



# Welcome to the New 3D, PhotonCast!

*Professional Manufacturing at Consumer Pricing.*

*Here is the Elevator Pitch for your quick perusal, followed by the Pitch Deck.*

## **PhotonCast.**

Professional manufacturing at consumer pricing.

No printer farms, no molds costing tens of thousands of dollars, no outsourcing your work.

How does **PhotonCast** do this?

By injecting the transparent mold you create with the UV curing resin of your choice, which UV resin cures instantly when exposed to UV light.

Magnitudes faster than 3d printing, magnitudes more affordable than injection molding.

Easy, Quick, Secure, and Affordable.

**PhotonCast** has been demonstrated in numerous trade shows to great acclaim and received praise for it's ingenuity and usefulness.

[https://www.youtube.com/watch?v=EjN\\_QgQf-S4](https://www.youtube.com/watch?v=EjN_QgQf-S4)

<https://www.youtube.com/watch?v=y2OSERntI1w>

<https://www.youtube.com/watch?v=cUMLtCGKPPU>

[www.Lowry3D.com](http://www.Lowry3D.com)

And on to the Pitch Deck below!



PhotonCast enables small manufacturers and hobbyist large and small to manufacture with the volume and pricing of professional shops at a minuscule fraction of the costs.

PhotonCast enables entirely new markets to manufacture products at a hundredth the price of conventional injection molding and deliver within a week.

No need for printer farms, no need for molds costing tens of thousands of dollars, no need to send work to a shop to be manufactured.

Units small enough to produce hundreds of pieces a day from your countertop to freestanding units capable of producing tens of thousands of pieces a day.

Using the power of light and the latest UV hardening resins, PhotonCast enables both the micro and macro economies to drastically reduce their bottom line while operating at a small fraction of the cost of a commercial enterprise with the added benefit of being 10x faster!

# How does PhotonCast work?

UV resins and transparent plastic molds. UV resin hardens nearly instantly when exposed to UV light, while using a plastic mold which is transparent to UV light allows UV resin placed within the mold to harden when exposed.

Users can create their own molds using their own 3D printer or have a service make the mold for them for dollars instead of tens of thousands of dollars and hours or days compared to months! If you need to change the mold, just print another and avoid the massive costs of new conventional molds.

Operation is simple and easy. Pour some UV Resin into the transparent mold, place the mold within PhotonCast, press a button, and within a 60 seconds you have your part!

Fast, Easy, Economical.

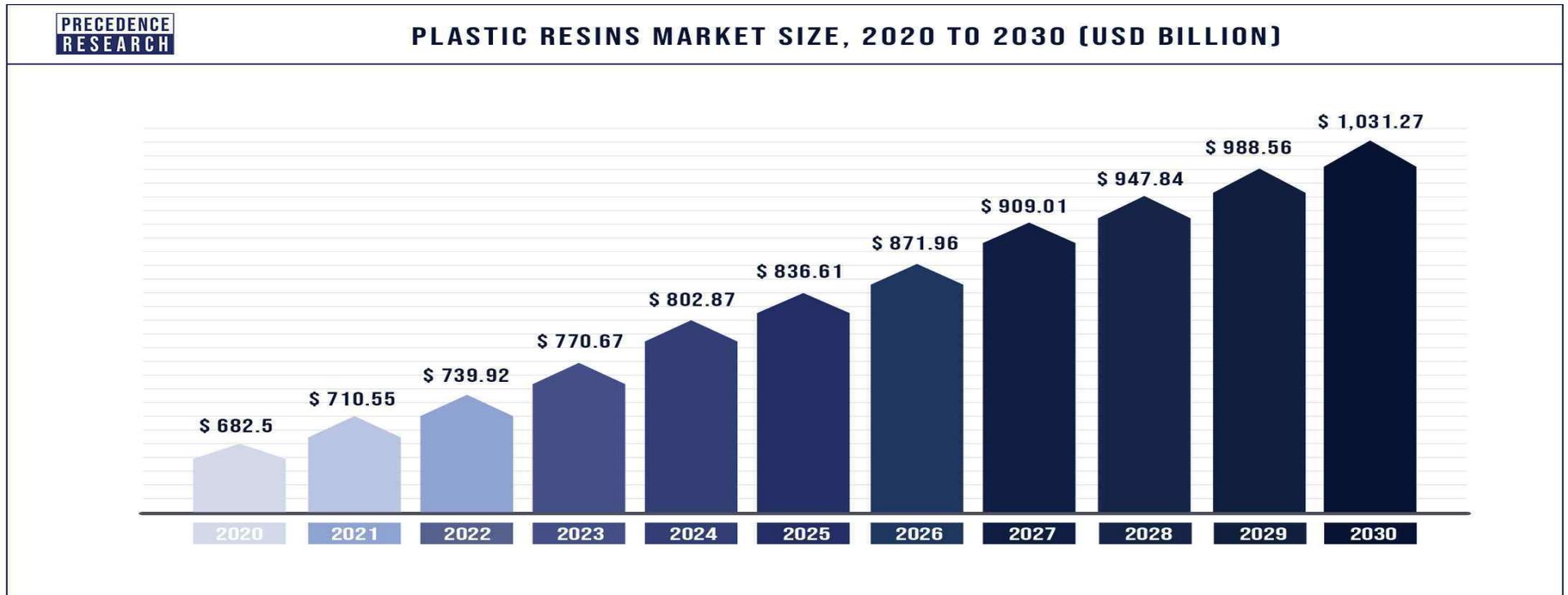
Enjoy using the resin of your choice.

