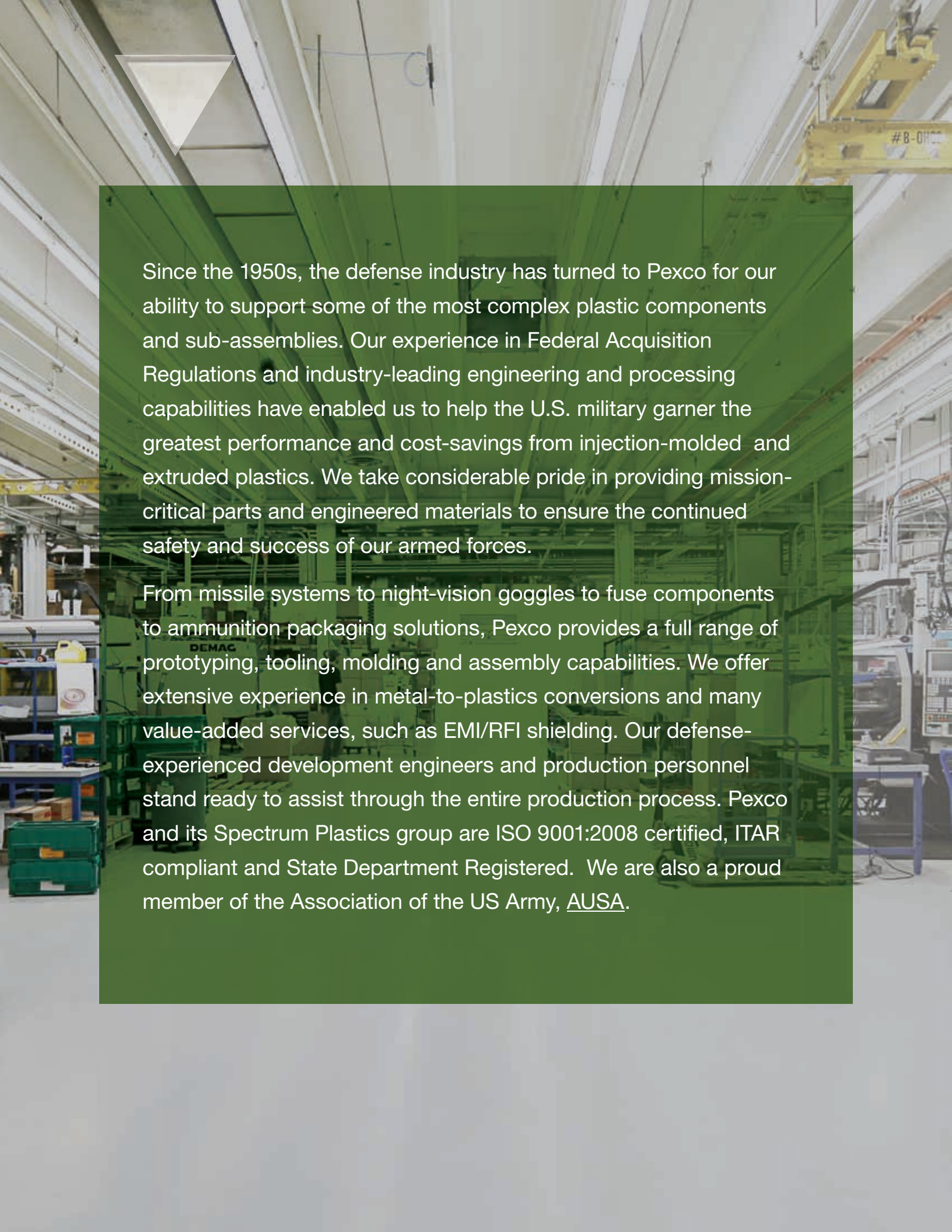


Where ideas  
take shape.

