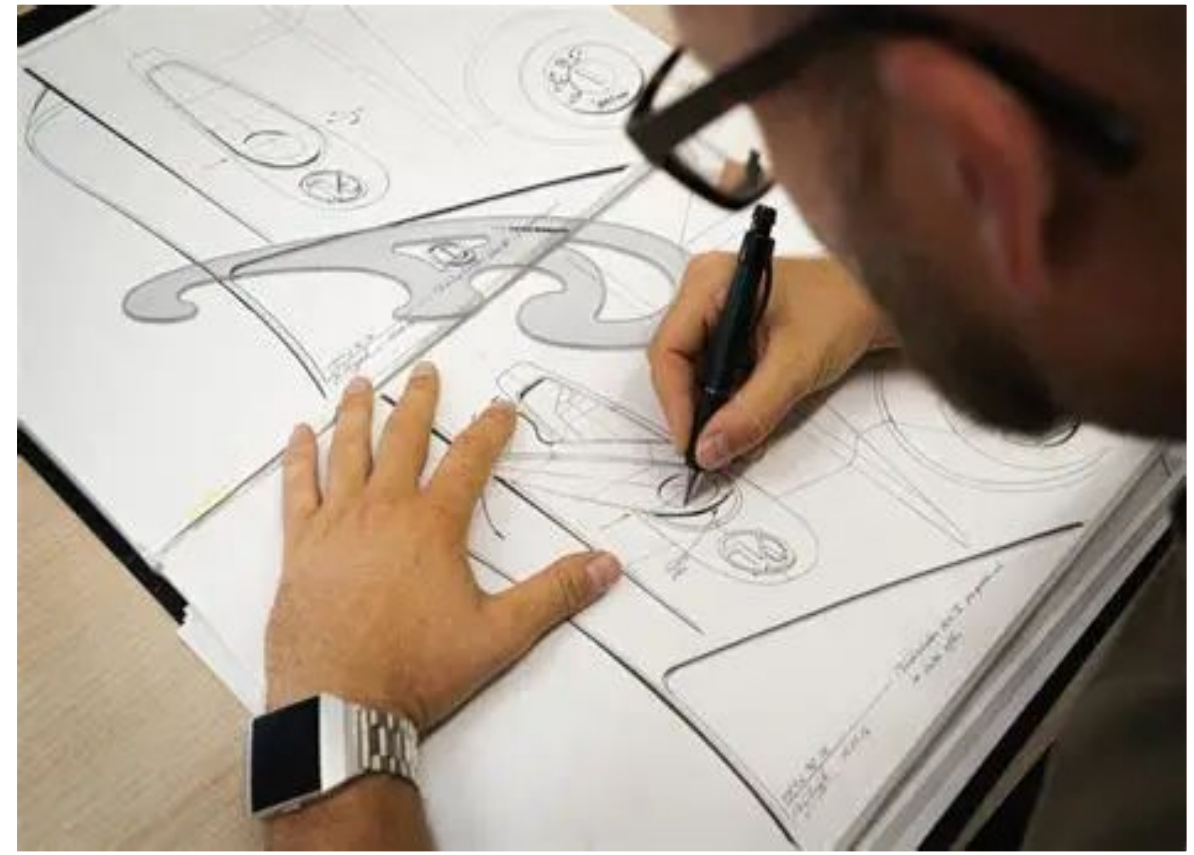


Investing in the Future of Rotational Molding
Through Industrial Design

The History of ARM and the IDSA

- Around 2013, a partnership was formed between ARM and the Society of Plastic Engineers (SPE) to invest in attending the annual Industrial Design Conference hosted by the IDSA.
- The goal was to introduce and promote the products of rotational molding to the industrial design community.
- The brand “Roto Made Local” was developed. ARM/SPE began exhibiting roto product at these annual events.
- The pandemic of 2020 put a pause on the world and the IDC. It would be restarted in 2022.
- By 2024 it became ARM’s initiative to continue to invest in this cause.
- By 2025, a new initiative had been set by ARM: Target universities with industrial design and plastic engineering programs for the purpose of education and collaboration.
- The first event was held in February of 2026 and was a smashing success.

