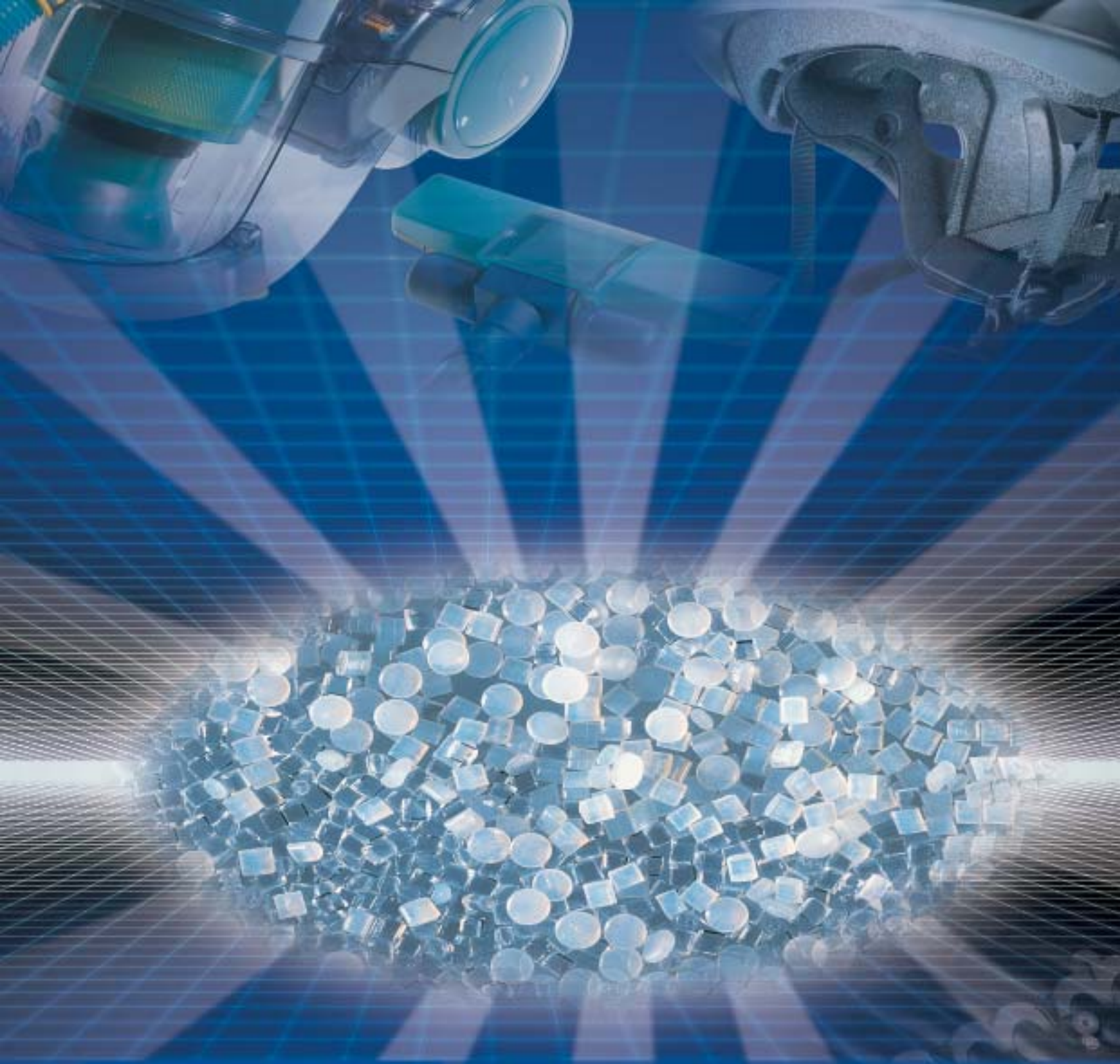


Helping Make
Products Better™

BASF
The Chemical Company

Application Development Engineering

www.plasticsportal.com/usa

Application Development Engineering

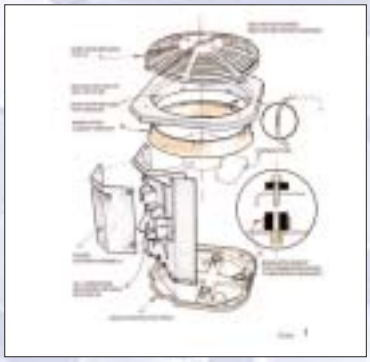
At BASF, we help make products better! From initial concept to reality ...

Every step of the way, BASF is ready to advance your process with our state-of-the-art technology, facilities and real-world expertise.

Our Application Development Engineers accelerate the product development process by applying a comprehensive portfolio of design software and analysis techniques to optimize part performance.

Conceptual Realization

- High Performance Application Design Teams grasp your concepts
  - — Brainstorming, renderings and 3D CAD modeling
- Physical prototype models complement advanced design ideation
- Virtual optimization of product solidifies design

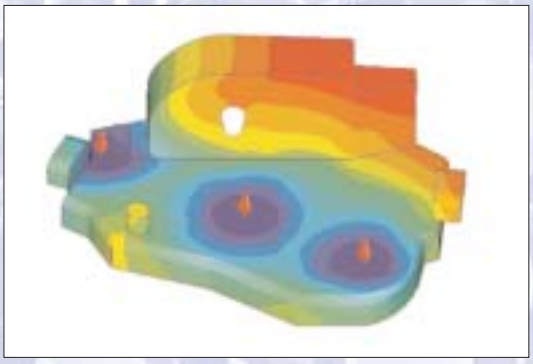


StereoLithography Apparatus (SLA)

