

Component: DRO Housing

(Summary)

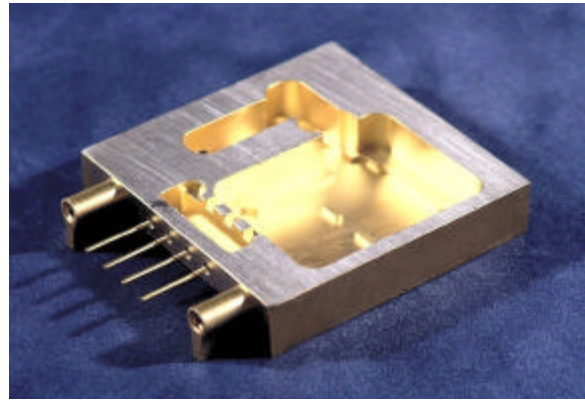
Challenge: This defibrillating resonating oscillator was growing in volume requirements. Traditionally machined because of low quantities, challenges to reduce cost while maintaining precision, hermiticity, and the same co-efficiency of thermal expansion were presented to FloMet.

Solution: A CTE tailored Fe Ni feedstock was developed for the application. The customer and FloMet worked together to create a part with minimum weight. No machining, incorporation of additional features that had been separate assembly parts attained a superior level of Tekna Seal finished hermeticity.

(Details)

Telecommunication and other microelectronic devices need to be protected by being sealed in a hermetic package. This housing is used in a microwave telecom application. It was originally developed by machining of a popular Fe 49% Ni alloy. The material is expensive to throw away chips, and is "tough and gummy" to machine also.

FloMet worked with the customer to convert the part to MIM manufacture substantially reducing the weight by net shape fabrication. Also, no chip MIM fabrication reduced overall product material cost. A feedstock was



developed using Fe Ni that repeats the CIE of the original wrought alloy. Another added benefit was the shape incorporation of the threaded posts that had been separated "stand offs" with longer bolts through them, reducing assembly components. All eight threaded holes were molded into the part.

FloMet went to Tekna Seal, a glass-to-metal sealer under the same ownership as FloMet, to complete the glass-to-metal sealing and feed through pin assembly. Final nickel/gold plating was subcontracted as the only outside secondary operation.

When sintered, the part was in excess of 98% density. When finished by Tekna Seal, the hermeticity was tested by an independent certifying lab and found to be less than 2.0×10^{-10} . atm cc/sec of helium. This is better than twice the order of magnitude of the point specification.

MIM achieved the cost target by greater than 60% of the original wrought design.