ARM Educational Event with Notre Dame

UNIVERSITY OF NOTRE DAME

ASSOCIATION OF ROTATIONAL MOLDERS

ELKHART PLASTICS

The UK and Industrial Design

- Estimated around 1.6M designers in the UK
- Verified 641 industrial design firms in the UK
- Around 30 universities in the UK that offer Industrial Design programs with an additional 30 that offer design research
- In England:
  - University of Cambridge
  - University of Manchester
- In Wales:
  - Cardiff University
  - University of Wales
- In Scotland:
  - University of Strathclyde
  - University of Glasgow
- In Northern Ireland:
  - Ulster University
  - Queen's University

How are you reaching the young minds of the UK with the knowledge of rotational molding?

The “Beautiful” Process

- There is an upside to rotational molding that needs the industrial design community to lead:
  - Product development
  - Tighter tolerances
  - Different materials
- There is an opportunity for growth in the industrial design community that needs rotational molders to lead:
  - Enlightenment on manufacturing verses marketing
  - Education of process – the best designers understand the process
  - Alternative process for their customer base
- There is something “beautiful” that can happen when these two come together.
  - New products introduced into new markets
  - New materials and advancements in the process
  - Industry exposure and growth

“Roto is Life”

ASSOCIATION OF ROTATIONAL MOLDERS

THIS IS...

ROTO

INTRODUCTION TO ROTOMOLDING DESIGN AND PROCESS

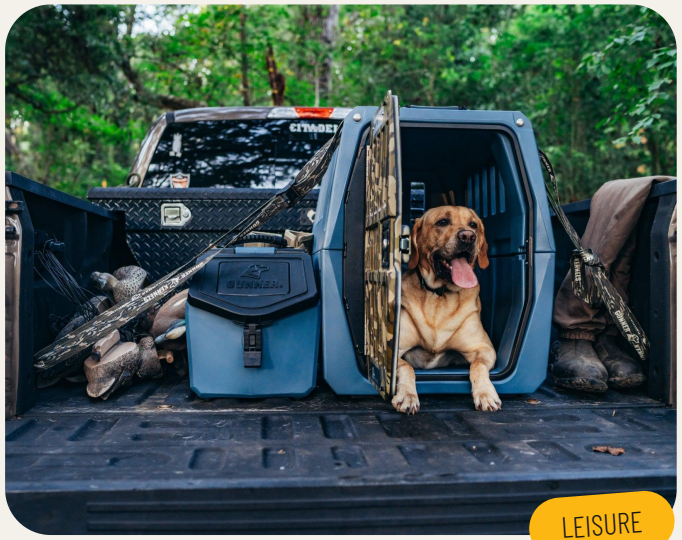
www.rotomolding.org

WHAT IS ROTATIONAL MOLDING?

Rotational molding is a manufactured process for creating hallow plastic parts. The process involves a heated mold that is filled with a charge of material and then slowly rotated around two perpendicular axes. This rotation causes the softened material to disperse and adhere to the mold walls, forming a hollow part.

PRODUCTS AND MARKETS


PLAYGROUND


LEISURE

OUTDOOR RECREATIONAL


MEDICAL

Rotationally molded product has its DNA in every major industry:

Automotive

Agriculture

Construction

Military

Retail

Commercial Playground

Toys

Outdoor Recreation

Medical

And More!!!

THE FUNDAMENTALS

#1. Design for Process

Tolerance

Defining tolerances in the rotational molding process can be difficult to pinpoint due to a number of factors. Factors that can impact tolerances:

- Design Features
- Materials
- Mold Design
- Process
- Part Finish and Secondary Process

