



**MORE THAN
MATERIALS**



HEALTHCARE ENGINEERING SERVICES

Streamlining the Product
Development Cycle

PolyOne[™]

MINIMIZE RISK, OPTIMIZE DESIGN

Designing and manufacturing plastic healthcare components that can maintain mechanical integrity when exposed to sterilization methods, cleaning agents, bodily fluids and drug solutions—all while meeting strict regulatory requirements—can be a challenge. PolyOne Distribution can help streamline your processes by utilizing advanced product design and simulation technologies to deliver robust, compliant designs and a streamlined product development cycle. Optimize your part

performance and reliability with one or more of the following engineering capabilities:

- 1. Industrial Design**
- 2. Application Development Engineering**
- 3. CAE Services**
- 4. Part & Process Verification**
- 5. Polymer Testing & Characterization**

1 INDUSTRIAL DESIGN

If you're looking to simplify your design process, we can help connect the dots. Our goal is to help you plan, and get your innovative idea into the hands of healthcare professionals faster. We offer help with:

- Ideation
- Conceptualization
- Ergonomics
- Renderings
- System Integration



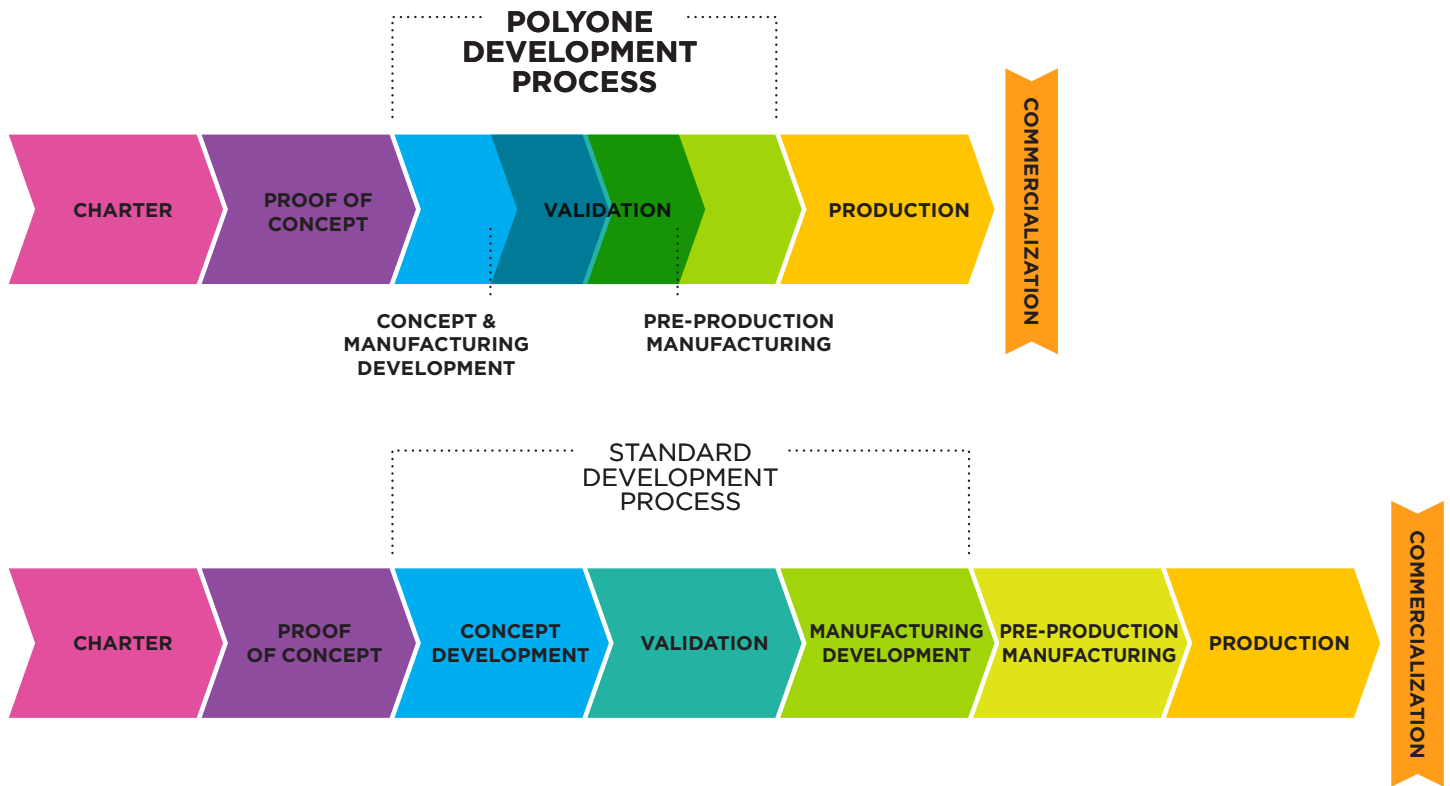
2 APPLICATION DEVELOPMENT ENGINEERING

Material selection and specification is an integral step in the application development engineering process. Without the right material for your specific needs, you could face component or even system failure. Additionally, we work closely with our key polymer suppliers to help close the gap for our customers, connecting you to current market needs and trends. We can help you sort out your component's engineering needs such as function, process, assembly requirements, sterilization methods and regulatory approvals.