ESSENCE





Since the 1950s, the defense industry has turned to Pexco for our ability to support some of the most complex plastic components and sub-assemblies. Our experience in Federal Acquisition Regulations and industry-leading engineering and processing capabilities have enabled us to help the U.S. military garner the greatest performance and cost-savings from injection-molded and extruded plastics. We take considerable pride in providing mission-critical parts and engineered materials to ensure the continued safety and success of our armed forces.

From missile systems to night-vision goggles to fuse components to ammunition packaging solutions, Pexco provides a full range of prototyping, tooling, molding and assembly capabilities. We offer extensive experience in metal-to-plastics conversions and many value-added services, such as EMI/RFI shielding. Our defense-experienced development engineers and production personnel stand ready to assist through the entire production process. Pexco and its Spectrum Plastics group are ISO 9001:2008 certified, ITAR compliant and State Department Registered. We are also a proud member of the Association of the US Army, [AUSA](#).





## Defense Programs & Products

The programs we support for our Nation's Defense contractors are as diverse as the men and women who serve our Nation. Programs and products include:

- ▶ Missile Systems
- ▶ Unmanned Systems
- ▶ Ground Vehicles
- ▶ Vision & Targeting Systems
- ▶ Radar & Sonar Systems
- ▶ Laser Guided Explosives
- ▶ Laser Guided Training Rounds
- ▶ Night Vision Goggles
- ▶ Fuses (FMU 139, FMU 132, Excalibur, SDB, GMLRS)
- ▶ Medium Caliber Ammunition
- ▶ 40mm Grenades and Less-Than-Lethal
- ▶ Tank Munitions
- ▶ F22 Serpentine Ammunition Belt
- ▶ Ruggedized Computer Hardware
- ▶ Tactical Communications

From simple products and designs, such as bullet casings, to night-vision systems to complex military aircraft and defense missile programs, Pexco continually delivers innovative and first-class injection molded and extruded plastic engineering to the industry. Our military is armed with the best components and munitions available, supplied to them by the world's leading manufacturers, and those manufacturers count on Pexco to deliver on time, and to the superior level of standards our Nation deserves.



## Engineering Resins

Pexco's knowledge & capability to mold and extrude many types of thermoplastic materials comes with decades of experience in the industry. We typically use engineering grade resins ranging from nylons to other high performance resins and reinforced materials. Having produced small, medium & large production runs of thousands of different products, Pexco can meet your specific injection molding or extrusion requirements from simple to complex sizes, shapes & tolerance.

### ► **Benefits of Engineering Plastics:**

- Weight reduction
- Cost reduction
- Electrical insulation
- Flame retardancy
- Hydrolysis resistance
- Corrosion resistance
- High mechanical strength

### ► **Types of Engineering Resins:**

- PEEK
- Polycarbonate
- Polyetherimide
- Polyethersulfone
- Polyphenylsulfone
- POM / Acetal
- PTFE



# Our Plastic Processing Methods & Capabilities

## ▶ Injection Molding

Pexco's injection molding technology division, the Spectrum Plastics Group in Minneapolis, Minnesota, offers a wide range of plastic injection molding capabilities to meet the most demanding applications and requirements. Our injection molding facility is home to a 104,000 square foot production space with 160 employees. Using horizontal, vertical or shuttle machines, we offer traditional injection molding in hydraulic and electronic options. All machines are equipped to our IQMS ERP system for real-time monitoring of your job.

With over fifty injection molding presses – including 6 micro machines – that range from 12 to 600 ton capacity, Pexco has the ability to meet all your needs and challenges plus the skills to process the most demanding polymeric materials.

Pexco & Spectrum have considerable experience in developing new product designs, as well as transferring existing tooled programs. With our in-house plastic CNC machining capabilities, we can even provide value-added solutions to save tooling expense. We will support you on your easiest part configurations to the most complex moldable geometries.

