

**Editor-in-Chief B.E.Paton**

**Editorial board:**

Yu.S.Borisov	V.F.Khorunov
A.Ya.Ishchenko	I.V.Krivtsun
B.V.Khitrovskaya	L.M.Lobanov
V.I.Kirian	A.A.Mazur
S.I.Kuchuk	Yatsenko
Yu.N.Lankin	I.K.Pokhodnya
V.N.Lipodaev	V.D.Poznyakov
V.I.Makhnenko	K.A.Yushchenko
O.K.Nazarenko	A.T.Zelnichenko
I.A.Ryabtsev	

**International editorial council:**

N.P.Alyoshin	(Russia)
U.Diltey	(Germany)
Guan Qiao	(China)
D. von Hofe	(Germany)
V.I.Lysak	(Russia)
N.I.Nikiforov	(Russia)
B.E.Paton	(Ukraine)
Ya.Pilarczyk	(Poland)
P.Seyffarth	(Germany)
G.A.Turichin	(Russia)
Zhang Yanmin	(China)
A.S.Zubchenko	(Russia)

**Promotion group:**

V.N.Lipodaev, V.I.Lokteva  
A.T.Zelnichenko (exec. director)

**Translators:**

A.A.Fomin, O.S.Kurochko,  
I.N.Kutianova, T.K.Vasilenko  
PE «Melnik A.M.»

**Editor:**

N.A.Dmitrieva

**Electron galley:**

I.S.Batasheva, T.Yu.Snegiryova

**Address:**

E.O. Paton Electric Welding Institute,  
International Association «Welding»,  
11, Bozhenko str., 03680, Kyiv, Ukraine  
Tel.: (38044) 287 67 57  
Fax: (38044) 528 04 86  
E-mail: journal@paton.kiev.ua  
http://www.nas.gov.ua/pwj

State Registration Certificate  
KV 4790 of 09.01.2001

**Subscriptions:**

**\$324**, 12 issues per year,  
postage and packaging included.  
Back issues available.

All rights reserved.

This publication and each of the articles  
contained herein are protected by copyright.  
Permission to reproduce material contained in  
this journal must be obtained in writing from  
the Publisher.

Copies of individual articles may be obtained  
from the Publisher.

**CONTENTS**

**SCIENTIFIC AND TECHNICAL**

<i>Krivtsun I.V., Semyonov I.L. and Demchenko V.F.</i> Numerical analysis of the processes of heating and convective evaporation of metal in pulse laser treatment .....	2
<i>Makhnenko V.I., But V.S., Kozlitina S.S. and Olejnik O.I.</i> Risk of fracture of pressurised main pipeline with defects of the type of wall thinning during repair .....	7
<i>Ustinov A.I., Zinkovsky A.P., Tokar I.G. and Skorodzievsky V.S.</i> Possibilities for lowering dynamic stress in structural elements of machines using nanostructured coatings .....	10
<i>Chernykh I.V. and Rachkov S.A.</i> Modelling of the process of induction heating of pipes within the weld zone .....	16
<i>Vasiliev Yu.S., Parshutina L.S. and Chukashkin A.N.</i> Development of the technology for formation of mechanical and glued-mechanical joints by the punching method .....	19
<i>Levchenko O.G., Lukianenko A.O. and Polukarov Yu.O.</i> Experimental and calculation determination of the concentration of harmful materials in the work zone air in covered-electrode welding .....	24

**INDUSTRIAL**

<i>Kravchuk L.V., Lyashenko B.A., Tsybanov G.V., Kuriat R.I., Bujskikh K.P. and Nalimov Yu.S.</i> Assessment of the effectiveness of repair technologies for power plant operation .....	27
<i>Kozulin S.M., Lychko I.I. and Kozulin M.G.</i> Increase of resistance of welds to formation of crystalline cracks in repair of bands of kiln furnaces using electroslag welding .....	32
<i>Kasatkin O.G., Tsaryuk A.K., Skulsky V.Yu., Gavrik A.R. and Moravetsky S.I.</i> Peculiarities of technology of welding pipelines of dissimilar steels in nuclear power engineering .....	35
<i>Pismenny A.S. and Kislytsyn V.M.</i> Influence of weld metal impact treatment on welded joint strength .....	38

**BRIEF INFORMATION**

<i>Dolinenko V.V., Kolyada V.A., Skuba T.G. and Shapovalov E.V.</i> Procedure of evaluation of transportation lags in weld formation ACS .....	41
Thesis for a scientific degree .....	43

**NEWS**

Technological Seminar of Deloro Stellite in Zaporozhie .....	46
4th International Seminar «New Directions of Research in the Field of High-Frequency Electric Welding of Soft Live Tissues» .....	50
Forum-Seminar of Limited Liability Company «Binzel Ukraine» .....	52
Developed at PWI .....	18, 51