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CONTENTS

SCIENTIFIC AND TECHNICAL

- Taraborkin L.A. and Golovko V.V.* Calculation model of formation of nonmetallic inclusions of multilayer morphology in weld metal 2
- Markashova L.I., Poznyakov V.D., Shelyagin V.D., Berdnikova E.N., Bernatsky A.V. and Alekseenko T.A.* Effect of metal structure on service properties of high-strength steel welded joints produced using different methods of welding 7
- Knysh V.V., Solovej S.A., Nyrkova L.I. and Miryanin V.N.* Influence of corrosion damage on cyclic life of butt welded joints strengthened by high-frequency mechanical peening 14
- Stefaniv B.V. and Sabadash O.M.* Effect of structure of joint zone of diamond layer with hard-alloy substrate of brazed cutters on their service life 19

INDUSTRIAL

- Kuzmenko G.V., Taganovsky V.M. and Sidorenko V.L.* Electric arc welding and surfacing in repair of rails of Kyiv underground 23
- Poznyakov V.D., Demchenko Yu.V., Denisenko A.M., Zhuk G.V. and Kozyrev V.B.* Application of welding for restoration of cast iron railing of the Kotzebue Bridge in Odessa 26
- Borisov Yu.S., Vojnarovich S.G., Kislitsa A.N., Kalyuzhny S.N. and Glukhovskiy V.Yu.* Application of the method of microplasma spraying for manufacturing resistance heating element 33
- Kuskov Yu.M., Soloviov V.G., Osechkov P.P. and Osin V.V.* Electroslag surfacing of billet end faces with application of consumable and nonconsumable electrodes 38

INFORMATION

- Laser Technology and Equipment for Manufacture of Multilayer Bellows 42
- Unit for Manual Laser Welding 43
- Laser Welding of Body Elements with Loose Edges 43

LASER TECHNOLOGY AND EQUIPMENT FOR

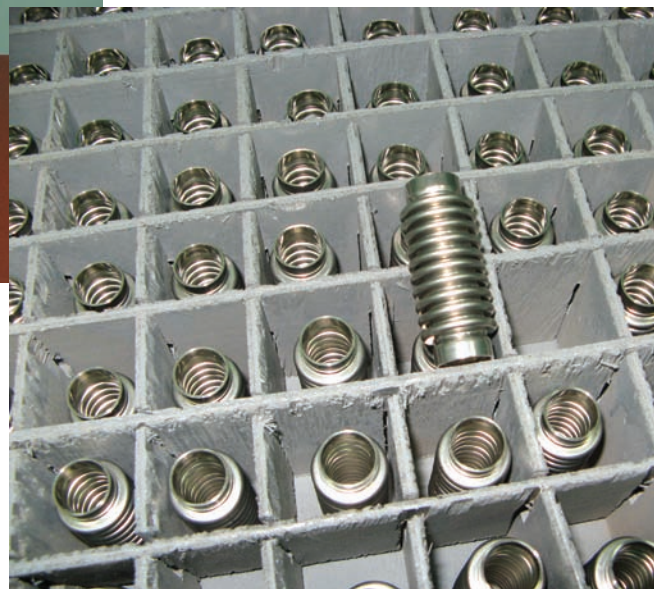
MANUFACTURE OF MULTILAYER BELLOWS

PWI has developed the technology and equipment for laser welding of thin-wall pipes of stainless steel for manufacture of multilayer bellows, which carry and divide liquid and gaseous media, including aggressive ones.

Following the developed technology the bellow consists of several laser-welded thin-wall pipes (from 3 to 10 layers) of 0.15–0.20 mm thickness each. The bellow will keep working capacity in such a multi-layer bellow structure, even if one welded joint breaks in process of operation.

Development advantages:

- > reduced amount of rejects from 50% in argon-arc welding to 0.5 % in laser welding
- > 4 times rise of productivity
- > cyclic strength, corrosion resistance and other characteristics of laser-welded multilayer bellow 1.5–4 times exceed the characteristics of single layer bellow made by argon-arc welding (depending on number of layers and bellow sizes).



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UNIT FOR MANUAL LASER WELDING

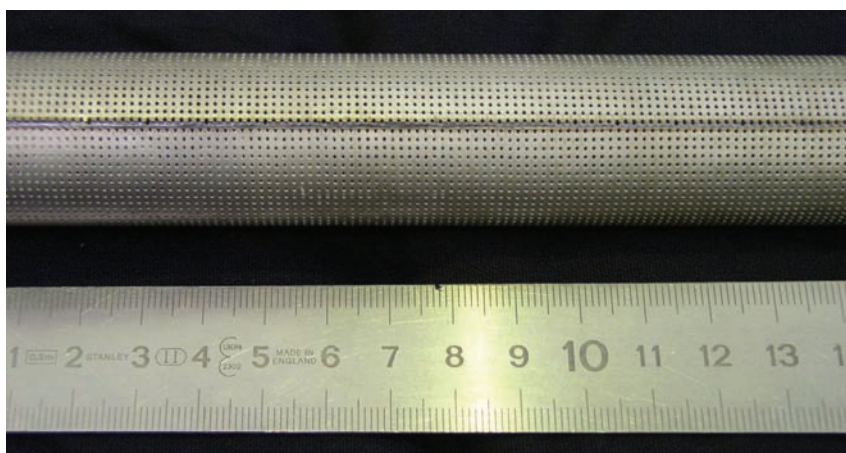
PWI by the order of carriage works (Changchun, China) has developed the unit for manual laser welding of car elements of modern high-speed trains. Weight-dimensions characteristics of the developed tool allow welding in different spatial positions. Carried metallographic investigations and mechanical tests of the welds produced with developed manual laser tool showed that the level of mechanical characteristics of given welded joints are as good as characteristics of the joints made using automatic laser welding.



LASER WELDING

OF BODY ELEMENTS WITH LOOSE EDGES

A technology for brazing of body elements of filters of 0.5–0.6 mm thickness stainless steels for paints and lacquers was replaced with laser welding using filler material in form of metallic powder. As a result, amount of defective products became 10 times smaller (spoilage in laser welding is 0.5 %). Strength and corrosion resistance of the joint is on the level of body base metal.



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