



Larsen Manufacturing 2021 Overview

**Larsen Mfg has been Stamping and Forming
all types of metals since 1950**

WHO IS LARSEN MANUFACTURING?

Core Competencies

- Precision Metal Stamping
- Precision Metal Fabrication
- Assembly Services (electro-mechanical assembly)
- In-House Powder Coating
- Progressive Tool Design & Manufacturing (In-House)
- Prototype and Short Run Production Cell
- Specialty Fabrication (Heavy Duty Weldments)
- Custom CNC Capabilities
- ESI / DFM / VA/VE



Larsen Focuses on Quality

- IATF 16949-2016
- TS16949 Certified
- ISO 9001-2008 Certified
- Now doing Virtual Audits and Plant Tours
- Stringent quality processes in place
 - Process control & monitoring at all phases of production
 - Vision and Laser scanner checks all flat blanks
 - All first off parts inspected and green tagged
 - Automotive Industry Action Group (AIAG) PPAP and FAI compliant
 - We deploy Lean, Six Sigma, 8D, and 5S processes

After safety, quality is Larsen's number 1 priority. We know that if we make quality parts on a consistent basis we will never shut down our customer's production lines



North American Locations



Corporate Headquarters

120,000 Sq. Feet in Mundelein, IL

A New In-House Powder Coating
Plant in Mundelein, IL

*Eco-Friendly Cleaning and Coating
Processes*



Southwest Manufacturing

80,000 + Sq. Feet in El Paso, TX
Expandable by additional 50,000 Sq.
ft.



Larsen Asian Manufacturing Partner



LUCKY HARVEST DONGGUAN



LARSEN MFG. HONG KONG



LUCKY HARVEST WUHAN



Diverse Markets Include:

- Automotive
- Electronics
- Energy
- Industrial
- Medical
- Appliance
- Entertainment
- Aerospace / Aviation
- Communications

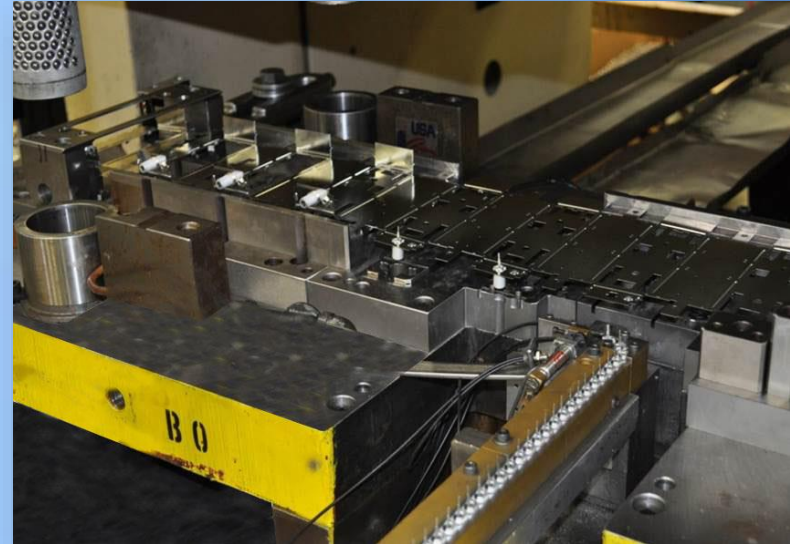


Note: **Blue-Chip Customer List** is available if requested.

STAMPING EQUIPMENT

✓ 34 PRESSES

- Ranging from 25 to 600 T
- 9 Small (25-80 T)
- 12 Medium (80-200 T)
- 8 Large (200-300 T)
- 5 X-Large (500-600 T)



✓ Press Bed sizes up to 144" x 72"

- ✓ 48" Servo Feed Capability
- ✓ In-Die Component Insertion Capabilities
- ✓ Die Transfer Program

STAMPING PLANT LOCATIONS

Mundelein IL



El Paso TX



PRESSES UP TO 600 TON



IN HOUSE TOOLING

✓ Progressive Metal Stamping

- Best Feature: Precision and Accuracy
- Sequential operations on the same press for lowest unit cost

✓ Compound Stamping

- Best Feature: Superior accuracy between holes & trim edge
- Commonly single-hit die with internal & external aspects of a part in one press stroke

✓ Automation Capabilities

- In-Die Tapping
- In-Die Hardware Insertion
- In-Die Labeling

✓ Drawn parts up to 5 inches in depth.



