



TECHNOLOGICAL AND ENERGETICAL ADVANTAGES WITH THE USE OF PLASTICIZING “MultiCompound” SCREW



OPERATION OF THE MULTI COMPOUND SCREW

The MultiCompound screw profile has been developed by BrixiaPlast's technical department in order to answer to our customer needs, it is not a standard barrier but an evolution of this old concept. We still have a feeding area where, thanks to the heating effect generated by the electrical resistances, the first layer of molten material is immediately formed. Then, when the feeding area ends, a second helix starts from the primary thread with an upper feed step, creating two distinct channels, a solid channel and a melt channel. The upper step is made as to allow the first part of plasticized material to advance more quickly during the plasticizing phase, until the same thread ends on the terminal area.

The external diameter of the special thread of the MultiCompound screw is slightly lower in the primary thread, generating a passage in which the molten polymer is separated from the solid polymer / un-melted polymer. The barrier area separates the solid granules from the melted ones by generating a transfer process.

With this special type of screw profile, the effect of cutting and stressing caused by the compression is lower, as a gradual glass transition phase of the granule is enabled by the sliding of the polymer in two separate channels.

This "gentle" method of plasticizing allows lower processing temperatures up to 10% compared to the normal temperature settings.

The engine torque required for the rotation of the screw in MultiCompound barrier is also lower compared to a standard screw, having less granules in contact with the thread. Consequently, less friction is generated and thus less torque, which translates into a saving of energy costs up to 5%.

FINAL CONSIDERATIONS

The advantages of using the MultiCompound screws can be quantified:

1. Improved product quality due to less stress on the polymer;
2. Homogeneity of the molten injected mass caused by the constancy of the melt temperature
3. Improvement of the dispersion of the masterbatch and excellent mixing
4. Increased plasticising capacity allowed by higher screw rotation speed
5. Reductions in dosing time due to higher capacity of plasticizing
6. Cooling time reduction due to lower melt temperatures.
7. Reduction of cycle times caused by the sum of the above considerations
8. Reduced energy consumption due to lower plasticizing temperature (- 10%)
9. Reduced energy consumption due to lower motor screw torque (-5%)