

Plastic Extrusion

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



Plastic profile for car upholstery. Material effect: color change. Laser marked with a fiber laser marking system.



Left: Fuel lines. Material effect: color change. Laser marked with a fiber laser system.

Right: Plastic tube. Material effect: color change, engraving. Laser marked with a Nd:YAG system.

The Plastic Extrusion industry is a multi billion dollar business globally. Everywhere we find a multitude of products that have been typically extruded. From window frames, profiles and sealings through cable tunnels and wires to fuel supply tubes and medical hoses for example.

Challenges

Most of these extruded plastics have to be marked, identified or coded one way or another. With marking contents that range from simple alphanumeric codes and crop marks to complex codes and logos or individual data. In most of the cases, these data have 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 that 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 Alltec solutions.

Marking Speeds/ Marking on the Fly (MOTF)

With up to 80 meters per minute production speeds are often extremely high. High standards are demanded for the quality of the mark. No competitor was able to reach the good marking results our systems delivered at such high speeds. These speed and marking quality results are delivered by our systems to serve all application needs.

The Industry

Laser marked extrusion parts - examples:

- **Automobiles:** gaskets lining the windscreen, 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.



Rubber car door sealing. Material effect: engraving. This part was laser marked with a 30W CO2 laser marker.

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. Especially in these cases, our new and compact fiber laser markers can be perfectly employed as they can be flexibly integrated especially into existing production lines.

Shouldn't these additives be possible, perhaps in the automotive industry, our application engineers check 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 the 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 our 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.

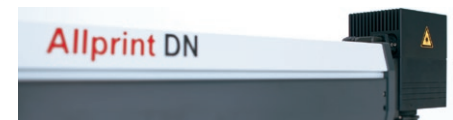
Our Laser Markers Especially Suited for Plastic Extrusion Applications ...

... span fiber systems for high resolution applications that require 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 (10/20 W pulsed)



Nd:YAG Laser Markers (50 / 100 W)



CO2 Laser Markers (10/30/50 W)



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 for plastic extrusion machinery (winders, cutters, laser markers, etc.) uses Alltec systems to mark plastic (PE, PP plus additive) profiles with speeds up to 40 m/min.



Left: PE tubes. Material effect: engraving. Laser marked with a 50W CO2 laser marker.

Right: Transparent medical hose. Material effect: foaming. This hose was marked with a CO2 laser mask marker.

Contact Us for Further Information:



ALLTEC GmbH

An der Trave 27-31 | 23923 Selmsdorf
Germany
Phone +49(0)38823.55-0 | Fax -222
www.alltec.org | info@alltec.org