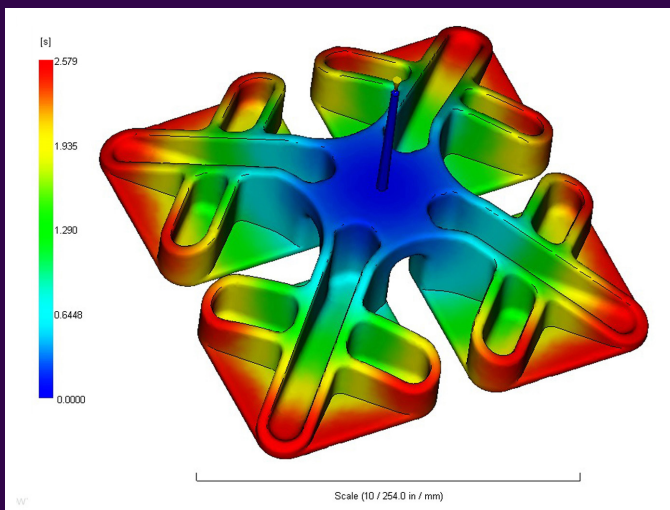


STREAMLINE YOUR PATH TO MARKET

By integrating concept and manufacturing development, products can be launched faster.



3 COMPUTER-AIDED ENGINEERING (CAE) SERVICES



When designing a component, the ability to analyze and troubleshoot with advanced software tools and smart systems will help you maximize product performance, enhance functionality, drive your design forward, and significantly reduce risk. We can help you with various CAE services, including:

Part Design for Manufacturing (DFM): If you want to reduce manufacturing time and associated costs while producing effective designs, through our network of DFM service providers, we will help you to address any potential manufacturing problems earlier in the design phase and produce effective components.

Advanced Mold Filling Analysis: With this flow simulation process, we can help you predict and determine fill pattern and associated issues or concerns with your plastic part.

Mold Design: Our goal is to help provide design recommendations and offer practical assistance to ensure your mold design meets your unique requirements.

Dynamic Finite Element Analysis: Structural analysis is imperative when designing parts for the high stakes healthcare industry. Whether your application requirements are straightforward or require highly non-linear dynamic impact scenario simulations, we're ready to help.

PART & PROCESS VERIFICATION

Typically, as medical device projects move closer to launch, the part and process verification steps need to be managed effectively as delays can be costly. Industrial micro-CT scanning is an efficient solution that delivers high accuracy results.

Advanced System Capabilities:

- 4D scanning (3D + Time)
- Vortex scans
- MosaiX
- SubpiX
- Nanofocus mode, detail detectability < 0.5 micron

Metrology: Metrology delivers results within hours versus days, as compared to CMM or laser scanners.

Whole Part Analysis: Part-to-CAD comparisons allow for quick and easy interpretation of part dimensions with colored-image format.

Non-Contact and Non-Destructive Analysis:

One part can be retained for further analysis while internal features can be analyzed without causing damage to the sample.

Faster-to-Work Validation: Using part-to-part analysis, production parts can be compared to current standards quickly and efficiently.

POLYMER TESTING & CHARACTERIZATION

We understand that patient safety, product integrity and design innovation are at the heart of what you do, and we're here to help you set new benchmarks in safety, performance, quality, and sterility specifications. We will work with you to provide plastics testing and characterization on medical devices using the following methods:

- **Chromatography:** Test for specific analytes and proportions of material components such as phthalates and BPA
- **Deformulation:** Isolate individual ingredients and proportions within any plastic
- **Failure Analysis:** Identify root causes and thresholds for medical device failure
- **Fire Science:** Evaluate and verify your product's flammability properties under combustion and near-combustion conditions
- **Litigation Support:** Employ world-class expertise in even the most sensitive situations
- **Physical Testing:** Develop extensive data on your material's physical properties
- **Rheology:** Understand your material's thermal transitions, molecular weight, structure/morphology, shear-thinning behaviors, and long-term performance models

For more information, contact 1.866.POLYONE or visit polyonedistribution.com or polyone.com

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