Material Types Processed

- **Pre-Finished Materials**
- Hot Dip Galvanized
- Electro Galvanized
- **Clad Material**
- **Quiet Steel**
- HSLA (High Strength Low Alloy)
- **200, 300, & 400 Series Stainless Steel**
- Aluminum
- Red Metals

Stamping Examples



This stamping is 2' by 4' feet



Additional Stamping Examples

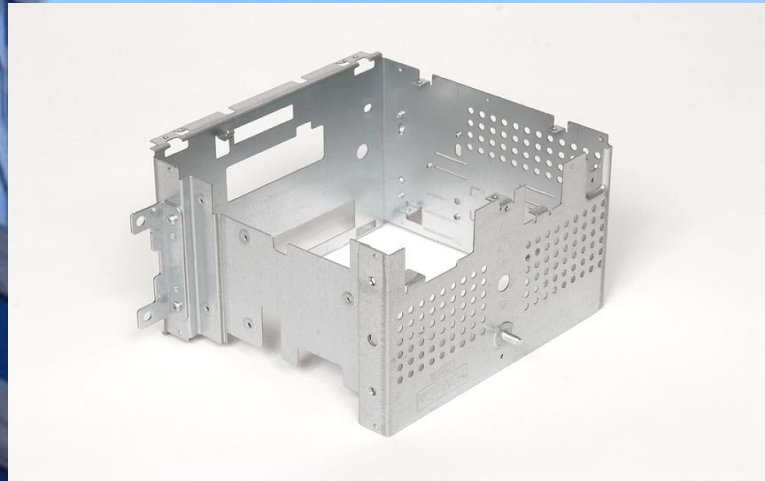
CLIMATE CONTROL



TRANSMISSION FILTERS



AUTO INFOTAINMENT



RF TUNER SHIELDS



FABRICATION EQUIPMENT

✓ Full Light and Heavy Fabrication Facilities

- Single component to Full Assembly
- All Finishing operations are Supported

✓ State-of-the Art Amada Equipment

- 2- 33-ton High Speed Turret Presses
- 1- 4000 Watt CW Laser w/ Nitrogen
- 1- 2000 Watt CW Laser w/ Nitrogen
- 6 - 88 ton electric/hydraulic Press Brakes
- 2 - 50 Ton Press Breaks

✓ MIG/TIG Welders, Spot Welders

✓ CD Stud Welding & Polishing

✓ Robotic Welding

✓ Hardware Insertion Equipment

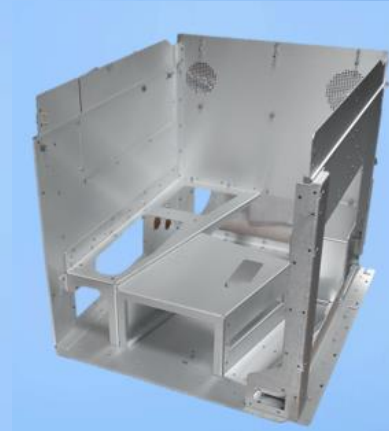
✓ Prototype cell for quick turns on new parts

✓ Versatile Assembly Cell Layout

✓ 2021 Capital for Additional Equipment Approved



Light Fabrication Examples



HEAVY FABRICATION

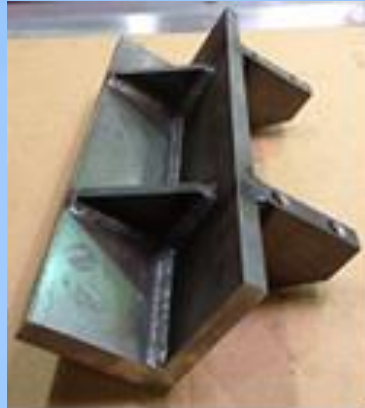
- Well managed facility and designated Program Managers working to cater to your custom or special heavy metal requirements
- Quality Work Instructions and proper training allow us to achieve excellent process repeatability



Heavy Fabrication Product Examples



Heavy Fabrication Product Examples



HEAVY FABRICATION & MACHINING

CUSTOM FABRICATED AND MACHINED ASSEMBLIES BUILT TO YOUR SPECIFICATIONS



GENIE LIFT
EXTENSION



BUS WHEEL
CHAIR LIFT



MARINE
INDUSTRY

POWDER COATING

- In-House **Eco-Friendly** state-of-the-art, custom, continuous Powder Paint line is designed to handle a wide range of part sizes and color requirements
- Our line's system and processes allow us to handle both high volume and high mix jobs
- **Larsen accepts RFQ's for Powder Coating only**



POWDER COATING

- ***Eco-Friendly*** -True 5 stage wash system
- Post wash dry-off oven
- Large powder booth to accommodate large parts
- Downdraft containment system in place for powder booth ventilation – eliminating possibility of contamination
- **Quick turn color change – any color**
- Programmable curing oven for custom curing needs based on part requirements and applications
- **2021 Capital Approved For Automatic Powder Application System**



Powder Coating Product Examples



Other Secondary Finishes

- Post zinc
- E-coat
- Heat treat
- Tin plate
- Silver plate



ASSEMBLY SERVICES

- Larsen does complete and partial assembly
- We purchase components from customers approved suppliers if required in their assemblies
- We establish dynamic cells complete with all tooling, fixturing and testing equipment (i.e. continuity testing)
- From simple sub assemblies to large complex parts including electronics
- Mechanical and electrical assembly



