

Success Story:

PROBLEM:

Routine service on skid-steer loaders was leaving engines exposed to debris and other unintended objects.

SOLUTION:

Retrofit loaders with a custom-fit screen/gasket to provide protection from debris during service without interfering with air intake during loader operation.

Company Profile:
CGR Products

About:
Custom Fabricator of Flexible Materials
Founded in 1963
ISO 9001:2008 certified

Locations:
Greensboro, NC
Decatur, AL
Waukesha, WI

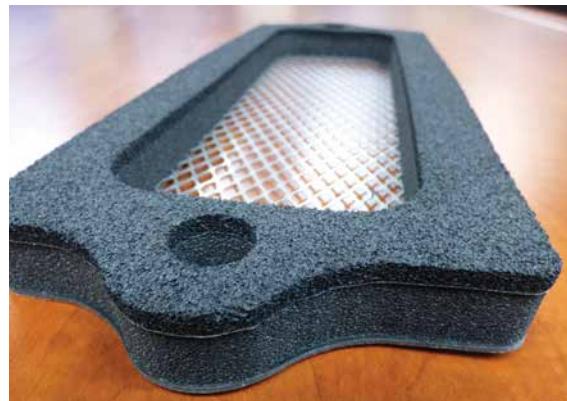
Serving Markets:
MRO Applications
Industrial OEMs – Automotive,
Appliance, Electrical, Small Engine,
Military and Government



Custom Part from CGR Products Helps Preserve and Protect Loader Engines

Loaders are a major investment for any company, so when routine maintenance procedures were leaving the engines of certain models of skid-steer loaders exposed to debris and other objects that could harm the equipment, the loader manufacturer had to take action. Skid-steer loaders may be categorized as “heavy equipment,” but developing a part that would solve this problem required almost surgical precision. The global manufacturer of heavy equipment turned to a trusted partner for help: *CGR Products*.

For nearly 50 years, CGR Products has provided custom rubber solutions for some of the biggest names in the automotive, small-engine, appliance, electrical and heavy-equipment industries. These solutions run the gamut from simple gaskets to complex engineered parts that play a critical role



Engineered For Success.



Stanford University installation in progress

in the functionality of equipment. As is often the case with CGR solutions, the part developed to solve the skid-steer loader problem looked simple, but embodied untold expertise in the design and fabrication of rubber and elastomeric components.

The Nitty-GRITTY of the Problem

Like most loaders, the cab of this particular four-wheel vehicle had to be raised (much like the hood of a car) to allow service technicians to access the engine. Unfortunately, this left the engine area exposed to such debris as dirt, rocks, or even the mechanic's tools, any of which could inadvertently fall into the engine air intake area. To protect the area, a screen was needed to prevent the debris from falling into the engine.

Because this part would be an add-on feature to existing equipment, the fit and seal had to be designed to create a tight seal with the molded parts of the loader. This was a challenge because the mating areas between the cab and the loader were somewhat irregular. The rubber parts had to have just the right amount of compressibility to completely seal the area, yet still have sufficient structural strength.

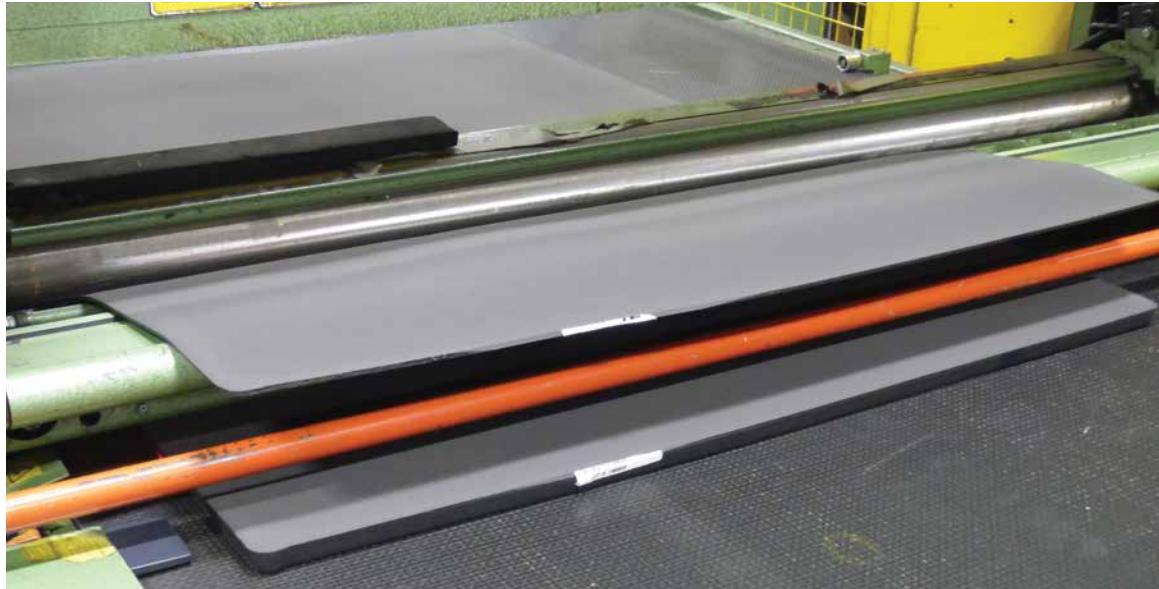
CGR Products: Proud to Be 'Part' of Many Solutions

As a custom fabricator of flexible, non-metallic materials, CGR Products fills gaps – both literally and figuratively.

