# RotoTrends

Exploring the potentials of rotational moulding in design

Issue 5







### Introduction

The evolution that has distinguished rotational moulding in recent decades is intimately related to the development of awareness of rotomoulding in the design world.

In other words, as the potential of rotomoulding becomes "common knowledge" amongst designers and producers the sophistication of their projects using our technology for industrial applications grows. Roto Trends explores the different potentials of rotational moulding showing case-histories where the roto technology is able to open new markets, developing innovative products and working successfully in new niches.

The projects developed in partnership with international design institutes, and the selected industrial products produced a faithful portrait of an industry constantly hungry for new ideas, eager to experiment with new shapes and new materials, sensitive to the international richness of globalization.

Rotomoulding is strategically placed as one of the key technologies for rethinking the industry according to today's needs for technology and performance.

# Prospects of the LED Urban Lighitng

White-light sources based on LEDs have a promising future. Continued advances are expected to exceed Haitz's law20, which forecasts that every 10 years the amount of light generated by an LED increases by at least a factor of 20, while the cost per lumen drops by at least a factor of 10.

The ultimate goal for LED-based white lighting is to replace all incandescent bulbs and compact fluorescent lamps to provide an energy efficient and long-lasting option for everyday use.

It is anticipated that cost-effective drop-in replacements for incandescent bulbs will be readily available in the next years once mass-produced LEDs have comparable metrics to the best LEDs in research laboratories today and the electronic circuits that operate LED structures have improved efficiencies and form factors.

# Key factors Details

- 1. Heat Dissipation: The heat accumulation of an LED luminaire not only affects the electrical performance of the LED, but may eventually lead to LED failure. Therefore, in order to ensure the life of LED lamps, heat dissipation and moulded plastic diffusors must be properly designed considering the potentials and limits of the rotomoulding.
- 2. Light source material: LED is a point light source. If poor LED is used, the LED will release a lot of heat during the working process, which will make the junction temperature rise rapidly making problems with the rotomoulded diffuser. The higher the LED power, the greater the heating effect.
- 3. Drive power: The role of the power supply in the entire luminaire is just as important as the human heart. The quality of the LED power supply directly affects the reliability of the product.
- 4. Light distribution processing: LED is a directional point light source. How to creatively apply this feature of LED to create a comfortable light environment is the core of LED light optical design technology.



### **Pod Collection**

production Luminexcence - Italy design Giancarlo Zema - Italy moulding Moulding Service - Italy

With the Pod collection, you can have an intelligent solar-powered urban lighting system. The large photovoltaic panel covering is able to generate over 65W, enough to power the double high-power LED lighting with specific concentric lenses. In addition, an HD camera for video surveillance is also integrated into the body.

The pole becomes smart, thanks to the large optional touch screen display. Perfect for communicating tourist and advertising information, as well as for recharging smart phones.

The solar-powered urban lighting of the Pod collection becomes Smart, thanks to the double, large, optional touch screen display. Perfect for communicating tourist and advertising information, as well as for recharging smart phones.

The centralised system means each pole could be equipped with a water-tight sockets SCAME for recharging electric cars in fast way. The recharge can be paid electronically with a cashpoint or credit card. A small screen allows, in additional to the instructions and pay, also car's charging status, traffic and advertising.

www.luminexence.com



> The lamp includes a solar-powered urban lighting system







> Water-tight sockets for recharging electric cars in fast way









### **Lotus Collection**

production Luminexcence - Italy design Giancarlo Zema - Italy moulding Moulding Service - Italy

Inspired by the leaves of the lotus flower, the Lotus collection grows in the Smart Cities of the future to generate lighting in an eco-sustainable way, obtaining from the sun and the wind the energy necessary to work. The steel structure with variable sections accommodates photovoltaic leaves on top of 1.5 sqm capable of generating 200 W each, with vertical axis wind turbines in carbon fibre.

The four-leaf clover light tower of the Lotus Collection can generate up to 2kW of power from the sun, using four large photovoltaic leaves. The vertical axis wind turbine can also generate up to 1.5kW at night. Lighting is guaranteed by four high power LED lamps with specific concentric lenses. In addition, HD cameras are integrated in the bodies of the lamps for video surveillance.

www.luminexence.com







> Rotomoulded leaf clover light tower able to generate up to 2kW of power from the sun





**Roto**Trends *Exploring the potentials of rotational moulding in design* 





### Mod-ule

design Kabo & Pydo - Design Studio production Flexx Design - Poland

Looking at the emerging new trend of bringing more and more nature into homes, Kabo & Pydo has come up with a new innovative product, a mix of two typologies that makes a new way to furnish the home. Named Jungle lamp, it combines lighting and plant pot into a single unit- both work together to add a relaxing element to interior space.