Clear, Tough, Flexible, Water-Washable, Dental, High Temperature, Casting, ABS like, Rapid, Rich, Functional, and dozens more. Different colors, different qualities, different markets, with more being introduced every day.

UV Resins are now so diverse, abundant, and cost effective they rival all thermoplastics in variety and cost.

**PhotonCast!**

# The global plastic market was valued at **US \$710.55 Billion in 2021**



And is projected to reach  
**US \$1,031 *Trillion* by 2030**

# These Companies Dominate the Market

SABIC

BASF SE

Dow Inc.

Sumitomo Chemical

Evonik Industries

Arkema

Teijin Limited

Eastman Chemical Company

Celanese Corporation

Chevron Phillips Chemical Co., LLC

Exxon Mobil Corporation

Lotte Chemical Corporation

Formosa Plastics Corporation

Toray Industries, Inc.

Covestro AG

Mitsui & Co. Plastics Ltd.

# With These Plastics Most Produced

- Polyethylene
- Epoxy
- Polypropylene
- Nylon
- Polycarbonate (PC)
- Polybutylene Terephthalate (PBT)
- Polyamide
- Polystyrene (PS)
- Polyvinyl Chloride (PVC)
- Polymethyl Methacrylate (PMMA)
- Acrylonitrile Butadiene Styrene (ABS)
- Polyether Ether Ketone (PEEK)
- Polyphenylene Sulfide (PPS)

# The Major Market Segments

- Automotive
- Packaging
- Construction
- Consumer Goods
- Logistics
- Electrical & Electronics
- Textiles & Clothing
- Agriculture
- Furniture & Bedding
- Medical Devices

The Global Plastic Market is a Tremendous  
Market with a Tremendous Opportunity

**But...**

There is a Very Steep Barrier to Entry

# The Cost of Producing Plastic Parts is Very Expensive!

Current technology requires these steps before a Plastic Part Can Be Sold.

1. Tooling the Plastic Injection Mold
2. Testing the Plastic Injection Mold
3. Procuring the Injection Molding Machine
4. Securing the Mold within the Injection Molding Machine
5. Clamping
6. Injection
7. Cooling
8. Opening
9. Part Ejection

## Tooling the Mold

Molds cost between tens of thousands of dollars to well over a million dollars each and requires 6 months or more lead time.

## Testing the Mold

Each mold must be extensively tested for efficient filling, cooling and ejection. This testing may take many months, especially if the mold needs to be “fixed” or remanufactured to remedy any issues.

## Clamping

In the clamping phase, the metal plates of the mold are pushed up against each other in the injection molding machine with enough force to keep the plates from separating under the pressure of injecting the plastic, typically 10 to 100 tons of force requiring the machining of metal molds.

## Injection

The plastic is now heated to produce a very viscous liquid. Then that liquid is injected under tens to hundreds of tons of pressure into the mold. This heat and pressure vastly reduces the life of the mold.

