

## PACKAGE ASSEMBLY (KEY PROCESSES)

The Egide Group is a leading developer and manufacturer of hermetic packages, housings, and assemblies for micro-electronic and optical product applications, having manufacturing facilities in the USA and Europe, and global customer support locations.

Our custom products can be found in the aerospace, defense, medical, opto-electronics, infra-red, sensors, RF, communications, and other markets around the globe.

Industry recognized, best in class package assembly capabilities include High Temp Cofired Ceramic, thermal management materials, state of the art plating services\*, precision machining, specialized sealing/brazing/soldering processes supporting Glass-To-Metal-Seal and Ceramic-to-Metal-Seal plus testing and inspection to ensure environmental, hermeticity and quality indices.

\* Please refer to our Technical Information Sheet for Plating.

## UNIQUE TECHNICAL EXPERIENCE

- Ceramic-metal and glass-metal seals
- Custom package designs
- Complex multi-material assemblies
- Leader in thermal dissipation materials

## PACKAGE ASSEMBLIES 'KNOW HOW'

- Extensive experience in the complexities of joining dissimilar materials, controlling CTE, in the manufacture of hermetic packages
- Proprietary formulas of ceramic powders, Tungsten inks, and metallurgy processing
- Migrating towards Industry 4.0

## PRECISION MACHINING

With a wide range of equipment and capabilities Egide supports precision component manufacturing for package assemblies for a variety of product applications including aerospace, microelectronics, optoelectronics, medical and sensor product applications.

**CNC Machining:** 3/4/5-axis equipment from Haas, Mazak, Fanuc & Mori-Seki with equipment platforms and capabilities to support precision machining of microelectronic components. Typical material sets include Kovar, MoCu, WCu, Copper, Aluminum, Titanium, Stainless Steel, and more.

**Wire EDM:** Mitsubishi equipment to produce thin wall profiles as well as precision features or outlines. We consistently hold tolerances of <.0005" (0.01mm) and have the experience necessary to cut precision ring frames, preforms or other very tight tolerance parts

**Dicing:** ADT equipment to cut both alumina and metallic components, capable of holding dimensional tolerances of <.0005" (0.01mm) and producing shims, spacers or sub mounts from .040"sq to 3"sq.

Additionally, we have laser marking, 3d printing, lapping, grinding, and blasting processes that allow us to manufacture a truly broad range of products.

## HIGH TEMP CO-FIRED CERAMIC MANUFACTURE

Egide performs in-house development and manufacturing of its proprietary HTCC technology, from the ceramic powders to the final components. The conductive inks are also developed and made internally. The HTCC production and R&D activities are fully integrated at our Europe and USA facilities.

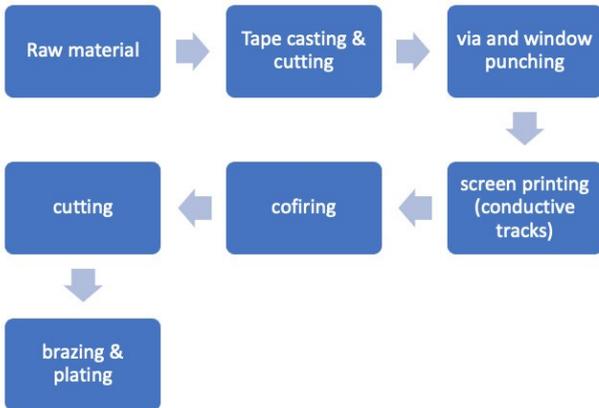


Figure 1: ceramic manufacturing process flow



Figure 2: Ceramic and metal connector for an IR camera

## SEALING, SOLDERING & BRAZING

Egide’s core competencies of hermetic package design and assembly incorporates various brazing, sealing and soldering technologies such as:

Brazing (>450°C): Cu, CuAu, Ag, CuAg

Glass Sealing: Matched (7070/7052), Compression

Soldering (<450°C): AuSn, SAC Alloys, Tin Lead Alloys

Ceramic: High Temperature Cofired Ceramic (Al<sub>2</sub>O<sub>3</sub>), Co-Axial Ceramic

From joining of specialty metals to glass sealing of complex machined housings, let Egide’s know-how assist you in your next project.

Tradename	Process	°C	Process	Tradename
7052, 7070	Matched	Glass Sealing	Cu <sub>100</sub>	OFHC Copper
			Au <sub>100</sub>	Gold
			Cu <sub>65</sub> Au <sub>35</sub>	Premabraze 407
			Ag <sub>100</sub>	Silver
			9013	Compression
Ag <sub>65</sub> Cu <sub>20</sub> Pd <sub>15</sub>	Premabraze 265			
Ag <sub>72</sub> Cu <sub>28</sub>	Silvaloy B72			
Au <sub>88</sub> Ge <sub>12</sub>	Premabraze 880			
Au <sub>80</sub> Sn <sub>20</sub>	Premabraze 800			
	Soldering	Soldering	Sn <sub>96.5</sub> Ag <sub>3</sub> Cu <sub>.5</sub>	SAC305
			Sn <sub>60</sub> Pb <sub>40</sub>	Tin Lead