

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

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Rigid bonded glass metals sealing Facility (GMS)

Overview

Hermetic glass to metal sealing (GMS) are extensively used in electronic and electrical engineering and cover a wide range of applications in which the sealing glass serves as an insulator. The same GMS in the field of vacuum science and engineering the seal act not only as insulator also an impervious layer in order to maintain the vacuum level. The GMS technology not only serves for engineering filed and it's extensively applied in bio medical science. The GMS occupy the recent advancement in the field of non-conventional energy such as solar thermal and solid oxide fuel cell (SOFC). Various glass composition and verity of metals need to be seal depend upon the applications

Key Features

- Rigid bonded glass and metal can be join by single stroke.
- Borosilicate glass and Stainless steel metal flange can be join by intermediate layer coating on steel.
- Maximum size of 130mm dia glass tube can be process.
- Semi-automatic fabricating machine



Fig: GMS for solar thermal

Potential Applications

- Solar thermal receiver tubes
- High temperature batteries
- Glass metal Vacuum sealing



Fig: Feasibility trial samples

Technology Readiness Level (TRL)

- Feasibility studies on ss 410 and borosilicate glass tube was done.
- Jig and fixture design and fabrication was completed
- Induction heating system with Jig and fixture fabrication was completed.
- The function of the joining process need to be automated by PLC

Major Patents / Publications

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Fig: Semi-automated GMS fabrication facility

IPDI : Intellectual Property Development Indices

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