The lamp comprises a rounded vessel that houses lighting and also a planter. Each unit is suspended on two strips of fabric, which are available in a variety of colors. This belt system is adjustable up to 4m – making it suitable for spaces with high ceilings.

The lamp is rotomoulded, which makes it completely waterproof. It does not generate heat that could adversely affect the plants, the website says. The glowing vessel of the Jungle lamp offers a soft, silky-smooth light that provides a chic background for plants.

www.flexx.design.com







> The lamp includes a rounded vessel that houses lighting and also a planter.





# The Rising Trends in in hand hygiene

Hand hygiene is a key aspect of infection prevention and control: the World Health Organization's (WHO) 'Save lives: clean your hands' campaign states: 'Hand hygiene is one of the most effective actions you can take to reduce the spread of pathogens and prevent infections, including the COVID-19 virus. Community members can play a critical role in fighting COVID-19 by adopting frequent hand hygiene as part of their day-to-day practices,' noting that 'Everyone has a role in supporting healthcare workers in hand hygiene best practices at this critical time.'

The COVID-19 pandemic has thrown a spotlight onto the role of community behaviour in alleviating the spread and impact of infection and disease. While the WHO has been actively engaged in promoting appropriate hand hygiene protocols around the world since 2009, until the advent of COVID-19 its campaigns had focused primarily on augmenting infection control efforts in low- and middle-income countries (LMICs).

## Key factors Details

- 1. A hand sanitizer dispenser is a device used in controlling the amount of sanitizer gel for use immediately. Hand sanitizers are essential in adding the liquid for disinfecting our hands regularly.
- 2. Hand sanitizer dispensers can be plastic moulded and available as wall-mounted or table-mounted or free-standing, where it can be easily accessible to users.
- 3. Every plastic hand sanitiser must be designed and developed considering the following key basic aspects:
- Easy to use
- Flexible in terms of positioning
- Delivers a standard dose
- Modern appearance
- Easy to be spotted
- Easy and fast maintenance



## Flamingo Hand Sanitiser

production MyYour - Italy design Moredesign - Italy

Imagine giving up the sea at the beach and an afternoon at the pool are the stimulus that made us think of Flamingo.

An idea that transports the bather into an almost V.I.P., situation. even better B.I.P. (Beach-Important-Person). A system that allows you to divide the spaces in a personalized way agile and fast creating routes and access to your area ensuring safety distances.

At the base a ballast that avoids fixing to the ground and allows positioning on the sand but also in the summer terraces of restaurants, bars or swimming pools. Flamingo is entirely made of regenerable PL material if disposed of correctly in the future. It's equipped with supports for signage and dispenser.