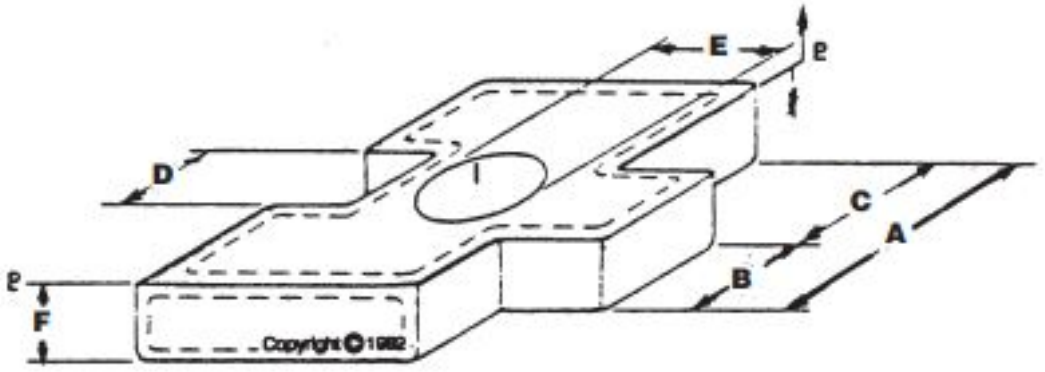


Figure XI

THE FUNDAMENTALS

#1. Design for Process

Materials

- Plastic materials with the smallest shrink factor can hold the more dimensionally stable tolerances.
- There are cycle variations which can impact tolerances. Amorphous materials (random molecular arrangement) such as PVC have less variation cycle-to-cycle than crystalline materials such as HDPE and Nylon (well defined molecular arrangement).
- Reprocessed materials and improperly ground material can introduce variability in tolerances.

Chart III

Recommended Tolerances

(Values in inches/inch. Does not include tolerance of cavity.)

	DIMENSIONS FROM FIGURE XI: A	B	C	D	E	F
POLYETHYLENE						
Ideal	±.020	±.020	±.020	±.015	±.010	±.020*
Commercial	±.010	±.010	±.010	±.008	±.008	±.010*
Precision	±.005	±.005	±.005	±.004	±.004	±.005*
POLYVINYLCHLORIDE						
Ideal	±.025	±.025	±.025	±.015	±.015	±.025*
Commercial	±.020	±.020	±.020	±.010	±.010	±.020*
Precision	±.010	±.010	±.010	±.005	±.005	±.010 *
NYLON						
Ideal	±.010	±.010	±.010	±.008	±.008	±.010*
Commercial	±.006	±.006	±.006	±.005	±.005	±.006*
Precision	±.004	±.004	±.004	±.003	±.003	±.004*
POLYCARBONATE						
Ideal	±.008	±.008	±.008	±.005	±.005	±.008*
Commercial	±.005	±.005	±.005	±.003	±.003	±.005*
Precision	±.003	±.003	±.003	±.002	±.002	±.003*

NOTE: Ideal Tolerance = Minimum care required
Commercial Tolerance = Possible with reasonable care
Precision Tolerance = Possible with difficulty & added cost

*Plus .010 inch for parting line variations

BENEFITS AND CHALLENGES

BENEFITS

- GEOMETRY
- SIZE
- COST
- DURABILITY

CHALLENGES

- TOLERANCES
- MATERIALS
- VOLUMES
- PROTOTYPING

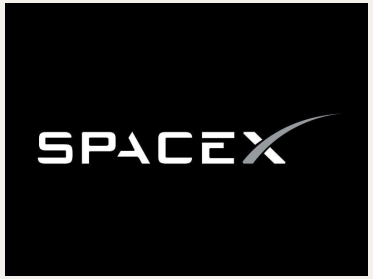
WHAT NEXT?


CATERPILLAR


JOHN DEERE


TORO


Walt Disney


SPACEX


newell
BRANDS


YETI


Bobcat


Baxter


CASE IH
NEW HOLLAND
AGRICULTURE


little tikes


VOLVO


KENWORTH


ANY
QUESTIONS
?

Webinar: Coming Soon!

ASSOCIATION OF
ROTATIONAL MOLDERS

Credits:

- **IQSDirectory.com**

- **The Association of Rotational Molders. *The Introductory Guide to Designing Rotationally Molded Part.* (Oakbrook, IL: Association of Rotational Molders: 1999).**
https://plasticsmfg.net/wp-content/uploads/2022/03/Rotational-Molding.pdf

Works Cited

- https://wdo.org/mapping-the-uks-design-economy/
- https://www.poidata.io/index.php/report/industrial-design-company/united-kingdom
- https://erudera.com/study-programs/industrial-design/united-kingdom/
- https://edurank.org/engineering/industrial-design/gb/