## Cooling

The mold now must be cooled so the hot plastic inside can solidify into a usable product that can be safely removed from the mold.

## Opening

Once the part has cooled, the mold clamp will slowly open allowing the sections of the mold to be separated and the final product removed

## Ejection

The removal of the plastic part either manually or using an ejector bar to slowly push the solidified product out of the open mold cavity.

All These Costs Contribute To The Massive Upfront Expensive of Producing Plastic Products.

**But...**

What if the costs for the mold could be reduced from tens of thousands of dollars to

***Tens Of Dollars?***

What if the time to make the mold was reduced from 6 months to

***6 Hours?***

What if you could fit the entire production line, from creating the mold, filling the mold to producing the plastic part

***On Your Desktop?***

***A Revolution In Plastics Manufacturing***

# PhotonCast Accomplishes These Advantages By Using:

Clear plastic molds instead of machined metal molds.

UV curing resins in place of heated thermoplastics.

Combined with unique and patent pending Integrated UV Resin Injection Molding / Rotomolding Technology.

# Clear Plastic Molds

Using clear plastic such as PolyLactic Acid (PLA), Polycarbonate (PC), Thermoplastic Polyurethane (TPU), and PolyPropylene (PP), a mold can be very quickly and inexpensively manufactured.

3D Printing would be ideal for being able to manufacture these molds due to 3D printing having become very affordable and capable.

3D printed molds may cost less than a dollar instead of tens of thousands of dollars and can be produced in hours instead of months.

# UV curing resin

The selection of UV curing resin is vast and improving weekly.

Stiff resin, flexible resin, resin for overmolding, resins for electronics, high temperature resin, resin for medical applications, and so much more are all easily available and compatible with PhotonCast.

The number of UV resin manufacturers vast and diverse.

The following is a sampling of some of the manufacturers of UV resins, but by no means a comprehensive list.

## **Anycubic**

Colored UV Resin

Plant-based UV Resin

UV Tough Resin

DLP Craftsman Resin

Water-Wash Resin

Standard Resin

ABS-Like Resin

ABS-Like Resin Pro

## **FLEX**

Tough

Crystal Clear

Super Strong

DENTAL CASTING

ORTHODONTIC

## **Ministry of Resin**

Durable Grey Water Washable, Non Brittle

Durable Translucent Quartz Color

Durable Translucent Ruby

Durable Translucent Emerald Green

Durable Translucent Ocean Blue

## **Elegoo**

Thermochromic Resin 1000G (grey to purple)

Plant-Based Rapid Resin in clear, green, black, and grey

ABS-Like Rapid Resin in Grey, White, Yellow, Blue, Beige, Clear, Mint, Smoky, Black

Standard Rapid Resin in White, Black, Grey, Beige, Yellow, Maroon, Blue, Clear, Clear Blue, Clear Red, Translucent Green

Water Washable Rapid Resin in White, Grey, Black, Beige, Yellow, Clear Green, Red, Blue, Mint Green, Smoky Black

