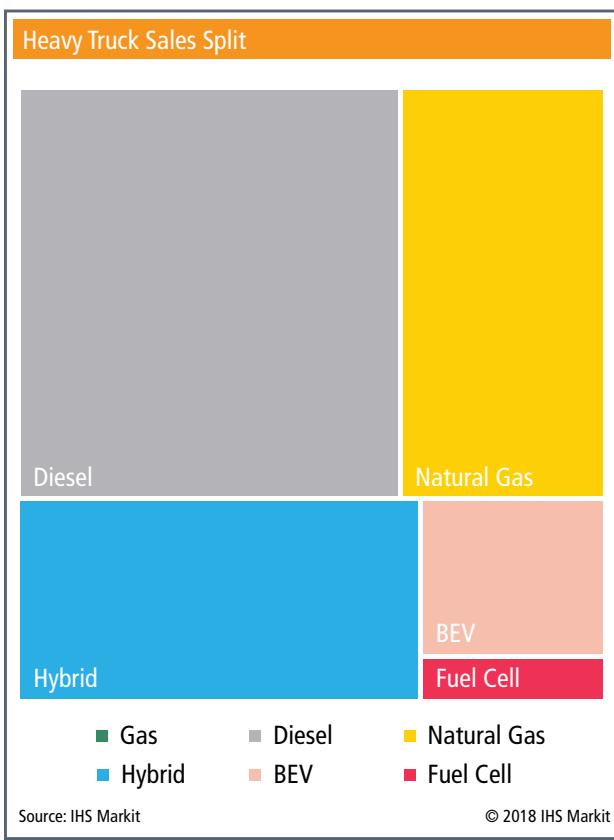
Promens rotomoulded electrical vehicle

governments take measures to be able to reduce the carbon footprint. One of the main polluting factors in cities is the fossil fuel used to operate vehicles. The regulations nowadays cover different vehicles and markets – on-road and off-road – to reduce the carbon footprint by lowering particulate and NOx emissions. Today, the average allowed CO₂ emission is 109 gr/km. and it can only be met by using various filtering, exhaust, and motor techniques. For diesel-driven HCVs, the limits can be held by using the environmentally safe liquid called AdBlue sprayed onto exhaust gas. Good news for rotomoulders: AdBlue cannot be stored in normal metal or aluminium tanks, so plastic is the most economical solution.

It will probably not be possible for the diesel-based, light-duty vehicles to meet the 2030 regulation of 77 gr CO₂/km. (tank to wheel). Therefore, car companies have been trying to develop hybrid and full-electric cars for many years now. Of course, this is of no concern to rotomoulders since the light-vehicle



Life Cycle CO₂ comparison for e-mobility and fossile fuel vehicles; gr CO₂ per km



Heavy truck sales split today according to fuel

sector is not an important market for most rotomoulders. HCVs seem to get away with the regulations with the help of AdBlue.

E-Mobility

Although hybrid and full-electric medium-to heavy-duty commercial vehicles (M/HCVs) seem to be a future competition even for diesel-driven vehicles using AdBlue, the future is not as near as some believe. There are a lot of problems attached to producing battery-driven M/HCV's. First of all, one needs to consider the environmental problems of the whole product – from cradle to grave. The life cycle of batteries, which need to be replaced every 2 years, is mostly not considered and/or compared to fossil fuel-driven vehicles and their recycling. In fact, the comparison of diesel production to production of electricity in terms of the environmental problems they cause is neglected. The way electricity is produced in some countries, using low-quality coal like in China, unfortunately does not make electrically driven vehicles environmentally any better. (*Data source: Toyota*) Electrically driven vehicles of all classes can run around 250-300 km today, once fully charged.

When should rotomoulders start to worry?

Today the best technology allows an HCV with a heavy 2000 kg. battery pack to drive for 200 km. Charging this battery lasts 10 hours with a 20kW charging station and 3 hours with a 150 kW charging station. This may not be a problem for vehicles used in cities as they may be charged overnight, but how about long-distance driving? Imagine trucks needing to drive 3-5000 km. distances to bring their payload. How about the huge electrical power needed to charge and re-charge thousands of M/HCVs driving on the highways? What kind of “tank stations” needs to be planned and constructed, and in how much time? How about countries with a lack of electrical power and infrastructure?

The best prognosis suggests doubling the battery capacity in the next 5-10 years with optimized lithium-ion batteries may be possible. The exhibits for the most prominent OEMs at IAA 2018 in Hannover claimed that in 10 years' time the range of the batteries will be doubled. This development will not make long-distance travelling for M/HCVs with batteries feasible. It is no wonder no OEM had a long-distance truck as a showpiece at Hannover 2018.

The exhibition for commercial vehicles at AIA 2018/Hannover had signs stating that for long-distance, payload-carrying vehicles, environmentally relatively clean, heavy-torque diesel motors with special filters, exhaust systems, and using the liquid “AdBlue” will be the solution for a long time to come. This solution obviously needs better, lighter rotomoulded tanks carrying AdBlue liquid next to the diesel fuel, where no doubt thermoplastics will be the best raw material solution. So the ban



Diesel tanks for a heavy duty vehicle

on light-duty vehicles used within the cities should not worry rotomoulders producing diesel tanks for a long time.

In short, rotomoulders of HCV diesel tanks have 10-20 years before they need to start worrying. ■