Press release

Application of PTFE membranes to electronic casings in motor vehicles

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Telsonic's SONIQTWIST® torsional technology is used to weld thin PTFE membranes to PA6.6

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For good air exchange

(Erlangen) To weld a thin PTFE membrane to PA6.6 so that it is leak-proof and without damage is one of the more demanding tasks of ultrasonics technology. Especially since conventional methods often cause the thin bars in casings to break. With Telsonic's SONIQTWIST® ultrasonic torsional welding process a machine and plant manufacturer succeeds in producing reliable weld connections. The process ensures that electronic casings in the engine compartment of motor vehicles have adequate humidity and hot air exchange.

"The exchange of air and the dispersal of moisture is extremely important for the proper function of electronic components in the engine compartment of motor vehicles", explains Wolfgang Ott, Telsonic's head of the department for plastic welding. This is achieved by an equalisation opening in the cover of the PA6.6 casing. Below this opening which, for greater stability, is crossed by two thin bars, a water- and pressure-tight PTFE membrane is welded. Any excess pressure generated inside the casing due to the heat in the engine compartment can escape through this membrane. It also allows moisture from condensate to disperse from the inside to the outside.

Producing reliable welds with critical materials

It was not possible to weld this very delicate thin membrane using the longitudinal ultrasonics process because the materials did not bond properly. Furthermore, owing to the directional vibrations the thin bars were often damaged. The solution was found in the SONIQTWIST® torsional ultrasonic welding process offered by Telsonic AG. The pioneer of ultrasonics succeeded with a standard TSF750 welding machine which was adapted to the production plant. This welding process with the unique torsional technology is reliable and repeats welds accurately irrespective of the different materials and combinations. The first-tier supplier produces about 4000 parts per day.

Contact and information:

TELSONIC AG
Reinhard Züst
Industriestrasse 6b
CH-9552 Bronschhofen
Head office
Tel +41 (0)71 913 98 88
reinhard.zuest[at]telsonic.com
www.telsonic.com

Telsonic in Germany
TELSONIC GmbH
Wolfgang Ott
Gundstrasse 15
D-91056 Erlangen
Tel. +49 (0) 9131 68789 0
info@telsonic.de
www.telsonic.de

In the process, the welding machines weld different PTFE material combinations to a range of different polyamide materials of the casing covers which, depending on the type, may contain more or less glass particles. The converters convert the 1000 Watt output produced by the latest generation generator into a torsional movement and apply it evenly and without disturbance to the welding zone. The weld connection is perfect and the bars remain intact.

Sonotrode also performs handling operations

In addition, the welding machine performs handling operations as it collects and assembles parts. The sonotrode is fitted with a vacuum system with the help of which it collects the pre-cut membrane and places it at exactly the position where it is welded. No separate handling unit is required. The vacuum system can also be used to cut the membrane directly out of the carrier board or backing tape and place it in position where it is then welded. Maximum automation for a good air exchange.

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((Company information on Telsonic AG))

Pioneer and technology leader in Switzerland

Telsonic AG is a pioneer in ultrasonics technology. The company, which was founded in 1966, has subsidiaries in Germany, England, South-East Europe, China and the USA, is part of a joint venture in India and has agencies in many countries. Today, TELSONIC is one of the leading ultrasonics companies worldwide and owns numerous patents. Ultrasonics technology is used for welding, cut-and-seal welding, cleaning and screening as well as in chemical processes and packaging. Having introduced the Torsional Welding Power Wheel, Telsonic has again achieved leadership in technology. The technology has spawned new solutions in many automotive engineering applications and has paved the way for numerous potential savings.

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