## eSun

Hard Tough ABS-Like Resin

Standard Resin

High Precision PLA Pro

PMMA Like

High Precision PLA Pro

Flexible Resin

PLA

Standard Resin

Hard Tough ABS-Like

Water Washable

Water Washable Red Wax for lost wax casting

## **Liqcreate**

Premium Black

Premium Flex

Premium Tough

Premium White

Premium Model

## **Flashforge**

Standard Resin

ABS-Like Resin

Water Washable Resin

## Formlabs

Draft Resin Greyscale Resins Clear Resin Grey Pro Resin

Grey Pro Resin PU Rigid 650 Pliable & Impact Resistant

PU Rigid 1000 Stiff & Sturdy ESD Resin Specialty Resins

Model Resin Draft Resin Surgical Guide Resin

Dental LT Clear Resin Castable Wax Resin

Digital Dentures Custom Tray Resin

Temporary CB Resin Permanent Crown Resin

IBT Resin Grey Resin High Temp Resin

Castable Wax 40 Resin Tough 1500 Resin

BioMedical White Resin BioMedical Black Resin

BioMedical Clear Resin BioMedical Amber Resin

PU Rigid Resins Elastic 50A Resin Rigid 10K Resin

Durable Resin

## **Monocure**

Rapid Resin

Tuff™ Resin

BigVat™ Pro Resin

Crystal Clear Pro Resin

Deep Black Pro Resin

Flex100

Dental Resin

## **Siraya-Tech**

ABS-Like resin

Blu-Tough Resin

Tenacious -Flexible Resin

Build -High Resolution Engineering Resin

## **Photocentric**

Dental Model

Hard

Castable

Crystal Clear

Poliglass

High Tensile

Firm

Rigid UV240 Plant-Based

## **ETEC Envisiontec**

E1 Loctite 3840 General Purpose Resin - Clear 1kg

E1 Loctite 3860 High HDT Resin - Black 1kg

E1 Loctite 5015 Resin - Black 1kg

E1-Loctite5015-Black

E1 Loctite Tough HDT 60 Resin - Matte Black 1kg

E1 Loctite Tough HDT 60 Resin - Matte Black 1kg

E1 Model Resin - Black 1kg

E1 Model Resin - White 1kg

E1 Rigid PU Resin - White 1kg

E1 Rigid PU Resin - Black 1kg

E1 RigidForm Resin - Charcoal 1kg

E1 RigidForm Resin - Amber 1kg

E1 ABS Tough Resin - White 1kg

## Phrozen

Aqua 8K Resin - Red-Clay      Aqua 8K Resin - Snow-Gray  
Aqua 8K Resin – Vanilla      Aqua 8K Resin - Gray  
Aqua 4K Resin – Gray      Aqua 4K Resin - Ivory  
Phrozen Speed      Aqua      ABS-Like  
Water-Washable  
Castable W20 Green      Castable W40 Orange  
Castable Jewelry Violet      TR300 Ultra High Temp  
ONYX Impact Plus      BASF Protowhite  
Onyx Rigid Pro410      TR250LV High Temp  
TR300 Ultra High Temp      Nylon-Green Tough  
Rock-Black Stiff

**And HUNDREDS More.**

# PhotonCast!

*Eliminates* expensive molds

*Eliminates* expensive plastic injection presses

*Eliminates* long lead times

**ENABLES** convenient and volume manufacturing at home or office

# PhotonCast Eliminates Expensive Molds

With PhotonCast, the use of expensive metal molds is obsolete. Using well established industry practices, the plastic molds may be manufactured quickly and inexpensively.

These molds can now be 3D Printed within hours in the office and ready to go the same day for under one dollar, not months and tens of thousands of dollars.

Changes to the design may be incorporated within the production flow within one day. A vast improvement over the months currently needed.

# PhotonCast Eliminates Expensive Plastic Injection Presses

Traditional plastic injection molding requires injection of molten plastic into a metal mold under great pressure to fill the entire cavity of the mold evenly without air gaps or voids.

PhotonCast eliminates the requirement for an expensive plastic injection press by using UV resin. UV resin does not require heat because UV resin is not a thermoplastic. UV resin does not require any pressure because UV resin is not viscous.

UV resin flows like liquid and instantly hardens with UV light, no heat nor pressure needed.

# PhotonCast Eliminates Long Lead Times

PhotonCast molds may be created using 3D Printers allowing the molds to be produced in-house same day on the desktop.

Since PhotonCast has no need for large and expensive plastic injection presses, the plastic articles may be produced in-house same day on the desktop, adjacent to the 3D printer.

Hundreds of plastic articles quickly, easily, affordably.

# The Future

While it is difficult to make future predictions on a revolutionary product: Based on internal research, social media interactions, and direct conversations, Lowry3D believes PhotonCast has the opportunity to expand and supplant the current plastic injection market by a minimum of 10 to 30 percent and easily upwards of 70 percent. The convenience of fast turnaround with the exceptional diversity of UV Resins creates a unique once-in-a-lifetime “Blue Ocean” opportunity.

**PhotonCast enables Just In Time manufacturing**

**PhotonCast enables immediate plastic production at every workstation**

**PhotonCast enables product design changes during a product run**

**PhotonCast enables efficient inventory**

**PhotonCast enables well-organized product manufacturing workflow**

This new and exceptional technology will revolutionize and supplement current plastics manufacturing by allowing, for the first time, “Just In Time” plastic production.

