

# Innovations Rewarded

**Growth in Rotational Processing.** According to predictions rotational moulding will register annual growth rates of more than 20% up to 2005. Use of new materials, more economical moulds and further developed mechanical engineering are the principal reasons for the outstanding growth of this process.

## D. ERICH BOERSCH

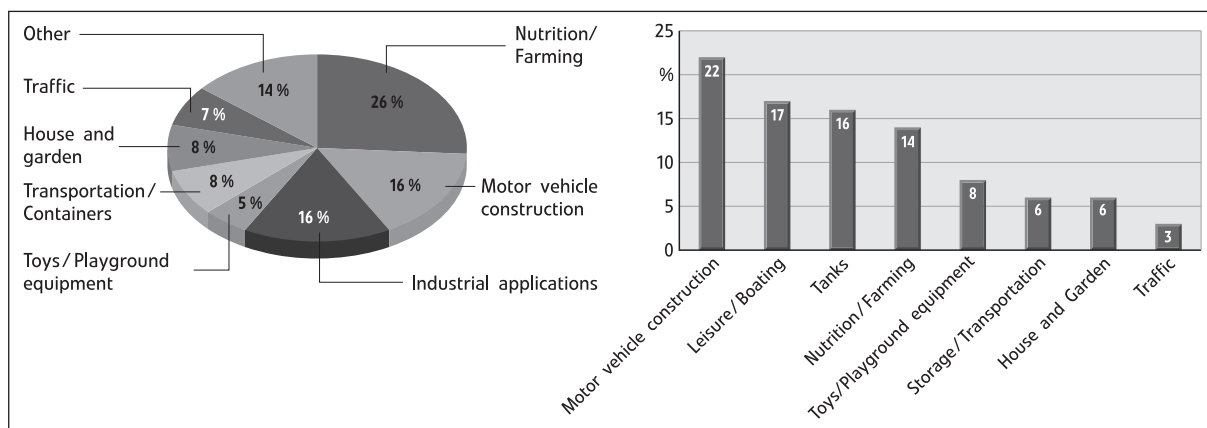
As a still relatively unknown process and at only about 50 years comparably recent, today rotational technology is presented as a process with its own profile suitable even for long series production. Rotational technology offers many degrees of freedom in the production of complex hollow plastic bodies. It is

## Developments to Date

Although up to about the middle of the 90s the rotational industry was engaged mainly in producing larger products in limited quantities, its development was impressive. At the same time new technical possibilities were realised and marketed, which introduced a very interesting new phase.

ments that are already known in principle and/or that are being developed. As in other areas, there are "leaders" and "followers". This is interpreted as normal development, at least related when it comes to developing and increasing sales volumes.

A further reason for the predicted continuous positive development is to be seen in the fact that today "quasi-consumer-associated" market segments that have



**Fig. 3. Applications and potentials: Application areas of rotational moulding in Europe. Left: Application field shares in the year 2000. Right: Market development potentials for rotational moulding in the period from 2000 to 2005**

sometimes not possible to produce hollow bodies or flat parts using the otherwise usual processing methods for plastics. In many cases restrictions concerning undercuts or wall thickness design are necessary.

Among plastics processing technologies rotational technology is one of the technologies that is developing the fastest. New materials, improved process control and stability, better moulds and progress in processing machines contribute to this. In addition a great advantage of the process is that single-walled moulds can be used that can be made relatively inexpensively and quickly, which gives many degrees of freedom for designing and building demanding products.

The rotational industry qualified itself more and more as a problem solver because of the new technical possibilities and permanently improved economy. This led to increased application in new interesting customer ranges.

The number of active rotational enterprises rose correspondingly because of increased attractiveness and associated activities. This will persist also in the future.

Despite the present continued weak economic situation in some areas, primarily in standard fields of application (e. g. those associated with building construction), the positive overall development of this process seems to be unbroken. This situation is particularly favoured by the fact that ever more market participants want to make use of the technical possibilities of this process also in other market seg-

been closed until now can be addressed successfully. Examples here are function furniture, leisure and sports articles, seating furniture, displays and also applications for the house and garden range. Where possible the interesting design possibilities of the process are particularly utilised.

## Further Technical Development

Today rotational technology has technical possibilities that are unique and support the positive trend.

Thus at present, and only with rotational technology, it is already possible to treat the raw material (powder) using a plasma modification in such a way that products made of it have certain surface tension and adhesion characteristics. Thus they are suitable for subsequent value

Translated from *Kunststoffe* 1/2003, pp. 18–20

added procedures (e. g. lacquer finish or other coating, adhesion to other materials and/or barrier layers). The plasma-treated powder is long-term stable and can be stored. Alternative processes in the background such as moulded part treatment with plasma or the so-called corona procedure already stand out for economic reasons.

By itself this new possibility will help open completely new market segments since the prevailing opinion up to now that PE parts cannot be lacquered is presently losing ground. A problem for any value added process is the poor cross-linking of polyolefins that results from the non-polar, hydrophobic character of the material. Therefore before lacquering a surface treatment (inside and/or outside) must usually take place. Such pre-treatment can be eliminated using the pre-treated powder. The plasma treatment of the powder does not influence the fundamental physical characteristics of the material. The raw material supplier Borealis, which is very important for the entire rotational industry, provides the market with this plasma-modified material.

Also the still prevailing opinion that the rotational procedure remains too labour-

intensive and too slow to qualify for production of large quantities per unit time is beginning to dissolve. Thus for some time with the Leonardo concept Persico S.p.A., Nembro/Italy has provided a manufacturing cell with which output per unit time can be increased several fold compared to traditional processing. At the same time many usual and/or necessary manual activities can be automated.

**Conclusion**

Continuous positive development is forecast for the rotational industry both with respect to fundamentally increased attractiveness because of demonstrated developments and their market prospects and with respect to the new possibilities only indicated here. ■

**THE AUTHOR**

D. ERICH BOERSCH is the owner of Rota Consult GmbH; rota.consult@t-online.de

**Title photo: Components with complex geometries such as these automobile panels can be produced economically with rotational moulding**

**ARM-CE**

In addition to the most influential processors in our economic region also the industry's suppliers are organised in ARM-CE, the Association of Rotational-Moulding (Central Europe) e.V., an organisation that concerns itself with the further development of this process and with increased market acceptance.  
[www.rotational-moulding.de](http://www.rotational-moulding.de)

**Fig. 1. Typical products produced in the rotational process**  
**Fig. 2. Future development: Development prediction (estimate) for rotational moulding according to region. Upper: Development of the amount of plastic processed in rotational moulds. Lower: Development of the number of businesses using rotational moulding.**  
**Zahl der Betriebe = Number of businesses; Europa = Europe; Kanada = Canada; Übriges Amerika = Rest of the Americas; Australasien = Australia/Asia ; Naher Osten/Afrika = Near East/Africa; Asien = Asia**