

SUCCESS STORY
TAKING (MATERIAL)
RESPONSIBILITY
ZF VIGO IN SPAIN



Krauss Maffei
Pioneering Plastics

CONTROL OF THE FORMULATION COST-EFFECTIVE DIRECT COMPOUNDING WITH DCIM

OVERVIEW

CUSTOMER: ZF Vigo
COUNTRY OR REGION: Spain
INDUSTRY: Automotive

APPLICATION: SAFETY COMPONENT

- Number of cavities: 2-4
- Shot weight: approx. 1,900 g
- Material: PP 30GF with PP impact strength modifier and masterbatch

MACHINE DETAILS: MX 1100-4300 DCIM

- Clamping force: 11,000 kN
- Screw diameter: 100 mm

CUSTOMER PROFILE:

ZF Friedrichshafen AG (also known as ZF Group) is the world's third largest automotive component supplier (by sales volume) and is one of the world's leading companies in the area of drive and chassis technology. www.zf.com

REQUIREMENTS:

- Clamping forces from 1,600 to 11,000 kN
- Shot weights from 50 to 2,000 g
- All types of thermoplastic polymers
- Meltable additives or masterbatch
- Fiberglass or carbon fiber reinforcement up to 60%
- Mineral fillers such as chalk, talc or barite

INDIVIDUAL SOLUTION:

- Separate compounding of material combinations including use of additives and reinforcement
- Use as DCIM or standard thermoplastic machine

BENEFITS:

- Less energy consumption
- Control of your own formulations
- Material savings of up to 50%
- Economically attractive for part weights from 50 to 2,000 g

The demands placed on plastics processors for traceability and transparency are growing just as much as the cost pressure. This is why the ZF plant in Vigo, Spain also wants to be in control of the polymers and relies on the new DCIM (Direct Compounding Injection Molding) process from KraussMaffei.

The DCIM process is economically attractive for components from 50 to 2000 grams—and it has no impact on cycle time. The DCIM single-screw extruder is installed in a space-saving piggyback position on a standard hydraulic injection molding machine (usually the GX series). Both operate intermittently. This means that the extruder stops automatically every time the injection volume for the next cycle has been reached.

DCIM technology from KraussMaffei can also be used to process materials with medium viscosity, whereas concepts from other providers only allow for embedding fibers in a low-viscosity matrix. The higher the viscosity, the better the mechanical properties of the components, which is important above all for safety-related products such as those ZF Vigo manufactures.

ZF Vigo sees a decisive benefit in gaining control over the material used with DCIM. That way it is easier for you to take over responsibility for the entire product as well as to gain a competitive advantage by creating, testing and protecting formulations yourself.

"With DCIM, the material quality lies with ZF, and we have the expertise protected in-house, fully documented and tested."

(Achim Härtel, Core Engineer Plastics at ZF Alfdorf / Germany)



The compounded melt flows directly from the single-screw extruder to the plasticizing unit of the injection molding machine.



The salient feature of our DCIM screw is the optimized design.



Production in a single heating process:
DCIM reduces the polymer degradation and energy consumption.