www.myyour.eu

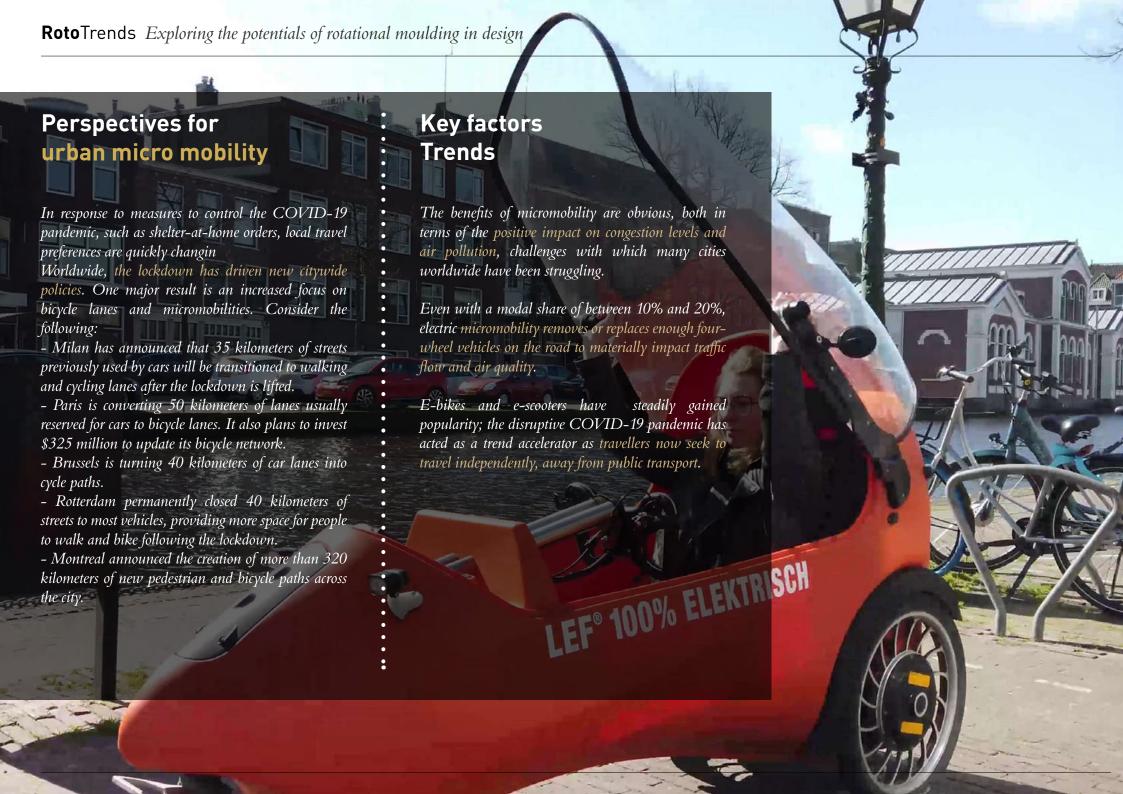












### LAMBROgio - LAMBROgino

design Makyo Hasuike, Japan production Repower, Italy

The LAMBRO Cargo bike project fits into the context of sustainable mobility. Lambro embodies the electric mobility of the future. The two pedalassisted cargo Trikers are called LAMBROgio and LAMBROgino in Milan, a laboratory sensitive to experimenting with new forms of mobility. Sustainability not only as a vision of mobility but also because they are designed to be recyclable.

The project respects the spirit of the bicycle, trying to preserve its essentiality through the enveloping, continuous and rounded shapes of the bodywork. The visual impact, the versatile use in urban and non-urban contexts, as well as the personalization potential are unique in the international panorama. Both E-Cargo bikes are equipped with a battery charging cable housed in a special cable reel.

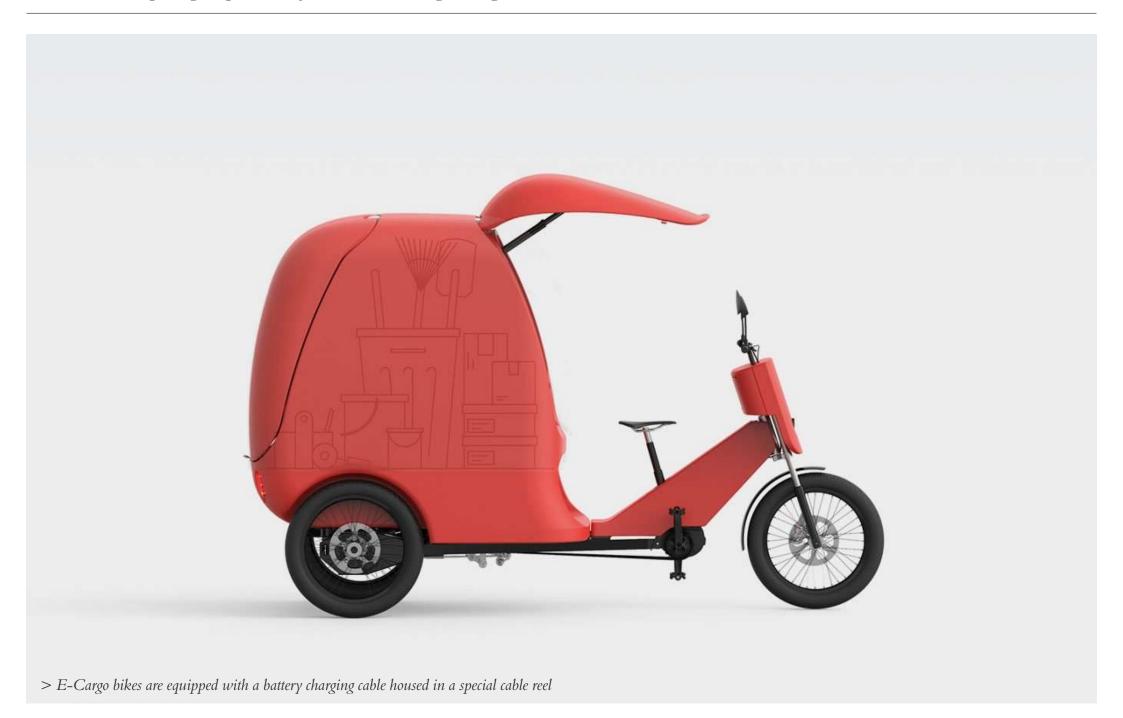
An integral part of the design process was the identification of the molding technique rotational for the construction of body shops, an innovative method for this type of product. Both vehicles are designed and manufactured, with all the parts that make up the bodywork in recyclable polyethylene, with rotomoulding molding.

www.repower.com











> Rotomoulded bodywork in recyclable polyethylene







### Lef

#### production EV Mobility - Netherlands

The LEF by EV Mobility provides a sleek solution to short trips that will surely crush the e-bike/car combination chimera. The Dutch three-wheeled product features a cocooned cockpit designed to comfortably accommodate one passenger. A clear canopy ensures the occupant is weather-protected while the three 10Ah lithium-iron battery capacity promises a maximum range of 60 miles (90 kilometers) per charge. The LEF can reach a top speed of 16 mph/25 km, making it the perfect personal mobility machine for urban dwellers.