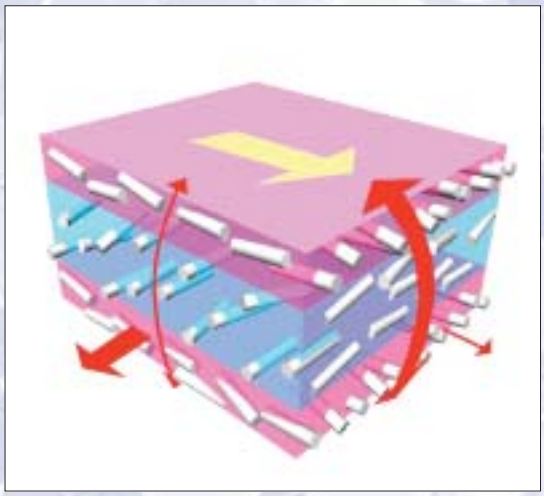
- In house machine has a build envelope of 10” X 10” X 10”
  - — Typically in 0.006” layers
- Enables conceptual art-to-part overnight
- Evaluate concept aesthetics or design practicality
- SLA part is an excellent communication tool

Mold Filling Simulation

- Predictive tool to eliminate the guesswork, reduce cycle time and improve injection mold efficiency
- Also improve general aesthetics by predicting air traps
- Optimizing part strength with weld line analysis
- Analysis techniques include traditional mid plane shell elements or true 3D simulations including Gas Assist
- Interface seamlessly with Fiber™ Program below

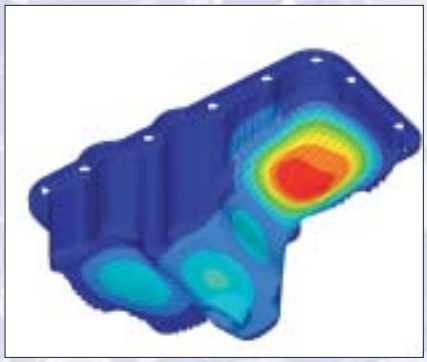


Structural Simulation



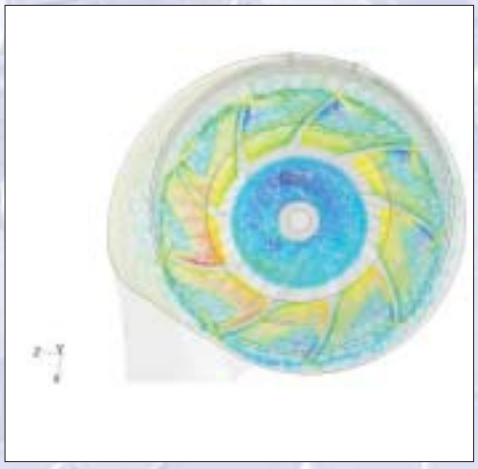
- Proprietary methods at BASF efficiently develop pre-processing models
- Predictive analysis assemblies simulate in-use stress loading conditions
- Structural simulations techniques include:
  - — Linear and Non Linear
  - — Structural Optimization
  - — Dynamic Impact
  - — Failure prediction
- The proprietary Fiber™ Program assists in understanding structural material behavior based on fiber orientation

Noise, Vibration and Harshness (NVH)



- Plastics have inherent NVH advantages over metal
- Sophisticated analysis utilizing an integrative approach
- Experimental testing of noise and frequency signatures
- Validation of computer predictions with signal analysis, laser vibrometry and acoustic measuring techniques

Computational Fluid Dynamics (CFD)



- Optimizing airflows can impact noise and energy-efficiency
- Permit early identification of potential problems
- Provide design direction for cost effective solutions
- Compiled database of various CFD studies including fully, quasi and non steady state conditions
- Proprietary algorithms to optimize part performance and development

Resident Software and File Compatibility

Resident CAD Software:

- Pro/ENGINEER Wildfire®
- SolidWorks®

Resident Structural Software:

- ABAQUS©
- OptiStruct®
- LS-Dyna®
- I-deas®

Resident Mold Filling Software:

- Moldflow®
- Moldex®

Resident NVH Software:

- LMS-SYSNOISE®

www.plasticsportal.com/usa

- **Product Locator** - Quickly locate technical and material safety datasheets for all BASF Plastics products. You can also compare plastics side-by-side and access multipoint data.
- **Online Education Center** - Live Webinars focused on the design, processing and performance of the BASF Engineering Plastics line of engineered thermoplastics.
- **Auto Specs Database** - Find BASF Plastics resins meeting different OEM Automotive Specifications.
- **Online Answer Center** - Get your Engineering Plastics questions answered in real time by our technical experts.
- **Cycle Time Calculator** - Users input processing conditions and this unique online calculator provides cycle time estimates for various resins.

BASF Corporation
ENGINEERING PLASTICS
1 (800) 527-TECH

BASF: The Chemical Company. We don't make a lot of the products you buy. We make a lot of the products you buy better.®

BASF Corporation, headquartered in New Jersey, is the North American affiliate of BASF AG, Ludwigshafen, Germany. BASF is the world's leading chemical company. Our portfolio ranges from chemicals, plastics, performance products, agricultural products and fine chemicals to crude oil and natural gas. As a reliable partner to virtually all industries, BASF's intelligent solutions and high-value products help customers to be more successful. BASF develops new technologies and uses them to open up additional market opportunities. We combine economic success with environmental protection and social responsibility, thus contributing to a better future. Further information on BASF is available on the Internet at www.basf.com.