ROTATIONAL MOULDING TECHNOLOGY

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ABSTRACT

Rotational moulding is a technique for the transformation of plastics in hollow articles such as doll's heads, tanks, containers, gloves, etc. The technique allows to obtain small parts of a few grams as well as containers of more than 20000 liters of capacity. Foamed parts, multi-layer mouldings or soft mouldings without joining lines can also be produced, what gives an idea of the versatility of this technique. Inversions and costs of production are very low when compare with other plastics processing techniques as injection moulding or blow moulding.

The group of plastics of the Chemical Engineering Departament of the Alicante University is working on rotational molding of plastics since 1990. From this year to the present a great number of research projects for the industry have been developed. The group has a high experience, expertise and know-how in cycle reduction, authomatization, wastage reduction, formulation optimization, pigmentation, double skin products, soft foamed materials and production of parts with special features as wood-like or skin-like appearance.

ADVANTAGES AND INNOVATIVE ASPECTS

The group of plastics of the Chemical Engineering Department of the Alicante University has developed more than 15 research projects (public European and Spanish projects, as well as for the industry) in topics related to the rotational moulding process.

The group has been working in the optimization of cycles in polethylene mouldings in order to reduce warpage and shrinkage and optimization of formulations of polyvinyl chloride (PVC) plastisols in order to improve the mechanical properties and the aspect of the mouldings. The substitution of PVC by plastics with similar characteristics to produce environmental friendly products has also been studied, although the costs associated are most competitive with PVC. Cycle reduction by improving heating and cooling systems, has been studied. In this sense a microwave machines and special moulds for this process has been developed. A new system for pigmentation that allows a save of pigment obtaining mouldings with better mechanical properties and pigment distribution has also been developed. The production of double skin products and foams has also been studied. Products with special features as wood-like or skin-like appearance have also been studied.

MARKET APPLICATIONS

The variety of products that can be rotomoulded is very high, and can be summarized as follows:

COLLABORATION SOUGHT

Different types of cooperation are sought by the Department of Chemical Engineering of the University of Alicante:

- Consulting services for companies which are working or expect to work with rotational moulding.
- Development of projects on optimization of the production of rotomoulded products, development of formulations.
- Know-how transfer in rotomoulding.