The main body is made from recyclable polyethylene. Inside, the driver can keep tabs on speed, battery status, and kilometers driven via a digital display screen. There are LED lights on the front and rear, a USB port for charging smart phones, and enough storage space to fit a 50-liter bag, groceries, and other possessions. Other features include electric windshield wipers, LED turn signals, and side mirrors. The entire vehicle barely tips the scales at 198 pounds. Designer Erik Vegt was inspired to create the LEF because he wanted to provide people with a personal mobility option that used less money, energy, and resources. After three years of development, the product was approved by the RDW and the Ministry of Infrastructure and Water Management.



> A cocooned cockpit designed to comfortably accommodate one passenger

www.evmobility.nl





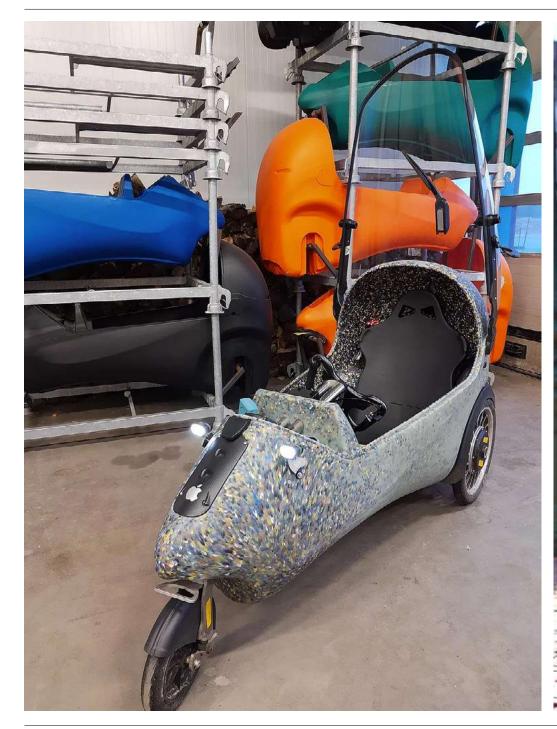














# Potentials for water-jet propulsion boats

The first thing that may come to mind when you think of water-jet propulsion is the jet skis that are popular with holiday-goers and adrenaline junkies. Traditionally the system has been used in small vessels such as these and the jetboats used by coastguards, the navy and others.

Since 2000, however, this technology has increasingly been used by larger vessels such as military ships and ferries. But what makes water jets (also called pump jets) appeal more to operators in these fields than traditional propellers?

Water jets may be chosen where quick and easy positioning and manoeuvrability are required, such as for a tug guiding a super-tanker or for ferry docking.

In addition, they make it easy for a vessel to change location or weathervane to avoid the effects of bad weather. They are very safe when working above congested seabeds with many pipelines, mooring lines from other vessels or sub-sea structures such as wellheads or risers.

## Key factors Trends

1. A water jet creates a propulsive thrust from the reaction created when water is forced in a backwards direction – the effect described in Newton's Third Law of Motion: 'every action has an equal and opposite reaction'. In a jetboat, the discharge of a high-velocity jet stream generates a reaction force in the opposite direction, which is transferred through the body of the jet unit to the craft's hull, thus propelling it forward.

Naval architects, owners and operators are also making use of water jets, since they offer advantages over propellers for a range of vessels and tasks.

For example, they enable better manoeuvrability, high acceleration and reduced vibration leading to less stress on engines and transmission systems.

Moreover the lack of an exposed propeller makes them safer for use near swimmers or divers. design, a 'reversing bucket' can be deployed to direct the outflow forwards, creating backwards thrust when required. Steering is achieved by changing the angle of the output nozzle.

