

# From the classic beverage can to the thin-walled aluminum bottle

Not all aluminum bottles are the same. Depending on customer requirements, aluminum drinks bottles can be manufactured using either the impact extrusion (IE) or DWI method. Different products require different production processes – even for the internal coating



Typical Japanese DWI-manufactured drinks bottles with short length-to-diameter ratio

DWI-manufactured drinks bottles with large length-to-diameter ratio

Impact-extruded bottles

Back in the 1990s, a variation on the classic beverage can – thin-walled aluminum bottles manufactured using the DWI method – were brought to market in Japan. Today, these bottles are an indispensable part of Japanese everyday life. Many drinks – from soft drinks to alcoholic beverages, such as sake and beer, through to iced coffees – are now sold in this customary aluminum bottle, usually with a large screw cap closure, particularly in the millions of drinks vending machines that can be found all over Japan, as well as in major convenience stores such as Seven Eleven, Lawson or FamilyMart.

American and European manufacturers were much slower to pick up on aluminum bottle production. This eventually led Ball to launch several versions of the FUSION® bottle at once, with different sizes and necks. At the start of the new millennium, Exal brought its C2C (Coil-to-Can-manufactured) aluminum bottles for soft drinks to market, as did Boxal (F).

Until that time, the products were still produced using a combination of IE and DWI technology. It was only with increasing unit sales that other manufacturers identified aluminum drinks bottles as an attractive market and subsequently developed the "pure" DWI bottle (Draw Wall Ironing). Plants that manufacture these DWI bottles can produce between 600 and 1500 bottles every minute, whereas the impact extrusion method suppliers produce only between 150 and

220 bottles per minute. Depending on the bottle's purpose, reverse impact-extruded bottles are still in use today, especially since both manufacturing processes produce versions of the bottle which differ in a number of aspects and have corresponding advantages and disadvantages. The first aluminum bottles outside of the Japanese market were largely manu-

factured by means of reverse impact extrusion, which is the same method used to manufacture monobloc aerosol cans. The method, specifically the necking process, was refined further to better match the classic bottle shape. The insides of the first reverse impact-extruded bottles were almost all coated on Sprimag internal coating systems. Back then, Sprimag had already built up decades of experience coating the insides of monobloc aerosol cans. With the launch of the 16 fl. oz. aluminum bottle for

its beers, brewery giant Anheuser-Busch (Budweiser) notably pointed the way to the future. Once again, Exal initially manufactured these bottles using IE production alone, but subsequently modified the production process to include DWI technology in separate production steps. Eventually, Anheuser-Busch and its in-house production company MCC (Metal Container Corp) refined the original IE beer bottle to adapt a twist-top seal. This led to the creation of a pure 16 fl. oz. beer bottle with screw cap closure, and they were able to produce the DWI beer bottle at rates of 1,200 bottles per minute – not the least thanks to their use of Sprimag HIL-05 inside spray lancing technology.

Sprimag continues to confront this trend in the market for thin-walled, DWI-manufactured drinks bottles, and thanks to the HIL-05, now offers an internal coating machine specifically for coating the insides of drinks bottles that have a large length-to-diameter ratio.

Naturally, the machine can also be used to coat the insides of classic beverage cans, where now even greater limits in the length-diameter ratio are desirable (e.g. slim cans for soft drinks, large volume beer cans). They can be

sprayed safely and reliably on Sprimag HIL-05 stand-alone machines, or other machine platforms from Sprimag, even at high cycle rates.

The HIL-34 internal coating system from Sprimag, for example, is one alternative which is particularly suitable for coating the insides of beverage cans and bottles with a short length-to-diameter ratio.

Just recently, beverage can manufacturers outside of America, particularly in Asia, have shown great interest in

manufacturing thin-walled aluminum bottles for beer, especially for 12 fl. oz. and 16 fl. oz. volume bottles. Sprimag is equipped for high-quality/high-speed spray coating in both lancing and fixed spray gun requirements for the beverage can industry, and can rely on her vast years of experience in successfully implementing internal spray projects.

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HIL-34: Internal coating of beverage cans and bottles with a short length-to-diameter ratio



HIL-05: Internal coating of beverage cans and bottles with a large length-to-diameter ratio