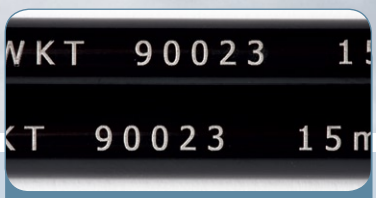
Videojet® Plastic Extrusion

Industry Case Study

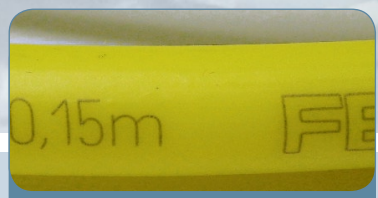
High Speeds for High Volume Production: Laser Marking of Tubes, Hoses, Cables and Profiles

Laser.
Ink Jet.
Thermal Transfer.
Labelers.
Track & Trace.
Supplies.
Parts & Service.

Plastic profile for car upholstery. Material effect: color change. Marked with a fiber laser.



Fuel lines. Material effect: color change. Marked with a fiber laser.



Plastic tube. Material effect: color change, engraving. Marked with a Nd:YAG laser.

The Plastic Extrusion industry is a multi-billion dollar business globally. Everywhere a multitude of products exist that have been extruded – from window frames, profiles and sealings through cable tunnels and wires to fuel supply tubes and medical hoses.

Challenges

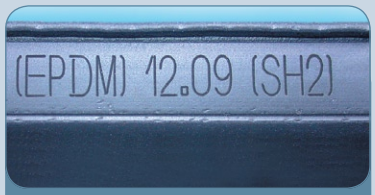
Most of these extruded plastics have to be marked, identified or coded in some form. Marking contents range from simple alphanumeric codes and crop marks to complex codes and logos or individual data. In most cases, this data has to be applied "on the fly", when the extruded parts move from machine to machine (e.g. from cooling bath to test stand). Usually, the products move extremely fast, so the laser marker has to be capable of high line and marking speeds.

Solution

The marking technology that offers the best quality while delivering easily traceable marks and being highly cost-effective is laser marking. The latest and most effective laser marking and engraving systems are Videojet solutions.

Marking Speeds/Marking on the Fly (MOTF)

With production line speeds up to 262 feet per minute (80 mpm), these applications also demand high quality marks. Vidojet laser markers deliver these speed and marking quality results for a wide range of application needs.



Rubber car door sealing. Material effect: engraving. Marked with a 30W CO2 laser.

The Industry

Laser marked extrusion parts:

- Automobiles: windshield gaskets, fuel supply lines/tubes, etc.
- Building: (window & door) profiles/ frames/sealings, rods, channels, etc.
- Electronics: wire, cable, conduits, etc.
- Others: medical and pharmaceutical hoses, films, stripes, sheet, fiber and filaments, coatings, etc.

Laser marking systems

- Are usually integrated between the cooling bath and the test stand so that the products can easily be marked on the fly.
- Mark nearly all extruded materials with the information companies need to apply - e.g. (bar)codes, logos/ symbols, (serial) numbers and letters.

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Videojet® Plastic Extrusion

Materials

The plastic materials that are processed most commonly range from Polyethylene (PE) and Polypropylene (PP) to Polyamide (PA). During plastic extrusion, color/master batches are added to these plastics. With little effort, these granules can be combined with a laser sensitive additive, too. That additive allows for a color change marking effect on the plastics after being laser marked with relatively low laser power. Videojet compact fiber laser markers can be perfectly employed in these industries, as they can be flexibly integrated into existing production lines.

In situations where these additives are not possible – perhaps in the automotive industry – Videojet application engineers check to see if the material can be laser marked without additives. We have been able to provide the perfect non-additive solution to several customers in the automotive and automotive supplier industries, employing one of our high power solid-state laser markers (Nd:YAG systems) that delivered excellent marks, especially on black Polyamide fuel supply lines.

Advantages at a Glance

Best Markings "on the Fly" Combined with Brilliant Marking Results

Production speeds of most plastic extrusion lines are extremely high. Our marking lasers keep pace with these speeds while delivering optimum marking results.

Good Installation Options

Our systems integrate flexibly into both new and existing lines – thanks to their generally small sizes and the many available integration options (e.g. with/without beam turn). Especially noteworthy is the compact fiber laser marking system.

Superior Service

Time and again the service and support within our global sales and service organizations is emphasized by our customers.

PE tubes. Material effect: engraving. Marked with a 50W CO2 laser.

Transparent medical hose. Material effect: foaming. Marked with a CO2 laser.

Laser Markers Especially Suited for Plastic Extrusion Applications

Our laser marker portfolio spans fiber systems for high resolution applications that require small footprint, Nd:YAG systems for high speed applications and CO2 laser coders – the economic solution for less demanding and lower resolution applications.

Fiber Laser Markers

Nd:YAG Laser Markers

CO2 Laser Markers

Plastic Extrusion References

Asia: Marking of fuel lines (PA6) within 40 - 80 m/min.

Europe: Laser marking of hoses for brake fluids (PA6); cycle time: 20 ms. Laser marking of tubes for the food, environmental and medical technology industries (PA, PE with additive) with speeds up to 40 m/min.

A Major OEM: Plastic extrusion machinery (winders, cutters, laser markers, etc.) use Videojet to mark plastic (PE, PP plus additive) profiles with speeds up to 40 m/min.

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