### **Ecokart SeaU**

production EcoConcept Marine - France

La Ferté-Bernard. It develops and manufactures small crafts for the river and maritime sectors, equipped with innovative propulsion. Its main objective is to offer a new alternative to tourism and leisure professionals. For EcoConcept Marine, Ecology is not only the use of electrical energy, but is an integral part of the manufacturing process. The recyclability of the materials used is for us a decisive factor in addressing environmental issues. These concerns are reflected at

EcoConcept Marine is a company based in Sarthe at

Ecokart SeaU is a rotomoulded trimaran equipped with water jet electric propulsion Eco marine concept maintenance free, designed for one person, this boat will suit everyone. The structure is rotomoulded in polypropylene to ensure excellent resistance to shocks and stresses. The floats are interchangeable and can be dismantled in 2 minutes.

every stage of our manufacturing process.

www.ecoconceptmarine.com



















## Key Drivers and Restraints of Global Electromedical Devices Market

Increase in research & development activities and technological advancements in electromedical devices are major factors for boosting the growth of the global electromedical devices market during the forecast period.

Increase in new product approvals for electromedical devices is another key factor for driving the market.

In addition, increase in demand for imaging in diagnosis and monitoring of major chronic diseases related to cardiology and oncology helps drive the market.

Heart valve replacement is the most common procedure in cardiology. Increase in use of electromedical devices in heart valve replacement procedure is another main factor for fueling the growth of this market. Moreover, new product launches from major manufacturers are anticipated to propel the electromedical devices market.

## Key factors Trends

Based on device type, the global electromedical devices market can be segmented into diagnostic imaging devices, surgical devices, patient assistive devices, and others

7mAs

2

The diagnostic imaging devices segment accounted for the highest share of the electromedical devices market in 2021-22. This segment is expected to dominate the electromedical devices market due to increase in incidence of major chronic diseases which further resulted into rise in demand for disease diagnosis.

In addition, launch of new diagnostic imaging devices in recent years is expected to drive the segment.

### Keito 8

production Keito, Spain moulding Nuova Simplast - Italy

Since 1986 Keito has been manufacturing electromedical equipment for public use for the measurement of weight, height, blood pressure, pulse rate, and body mass index. From the very beginning Keito has demonstrated innovation in this sector by launching the first personal weigher with an integrated baby scale.

The development of the eHealth interface in the K8 model has made a qualitative improvement, offering to customers a user friendly tool for prevention & control and to health professionals an easily accessible system for providing health screening services. The Keito K8 is the result of experience of the previous Keito units with a rotational moulded structure.

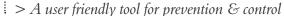
Its maintenance and servicing, now simpler and cheaper for the customer, with relevant improvements in the wrist cuff and design of the body.

A biometric recognition system, linked via internet to eHealth, allowing the users of the K8 to monitor their measurements through the web.

The blood pressure is measured in the left wrist and the body fat estimation is made by means of four contacts integrated on both sides of the unit.

www.keito.com















## CHELT Therapy Cryo High Energy Laser Therapy

production Creanova, Italy

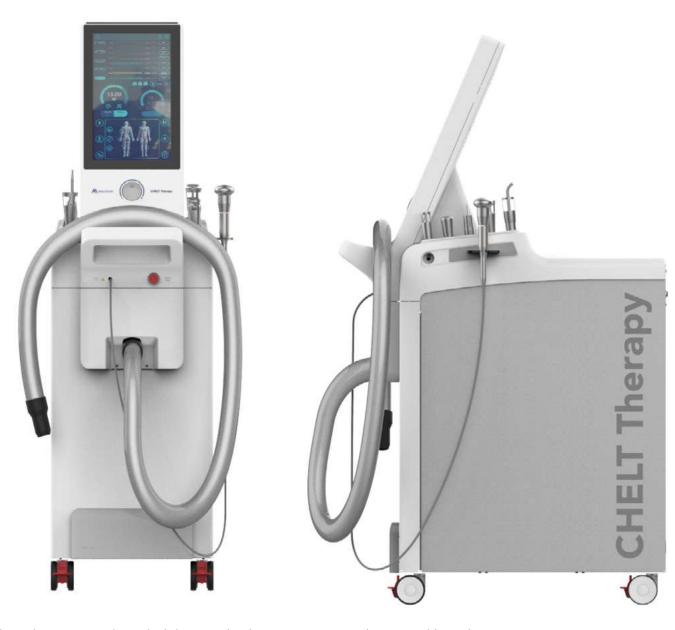
As the result of collaboration between Mectronic Medicale and renowned research centers, CHELT Therapy (Cryo High Energy Laser Therapy) is an innovative device in the physiotherapeutic, medical and rehabilitative fields. It represents the unique synergy between the THEAL lasertherapy and the cryotherapy with dry air at -30° with thermal control. Since 7 years, Mectronic Medicale and Creanova have been combining their expertise to market successful and design-awarded physiotherapy devices.