LARSEN
MANUFACTURING

Larsen Customer Focus - VA/VE

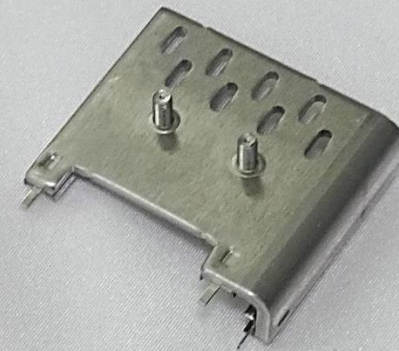
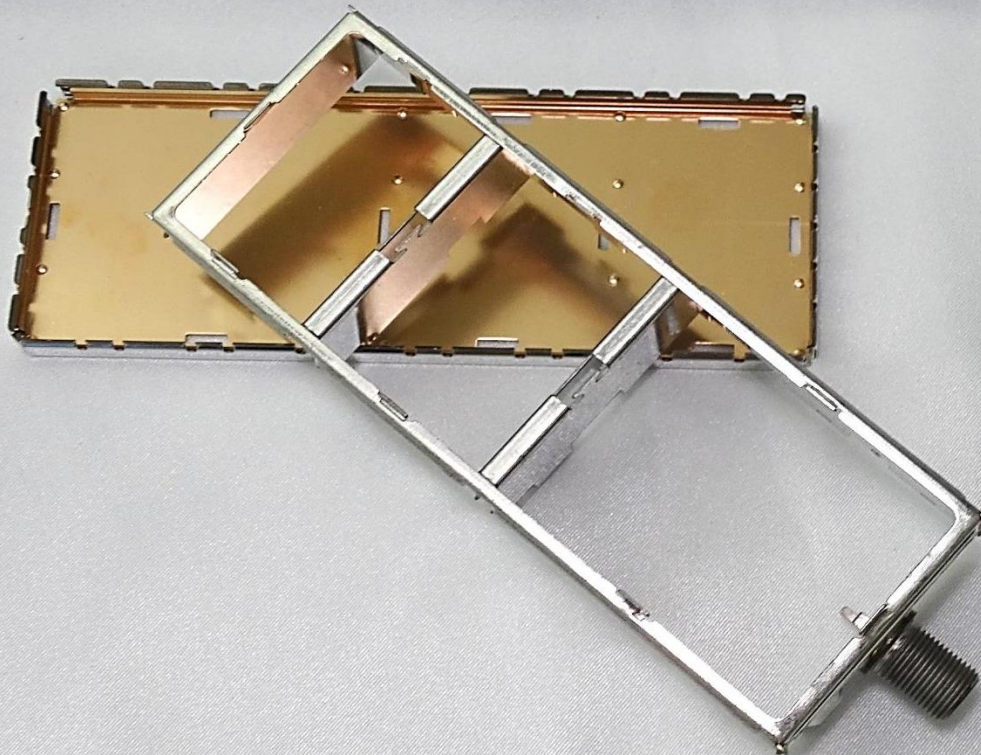
- Work with clients Early Supplier Involvement (ESI)
- **Drive cost reduction through Design For Manufacturability (DFM)**
 - Material Type, Material Reduction & Material Optimization
 - Hardware Elimination & Alternative Fastening Options
 - Automation to limit Secondary Operations
 - Finishing Requirements and Options
 - Tooling Cost Optimization
 - Critical Dimensioning

Larsen VA/VE Case Studies

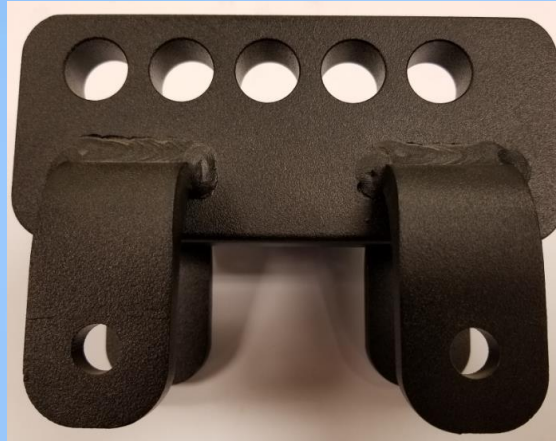
- **RF connector into shield:** With Early Supplier Involvement Larsen was able to eliminate an entire secondary operation within the assembly line using progressive stamping technology ~ 45% labor cost savings over \$1mm savings to customer.
- **Current Snap Lock Feature:** Larsen added this feature into a chassis design which eliminated spot welding in the corners of the tuner ~35% labor cost savings of over \$500k
- **Auto Labeling:** Apply label overlays automatically at the press, reducing labor by 50-75%
- **In All Cases:** Customers realized significant cost reductions



Stamping ESI, VA/VE Examples



Fabrication ESI, VA/VE Examples



Larsen's Key Focus is on Sustainability



- Sustainability is key to Larsen's Continuous Improvement
- Supported by all levels of organization
- Efforts include
 - High efficiency lighting
 - Installed a high-efficiency HVAC system and made improvements to finishing systems (ovens, booths and air control).
 - Zero-VOC paint, resulting in better environmental air quality and a safer working environment
 - **Filtration and reuse systems that significantly increase the life of our water baths and reduce water usage and waste water.**
 - **Recycling to reduce solid waste**
 - **Returnable/Reusable packaging for our products.**





Thank You For Your Time

*We Look Forward to New Opportunities and Building
Strong Long-Term Team Partnerships*

www.larsenmfg.com

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