

Category: Materials, Coatings & Processes

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Super Plastic Forming (SPF) combined with Diffusion Bonding

The technology provider is one of the worldwide leading companies for Super Plastic Forming (SPF). For manufacturing integral constructions SPF can be combined with diffusion bonding.

SPF technology:

SPF (Super Plastic Forming) is a process for the economic production of thin-walled three-dimensional objects made of aluminium, titanium and steel alloys. The characteristic of SPF is an extremely high flowability. Titanium reaches this condition in a hot press when heated up to 900 °C. Under comparatively low gas pressure, the material forms over the shape of the forming die. Extremely thin-walled but rigid designs are possible. The process is governed by specifically developed SPF-parameters and an advanced tooling concept. This method allows to adjust the panel thickness as required.



SPF/DB technology:

SPF/DB technology:

SPF/DB (Super Plastic Forming/Diffusion Bonding) is a process for the economic production of three-dimensional objects and sandwich structures made on titanium. A separating agent is placed on defined areas between titanium sheets. Temperatures of over 900 °C and gas pressure are applied and the unmasked areas are bonded by DB. The flat sandwich is inflated - integrated webs are formed by SPF.

Innovative Aspects:

Application of these up-to-date forming technologies allow for completely new innovative solutions and savings by means of higher component integration, reduced material thickness and economic processes. The essential advantages are:

SPF units:

- greater design freedom for high performance aluminium, titanium and steel alloys
- thin-walled, more complex spherical three-dimensional objects made of high-strength materials
- higher economic value by lower tooling costs and material reduction.

SPF/DB units:

- three-dimensional objects with component integration of highest complexity
- greater design freedom
- integrated SPF/DB process reduces stages of production.

Application Areas:

Amongst others, application of the process is possible for:

- special vehicle construction, small series such as racing cars, prototypes, emergency vehicles
- off-Shore applications
- engineering, e. g. of heat exchangers
- chemical industry
- medical engineering.

Cooperation:

Offered are services of consulting, engineering, development and production of individual items, prototypes and small series for all forming processes for titanium, steel and aluminium alloys.