The main challenge in design phase was to lend a light and compact look to a device which boasts technologies requiring significant cryotherapy and laser therapy. The large vertical display of this physiotherapy device

ensures a wide and easy-to-use interface.

Creanova completed the CHELT Therapy development process with the production phase, leveraging PUR and roto-molding technology. These technologies are selected according to the complex geometries, small-scale production and required high quality of this physiotherapy device.

www.creanovagroup.com



> A light and compact product which boasts technologies requiring cryotherapy and laser therapy





> The large vertical display of this physiotherapy device ensures a wide and easy-to-use interface





> The main body is made through rotational technology

# From storage and travel to 3D target archery

Most serious archers put a lot of time, research, and "test drives" in before they purchase a new bow. When selecting the tools of a trade, details matter. What is right for one archer might be wrong for another.

Decisions about any piece of archery equipment should be arrived at through a needs-based approach that evaluates your intended usage of the equipment, along with your personal wants and needs.

In the same way that decisions about which bow model will shoot for the upcoming indoor, 3D, or hunting season will have direct impacts on your success and warrant careful consideration. The choice of a bow case is also a very important decision that shouldn't be overlooked.

A high-quality bow case not only protects the investment you have made in a bow and archery accessories, but it can also provide a high level of functionality and organization that is specifically designed and customized with your needs in mind.

# Key factors for bow storage cases

The bow case you settle on will be influenced by various factors. When design a new bow case that is compatible with long-term storage needs, it is important to select a rugged and robust case that provides some structure around the bow itself.

Cases that are adequate for bow storage will incorporate some sort of "shell" structure in their design; be it a hard shell, or semi-structured. These types of cases provide additional protection to your bow while in storage. Additionally, the structured design provides for more storage options and space savings since they are designed to be able to be stored in an upright, freestanding position.

Storing a bow case in an upright position takes up less space in a closet or storage room. Structured and semi-structured cases also allow for other bow equipment and components to be stacked on top of them, which can also serve as an additional space saver if storage space for your bow case is limited.



### **Barracuda Archery Case**

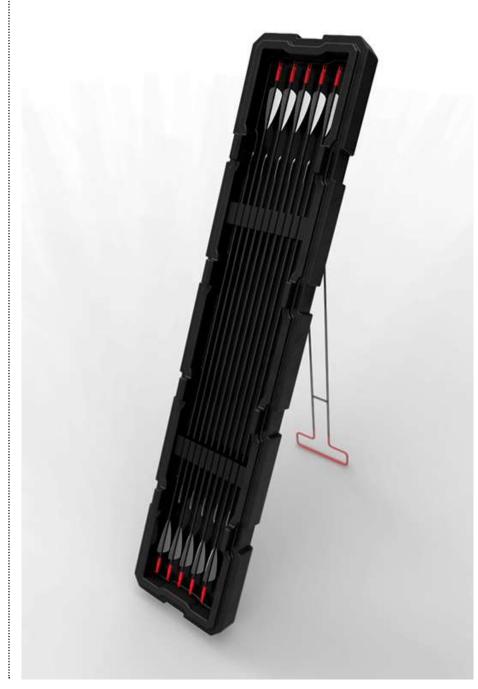
design Vinicius Carvalho, UEMG Design Institute, Belo Horizonte, Brasil

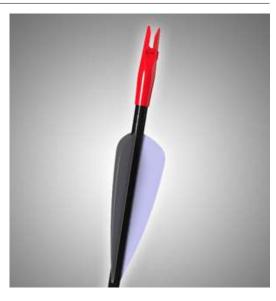
The project was born with the aim of exploring the possibilities of applying rotational technology to create new types of products in the sports field. Having myself known pretty well and suffered the issues related with transporting archery equipment, i set my project towards creating a resilient, light-weight and multiple-brand compatible carrying case for a recurve bow.

The result is a box and lid configuration with highly structured double walls and polyethylene foam internal padding. The outer shell is HDPE. The pieces that compose the bow have separate pockets or foam inserts where they fit tightly, still leaving headspace for the upgraded (and generally bulkier) equipment to come. The lid act at the same time as an arrow rack, which can be converted to a standing field rack for those days you forget your quiver home. The pedestal have a pocket of its own in the foam padding, so it's always there when needed.

Also, the name Barracuda takes its reference from the homonymous fish, known for its ferocity and striking speed - archery at its best.

www.ed.uemg.br

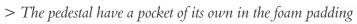




> The pieces that compose the bow have separate pockets











### Healthcare Design Trends

To say that 2020 was difficult for hospitals and health systems would be an understatement. COVID-19 wreaked havoc on healthcare, with revenues, patient volume, and margins falling below 2019 levels. The industry is at a pivotal point of disruption, and change is happening rapidly – almost too rapidly.