## ▶ Extrusion

Custom profile extrusion is Pexco's DNA. More than 80 engineering and production specialists provide consultation, design and production of plastic extrusions to meet a variety of end-use challenges. Services include product/part design and engineering, die development, tight tolerance processing, both air and vacuum sizing, and value-added fabrication.

Across our multiple North American production facilities and almost 1 million square feet of production space, Pexco operates 170 extrusion lines, including 75 2-1/2" extrusion lines, 74 3-1/2" extrusion lines, twin screw and 4-1/2" lines, and 19 smaller lines. Our smaller lines include sizes down to 1-1/4." We also operate 62 co-extruders. This wide range of resources is used to produce both rigid and flexible extrusions, and both open and closed profiles and tubing, across all material classes.





## Design for Manufacturability

Often, many quality-enhancing and cost-saving manufacturing factors can be identified and nailed down in the design phase. Pexco consistently demonstrates its value by providing input on efficient part design, mold design, materials, and production processes. We work as a partner with you to deliver workable designs for injection molding or extrusion, without compromising the functionality and/or aesthetics of your part or product.

# Our DFM Process

## Pexco's Successful Design For Manufacturability (DFM) Process

### Review Specs

Customer presents their specifications for the project such as CAD files, prints, along with goals and applications of what they want to produce.



STEP  
01



### Discuss Application

Teams discuss the goals and critical features in order to determine the must have's and the nice to have features of the product.

STEP  
02

### Collaboration

Teams discuss design, materials and product features to develop a moldable and/or assembly design to meet customers product "must have" features and in many cases are able to add in many "nice to have" features as well.

STEP  
03



### Manufacturing Layout

Once facts are gathered, we lay out efficient and repeatable manufacturing, assembly and packaging work flow.

STEP  
04



### Manufacturing Launch

Pexco's engineers work with the customer on final tool design and validation requirements.

STEP  
05





**Making it right  
the first time  
every time.**



### ▶ 40mm Training Round

Pexco has produced over 12 million 40mm M212 injection molded cartridge cases out of a specially developed and tested engineered resin since 1999. The material, a high impact polyamide, was specifically developed for this application featuring a chemistry that was altered to optimize moldability, process repeatability, and has been tested to withstand the rigors of soldier training.

The metal-to-plastic conversion for the 40mm M212 case resulted in an improvement in cost, part weight, and damage due to mishandling, being more resistant than their aluminum predecessors to galling and denting.

The M212 cases are used on the M781 training round, fitting the M203 and M79 40mm grenade launchers. These training rounds are an essential step in the soldier's ability to fire the live M433 live velocity HEDP rounds effectively. The plastic cases are designed to hold a .38 caliber primer, which allows for the inert projectile to be vaulted from the grenade launcher. These cases are ideal for low velocity training rounds.

### ▶ Pexco Offers:

- Lot quantities available from 1,000 to 100,000+ monthly
- Tiered pricing based on order quantity
- Custom Windshields available
- Stocking programs available
- Additional metal-to-plastic conversion support on site







▶ **A Case Study Challenge**

A leading global defense contractor was challenged to redesign a soldier-mounted vision system. The objectives were to reduce cost and weight, consolidate the component parts of the design, and rationalize the vendor base providing a number of value-added secondary operations in the manufacture of the system, including machining, painting and plating.

▶ **Solution:**

The formulation of a material blend to match color requirements, leveraged design engineering and in-house tooling techniques to eliminate a metal component of the legacy system to reduce weight and cost.

▶ **Key Takeaways:**

- Engineering & tool design expertise
- Material selection & consultation
- Light-weighting (metal to plastic)
- Reduction in assembly time
- Lower costs
- Aesthetic improvement



# Get to know the Pexco way.

Pexco is a North American leader in the design, manufacturing and delivery of custom plastics solutions. Our team of engineers and proven experience in several specialty segments including defense, medical, industrial, commercial, building and infrastructure ensure you receive the highest quality products to satisfy your unique needs.

Find out how a partnership with Pexco is the best way to start shaping your future today.

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