Just In Time production minimizes the time, labor, and materials in a manufacturing process. It does so by only producing goods as they are needed. The desired outcome is a streamlined production system that maintains a minimal amount of on-site raw materials, minimal wait times in the production process, and small batch sizes.

There are several benefits of a Just In Time production system.

One is a drastic decline in the amount of working capital needed, since inventory can be immediately produced as required.

Another benefit is a reduction in the amount of waste since discovering and correcting a manufacturing design flaw with implementing a solution can be accomplished in a single day.

Further, there is no finished goods obsolescence, since goods are only produced when they can be immediately sold.

In addition, the square footage needed by the production area is reduced, since the PhotonCast does not require an extensive work area. There is also a reduced need for materials handling equipment, since the workcenters may be positioned close together so parts can be manually handed from one workstation to the next.

PhotonCast Is Compact. With varying sizes, there is a PhotonCast appropriate for the users application.

PhotonCast is Easy. With the effortless to understand and use touch screen interface, PhotonCast can be learned within minutes.

PhotonCast is Safe. Using UV resin eliminates the heat, pressure, and danger of conventional injection molding.

PhotonCast is Efficient. Produce plastic parts only when and if needed in seconds.

PhotonCast is Affordable. The cost of PhotonCast is dramatically less than the wasted inventory, downtime, and lost sales experienced without PhotonCast.

# Projected Sales

As previously stated, the current plastic market is projected to be over ***one trillion dollars*** by 2030.

At the conservative end of the estimate, ten percent of one trillion dollars is **100 billion dollars**.

At an even *more* conservative estimate, only one percent of one trillion dollars is **10 billion dollars annually**.

We understand this is a huge estimate. Nonetheless the advantages of PhotonCast are self-evident and the market will

quickly realize the attractiveness and competitive advantage afforded through PhotonCast.

Therefore, Lowry3D believes this to be a reasonable estimate.

## Marketing

There are three major markets for PhotonCast:

- A) Consumer
- B) Professional Individual User (Prosumer)
- C) Business to Business

The most cost effective PhotonCast for the consumer market would be the PhotonCast X, being modest in size and more conservative in features.

The best match for the Professional Individual User (Prosumer) would be the next tier, the PhotonCast XL. Larger in size, desktop or floor mounted, and with additional features such as automated part removal.

The Business to Business PhotonCast is the PhotonCast Ultra. Designed for the rigors of industrial use and with options including full automation, PhotonCast Ultra fills the demanding requirements of heavy industry.

# Obtaining the Customer

Obtaining the customer would be achieved through a diverse series of media outlets and customer recommendations.

## **For the Consumer and Prosumer market.**

Social media would be leveraged with multiple posts, sending evaluation units to influencers such as Joel Telling (3D Printing Nerd), Thomas Salander, and others. Each of these social influencers have millions of views a month, and these influencers are ready and willing to display, use, and honestly review PhotonCast X to the wider audience producing millions of views and contacts/sales.

Other avenues of exposure would include paid advertising both online and print, and conventions. Conventions such as local and regional MakerFairs, and RepRap festivals such as the Midwest

RepRap festival where PhotonCast was introduced have proven to be invaluable.

### **For the Business to Business market:**

Conventions, targeted print and online advertising, as well as articles printed in leading industry publications.

### Plastics Expos

Machine Association for Plastics Processors (MAPP)

<https://www.mappinc.com/>

Plastics Industry Association

<https://www.plasticsindustry.org/>

Injection Molding and Design Expo

<https://injectionmoldingexpo.com/>

## Magazines

Modern Plastics Weekly

<https://modernplasticsweekly.com/>

Injection World

<http://www.injectionworld.com/>

Plastic Machinery and Manufacturing

<https://www.plasticsmachinerymanufacturing.com/magazine>

Plastics News

<https://www.plasticsnews.com/>

Plastics Business

<https://plasticsbusinessmag.com/>

Plastics Today

<https://www.plasticstoday.com/>

# INTERESTED?

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Lindedin

<https://www.linkedin.com/in/charles-lowry-5b072437/>

Facebook

<https://www.facebook.com/Lowry3D/>

YouTube Lowry3D

<https://www.youtube.com/channel/UCKISrphEtxqOFDx3ijxSg7w>

Lowry3D Website

<http://www.lowry3d.com/>

Thank you for your time!

Lowry3D / PhotonCast

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