The industry will be dealing with the impact of COVID-19 for years to come. Provider burnout is real, and hospitals will have to focus on the well-being of those delivering healthcare as well as their patients. The patient experience is also evolving; patients are approaching healthcare with new expectations and fears, and providers should concentrate on patient education, outcomes, and mental health.

# Key considerations Trends

- 1. Cleanability. In the fight to prevent health careassociated infections (HAIs), manufacturers are focusing on infection prevention in furniture designs. Bacteria can grow and thrive in cracks and crevices, and spread to patients and their guests. Thus, designing furniture that is nonporous is better for patients and for the hospital's bottom line.
- 2. Ergonomics. When it comes to improving ergonomics, it is important to remember that no two patients are alike. A patient's height, weight, strength, dexterity and other factors determine his or her unique ergonomics.
- 3. Sustainability. Designing and building environmentally friendly furniture is now standard in the health care industry. Sustainability, once a 'nice to have' in health care design, has become something that architects and designers expect from manufacturers.



### Inspire Next Discovery bed - removable siderails

production Favero - Italy moulding Simplast - Italy

An innovative bed for care home settings, providing highly advanced infection control and prevention.

With a focus on the latest technologies, industry-leading disinfection, eye-catching design and using durable materials, we have produced a truly innovative bed. All exposed parts are rotomoulded in an antibacterial, non-toxic plastic and may be fully removed for thorough disinfection and cleaning so as to guarantee both incredible durability and the highest standards of hygiene and disinfection.

Siderails can be unlocked and dropped down by means of a central lever and dampened movement. Simple, swift and safe. All surfaces are completely rounded, with no sharp edges, reducing the risk of injuries and trauma, and ensuring maximum patient safety.

The four-section platform is made of moulded onepiece plastic sections which are removable, easy to clean and disinfect and have no sharp edges or corners. Height adjustment, Trendelenburg and reverse-Trendelenburg controlled electrically. Centralized parking brake with levers on the foot side.

Backrest and leg section movements are accompanied by auto-regression to reduce pressure on the abdomen and increase patient comfort.

www.favero.it

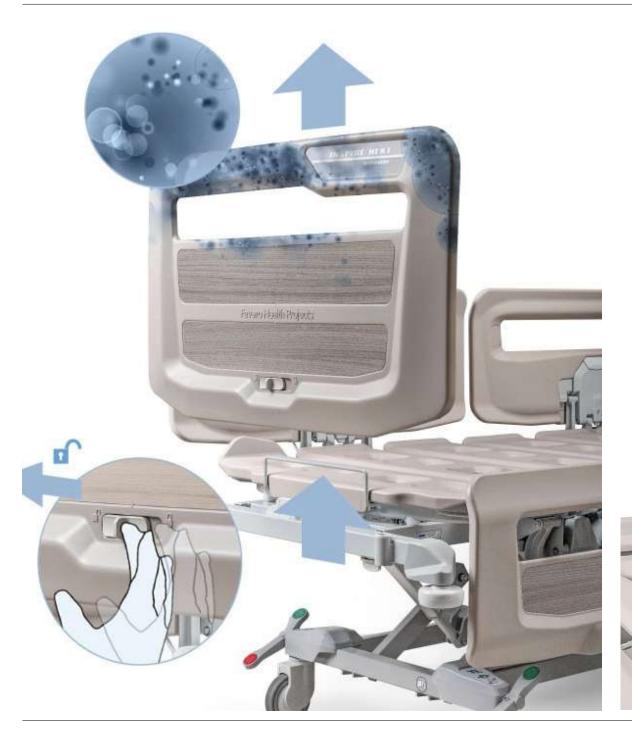


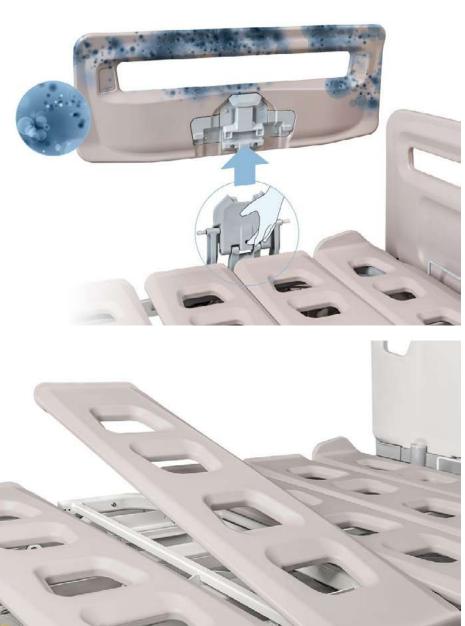


> The platform is made of roto moulded one-piece plastic sections which are removable, easy to clean and disinfect









### **Prospects for Kids Furniture**

In a bid to raise children's awareness of plastic waste, recycling and sustainability, one of the main challanges for the industry is transforming unwanted plastic toys into kids' furniture.