Since opening in 1963, CGR Products has artfully positioned itself between material suppliers (e.g. Armacell) and a multitude of manufacturers whose brands are known worldwide. The "parts" that CGR produces in its North Carolina, Alabama and Wisconsin manufacturing facilities improve the functionality of products used and made by the automotive, pharmaceutical, appliance and countless other industries. Without CGR solutions, many well-known brands would not exist as we know them today.

Based in North Carolina, CGR Products has manufacturing facilities in Greensboro, NC, Decatur, AL, and Waukesha, WI. Plant operators in each of these locations collectively use more than 100 pieces of quality equipment, including splitters, die cutters, laminators and more.

This extensive machining capability, coupled with more than a half-century of custom fabrication expertise, has made CGR a go-to source for long-term, high-volume product solutions.



Two Foams, One Solution

CGR and the manufacturer consulted with an Armacell Component Foams Technical Manager to procure just the right material. Together they decided it would be best to incorporate two different foam materials, Ensolite® IV1 and Ensolite® EF0, to meet the demands of the application.

“The IV1 is a more robust material that supports the integrity of the part. The EF0 layer is a much softer, spongier material that conforms to the peaks and valleys in the molded plastic where it is applied, therefore creating a better seal,” explained Calvin Dean, Account Manager for CGR Products.

Ensolute IV1 has a higher compression deflection value of 4.0 psi @ 25% compression, giving the part an overall robust structure. It also is a blend of Nitrile/PVC/CR, which makes it resistant to oils and fuels. Ensolute EF0 has much lower compression values of 0.25 psi @ 25% compression, which allows it to conform more easily to the irregular surface of the loader. The two materials are bonded together with a 3M™ VHB™ adhesive that creates a permanent structural bond once it is cured. The bonded Ensolute foams are then attached to a 74-micron screen and a peel-and-stick adhesive backing is applied. All of the parts are cut and/or assembled at the CGR plant.

Delivery of the finished part involved just about every type of CGR machining and fabrication technology, which is extensive, and included:

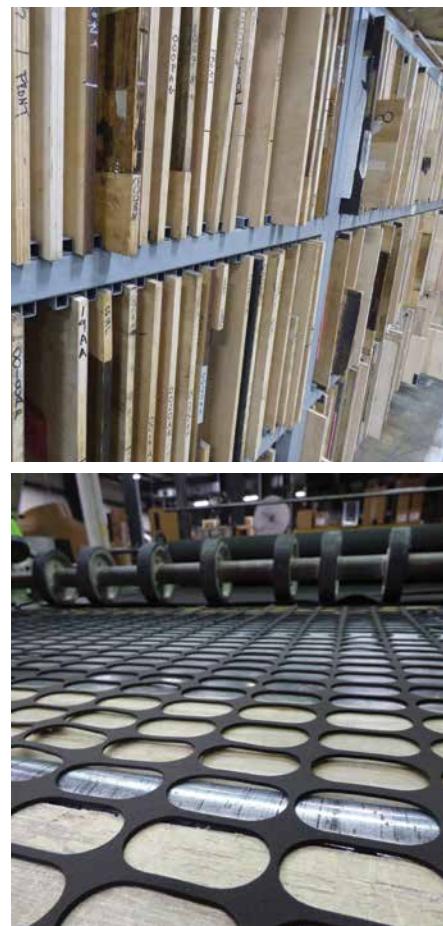
- Sheet Splitter and Skiving machine to cut Ensolute foam to the proper thicknesses

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- Heated platen laminator to laminate adhesive to the EF0 and IV1 foams
 - Die cutter to cut material into final shapes
 - Application of pressure sensitive adhesive (PSA)
 - Final assembly of the foam layers into one part

The result was an “Air Intake Guard” that has served the loader manufacturer for several years running, without incidence.

Building that kind of reliability into a part that is continuously exposed to rugged use and handling requires expertise in many areas, from mechanical engineering to materials selection. Working closely with Armacell technical experts, CGR has developed many such solutions.

“It is always a thrill to see a project like this come full circle, knowing that a major problem has been solved. CGR Products’ expertise and attention to detail ensures success, and helps demonstrate the versatility and reliability of Armacell products,” said Jeffrey Lippy, Armacell’s Business Director-Component Foam. “It’s one of the reasons we value our relationship with this first class fabricator.”



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