

Metallisation

Thermal spray equipment and consumables

F119 Vitkovice Milmet LPG Bottles

Polish LPG Bottles Protected by Metallisation Equipment

Vitkovice Milmet S.A. is the only manufacturer of LPG bottles in Poland and has recently purchased three Metallisation Arcspray 528E production metal spraying systems. The steel cylinders, which are mainly used for Propane and Butane gas, are produced from scratch at the company's site in Sosnowiec and, as with all steel items, are prone to long term damage by corrosion.

Vitkovice Milmet has purchased the metal spraying equipment in response to demands from the LPG cylinder industry for more superior and reliable resistance to corrosion. To provide the level of corrosion protection required, each bottle needs to be metal sprayed prior to powder coating or wet painting. Metal sprayed bottles will be fit for useable service for between 10 and 15 years before routine inspection is required. Metal spraying is a technology that protects or extends the life of a wide variety of products in the most hostile environments.



Normally, LPG bottles are simply coated with either wet paint or a powder coat, which are both liable to damage through normal wear and tear, leaving the metal exposed and leading to corrosion. As an effective protection from corrosion, Vitkovice Milmet has been considering metal spraying for some time and began investigation into this nearly ten years ago, before the demands of the industry were evident.

In 2007, the Vitkovice Milmet management team visited Metallisation in the UK to see first hand how metal spraying can protect LPG bottles from corrosion. The team also visited a number of bottle spraying plants across Europe and Scandinavia to witness the effectiveness of metal spraying gas cylinders. While in the UK, the Vitkovice Milmet team also visited leading automation company, EMS Surface Technology Ltd (EMS), based in Reading, to evaluate the equipment that would enable the metal spraying process to be fully automated.

Following extensive evaluation and discussion Vitkovice Milmet chose Metallisation to provide all of the metal spraying equipment, and EMS as the main contractor and supplier of the automation. Vitkovice Milmet's decision to opt for Metallisation was based on the professional approach of the team in the UK, recent references for the same application and the local support service provided by established Metallisation distributor, Sciteex.

Vitkovice Milmet's initial brief to Metallisation and EMS was to metal spray the cylinders while in a vertical position. This, unfortunately, can create a range of technical problems and can increase the cost of the automation as well as producing an uneven coating. Following lengthy discussions, Metallisation and EMS were able to demonstrate the benefits of spraying the bottles in a horizontal position, which Vitkovice Milmet agreed to and adopted the principle.

Vitkovice Milmet's target production is to spray 2,100 of the 11.3kg bottles per day across three shifts. The adaptable automation in conjunction with the Metallisation Arc528E systems can spray a range of bottle sizes between 3kg to 33kg in weight, between 320mm and 1330mm in length and a diameter range of between 215mm and 375mm.



Vitkovice Milmet make the bottles by first pressing the parts which are then welded together with the fixtures, before pressure testing them prior to applying a surface coating. The surface of the bottles needs to be prepared to ensure an adequate profile is created for metal spray adhesion. This is done by grit blasting the bottles in an automatic blasting machine, which produces a blast cleanliness of SA 2.5. Once the surface has been prepared, the metal spraying can begin.

The bottles are automatically fed into the metal spray machine, which aligns the pistols and rotates each bottle. One metal spray pistol moves across the base and sprays the bottom of the bottle, a second, fixed pistol, sprays the bottle neck and shroud and a third pistol traverses along the length of the bottle to coat the sides.



The machine is also supplied with dust extraction and dry filtration equipment, to ensure there is no contamination of the coating and to provide a safe working environment.



Each bottle is coated with an average of 60 microns of zinc. The base of the bottles is coated with a slightly thicker coating to provide greater protection in an area normally subjected to

greater wear and tear. Once all the bottles have been metal sprayed, Vitkovice Milmet then powder coat the bottles to meet its customer colour requirements. Bottles are then fitted with valves, pressure tested, certified and stamped and finally branded with the customers branding using screen-printing.

Vitkovice Milmet chose the Metallisation Arc528E System as it provides a consistently high quality zinc coating and can spray zinc at a rate of up to 46kg per hour. The Arc528E pistols, used to spray the base of the bottles, are connected to two S250, 250 amp energisers. The pistol spraying the sides of the bottles is connected to an S450, 450-amp energiser, as this needs to spray at a higher spray rate than for the base and neck. Metallisation supplies the zinc in 250g fibre drum production packs.



Robert Kościelny, Production Manager, Vitkovice Milmet, says: “We chose Metallisation and EMS because of their experience and professional attitude throughout this whole process. Over the last few months we have had a lot of contact with both companies and they have proven themselves time and again. The process has worked really well because they understand what we are trying to achieve, plus the availability of local knowledge and support offered by Sciteex made the decision to choose Metallisation so much easier. Sciteex has proved to be very technically competent when we have needed advice or support. We are looking forward to ramping up production over the coming months and seeing our new equipment in full action. It’s a very exciting time for us. Now we have the ability to coat our bottles, it will allow us to expand our customer base into markets where zinc coatings are a prerequisite from certain gas suppliers such as Shell and Primagaz.”

For further information on surface coatings, or Metallisation equipment and processes, please contact Stuart Milton on + 44 (0) 1384 252 464 or visit www.metallisation.com