Today 80% of plastic toys end up in landfill or incinerators, while 90% have a lifespan of just six months.

In response, Ecobirdy has developed a system that encompasses the collection and recycling of unwanted plastic toys, right through to the design and production of furniture pieces.

To introduce kids to the circular economy and raise awareness of plastic recycling, a storybook and school programme have been designed to accompany the process. Children are then invited to donate unwanted toys and are informed when their items have been recycled into new furniture.

# Key factors Trends

- 1. The leading players are focusing on technological advancements to improve kids furniture quality. The long term development for this market can be attained by continuing the ongoing process improvements, demand generation, making the technology affordable and investing in the best industrial practices.
- 2. The pieces of the ecoBirdy collection are made out of Ecothylene a new material developed by Ecobirdy that's 100% recycled plastic.
- 3. The plastic toys are separated by colour, cleaned and grinded, resulting in pure, chemical-free flakes ready for moulding.
- 4. The speckled finish of each item aims to help children recognise a recycled material, with the colours from their toys still being visible.
- 5. Ecobirdy hopes that increasing children's consciousness of plastic waste will help them contribute to a sustainable future.



# Home Delivery Containers

production Maheshika Gayathri - Domus Academy, Milan, Italy

Virtual shopping is constantly developing and more and more people no longer go shopping in the supermarket but are waiting for delivery at home.

The project was born with the aim of exploiting the possibilities of rotational technology to create a system of modular containers suitable for transporting goods home. A series of rotomoulded polyethylene containers are designed to be easily transported and compacted through light metal structures.

Rotomolding of containers with a double wall allows to create elements that are particularly resistant to shocks and stresses.





> Rotomoulded polyethylene containers are designed to be easily transported







# Rescue Services in the Mountains

Every year people become lost in the mountains and ski areas of the alpine country.

When a person gets injured, stuck, or lost in the mountains, helping them can be very difficult. The often-dangerous terrain can pose numerous challenges for regular first responders. In many cases, mountaineering expertise are required to access the people who need help.

This is where the mountain ambulance service comes in, providing an effective emergency response service through specialised doctors and volunteers who know the mountains well.

### Key factors Emergencies in the snow

Knowing how to avoid the risks associated with driving in adverse weather conditions requires a certain mindset ambulance operators eventually learn on the job.

Driving on icy roads with whiteout conditions can make the job of an ambulance driver that much more nerve racking — and it's not something you can learn in a textbook. Through rotational molding it is possible to create cabins that are particularly resistant to shocks and stresses that can be encountered in mountain rescue operations.



#### **Snowbulance**

production Equinox - Canada

The Snowbulance is a lightweight enclosed trailer that can be pulled by an ATV into remote areas where larger rescue vehicles cannot go. Equipped with a heater, interior lights and suspension, the snowbulance provides a comfortable place for patients while they are transported out of the bush to waiting air or ground ambulances.

In the winter, the low-pressure tires can be taken off and replaced with skis. The Snowbulance's superior gas shock suspension and cushioned hitch provides a high level of safety and comfort for your patient, fully enclosed, the Snowbulance has enough room for the patient and one or two attendants.

Another big advantage with the Snowbulance is it is fully enclosed and patients can be loaded through double doors at the back.

www.eqnx.biz













> In the winter, the low-pressure tires can be taken off and replaced with skis.



### credits

Luminexence, Italy
Flexx Design Poland
MyYour, Italy
Repower, Italy
EV Mobility, Netherlands
EcoConcept Marine, France
Favero, Italy
Creanova, Italy
Equinox, Canada
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Domus Academy, Italy

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Projects
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Ecal, France
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UDK, Germany
Politecnico di Milano, Italy
SJB-Institute of Technology, India
St. Martins School, Great Britain

Concept Studio Giovanetti, *Italy* 







AFR - Association Francophone du Rotomoulage



ARM - Association of Rotational Molders



ARMA - Association of Rotational Moulders Australasia



ANIPAC - The Mexican Plastic Association



ARMSA - Association of Rotational Moulders Southern Africa



ARM-CE - Association of Rotational Moulders Central Europe



StAR - Society of Asian Rotomoulders



Nordic ARM - Nordic Association of Rotational Moulders



BPF - Rotational Moulders Group



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#### Moulders



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#### Raw Materials



#### Accessories

