

UNIVERSITY OF ŽILINA



TRANSCOM PROCEEDINGS 2015

**11-th EUROPEAN CONFERENCE
OF YOUNG RESEARCHERS AND SCIENTISTS**

under the auspices of

Tatiana Čorejová
Rector of the University of Žilina

**SECTION 5
MATERIAL ENGINEERING
MECHANICAL ENGINEERING TECHNOLOGIES**

ŽILINA June 22 - 24, 2015
SLOVAK REPUBLIC

Edited by Vladimír Bulej, Michal Mokryš

© University of Žilina, 2015

ISBN: 978-80-554-1047-0

ISSN of Transcom Proceedings CD-Rom version: 1339-9799

ISSN of Transcom Proceedings online version: 1339-9829

(<http://www.transcom-conference.com/transcom-archive>)

TRANSCOM 2015

11th European conference of young researchers and scientists

TRANSCOM 2015, the 11th international conference of young European scientists, postgraduate students and their tutors, aims to establish and expand international contacts and co-operation. The main purpose of the conference is to provide young scientists with an encouraging and stimulating environment in which they present results of their research to the scientific community. TRANSCOM has been organised regularly every other year since 1995. Between 160 and 400 young researchers and scientists participate regularly in the event. The conference is organised for postgraduate students and young scientists up to the age of 35 and their tutors. Young workers are expected to present the results they had achieved.

The conference is organised by the University of Žilina. It is the university with about 13 000 graduate and postgraduate students. The university offers Bachelor, Master and PhD programmes in the fields of transport, telecommunications, forensic engineering, management operations, information systems, in mechanical, civil, electrical, special engineering and in social sciences incl. natural sciences.

SECTIONS AND SCIENTIFIC COMMITTEE

1. TRANSPORT AND COMMUNICATIONS TECHNOLOGY.

Scientific committee: Adamko Norbert (SK), Bugaj Martin (SK), Buzna Ľuboš (SK), Drozdziel Paweł (PL), Jánošíková Ľudmila (SK), Madleňák Radovan (SK), Rievaj Vladimír (SK), Teichmann Dušan (CZ)

2. ECONOMICS AND MANAGEMENT.

Scientific committee: Blašková Martina (SK), Hittmár Štefan (SK), Borkowski Stanisław (PL), Gregor Milan (SK), Kucharčíková Alžbeta (SK), Matuszek Józef (PL), Mičieta Branislav (SK), Rostášová Mária (SK), Sroka Włodzimierz (PL), Tomová Anna (SK), Zhivitskaya Helena (BLR)

3. INFORMATION AND COMMUNICATION TECHNOLOGIES.

Scientific committee: Dado Milan (SK), Hudec Róbert (SK), Kharchenko Vyacheslav (UKR), Klimo Martin (SK), Kršák Emil (SK), Matiaško Karol (SK), Pancierz Krzysztof (PL), Spalek Juraj (SK), Švadlenka Libor (CZ), Vaculík Juraj (SK), Vašínek Vladimír (CZ), Vrček Neven (HR)

4. ELECTRIC POWER SYSTEMS. ELECTRICAL AND ELECTRONIC ENGINEERING.

Scientific committee: Altus Juraj (SK), Brandštetter Pavel (CZ), Bury Peter (SK), Cacciato Mario (I), Čápová Klára (SK), Dobrucký Branislav (SK), Chernoyarov Oleg Vyacheslavovich (RU), Janoušek Ladislav (SK), Luft Mirosław (PL), Szychta Elżbieta (PL), Špánik Pavol (SK), Vittek Ján (SK)

5. MATERIAL ENGINEERING. MECHANICAL ENGINEERING TECHNOLOGIES.

Scientific committee: Adamczak Stanisław (PL), Guagliano Mario (I), Konečná Radomila (SK), Kunz Ludvík (CZ), Kuric Ivan (SK), Meško Jozef (SK), Neslušan Miroslav (SK), Takács János (H), Ungureanu Nicolae Stelian (RO)

6. MACHINES AND EQUIPMENT. TRANSPORT MEANS. APPLIED MECHANICS.

Scientific committee: Gerlici Juraj (SK), Chudzikiewicz Andrzej (PL), Malcho Milan (SK), Medvecký Štefan (SK), Zapoměl Jaroslav (CZ), Žmindák Milan (SK)

7. CIVIL ENGINEERING.

Scientific committee: Bujňák Ján (SK), Ižvolt Libor (SK), Segalini Andrea (I)

8. NATURAL SCIENCES (APPLIED MATHEMATICS). SOCIAL SCIENCES.

Scientific committee: Dopita Miroslav (CZ), Dzhalladova Irrada (UKR), Grecmanová Helena (SK), Katuščák Dušan (SK), Marčoková Mariana (SK), Růžičková Miroslava (SK), Šindelářová Jaromíra (CZ)

9. SECURITY ENGINEERING. FORENSIC ENGINEERING.

Scientific committee: Kasanický Gustáv (SK), Kohút Pavol (SK), Navrátil Leoš (CZ), Řehák David (CZ), Sventeková Eva (SK), Šimák Ladislav (SK), Zagorecki Adam (UK), Zamiar Zenon (PL)

ORGANIZING COMMITTEE

CHAIRPERSONS

Čelko Ján, Bokůvka Otakar

EXECUTIVE SECRETARY

Vráblová Helena

MEMBERS

Bašťovanský Ronald, Belan Juraj, Bendík Ján, Brída Peter, Brůna Marek, Bulej Vladimír, Cíba Jakub, Čičmancová Silvia, Dulina Ľuboslav, Ďurovec Martin, Florková Zuzana, Gašová Zuzana, Grajcaríková Petra, Grejták Marek, Herda Miloš, Hőger Marek, Hrbček Jozef, Hrboš Marián, Hudák Martin, Koman Gabriel, Kutaj Milan, Kuzmová Mária, Kvet Michal, Magdolen Marián, Malichová Eva, Maňurová Mária, Masárová Gabriela, Metruk Rastislav, Murgašová Veronika, Nosek Radovan, Odrobiňák Jaroslav, Olešnaníková Veronika, Oriešková Veronika, Palkechová Marcela, Porubiaková Andrea, Pšenáková Zuzana, Račko Ján, Rusinková Jana, Rypáková Martina, Semanová Štefánia, Stankovičová Zuzana, Šarafín Peter, Šimková Ivana, Šušlik Ľuboš, Vaško Alan, Vincúrová Gabriela.



SECTION 5 MATERIAL ENGINEERING MECHANICAL ENGINEERING TECHNOLOGIES

REVIEWERS:

Belan Juraj	Liptáková Tatiana
Bokůvka Otakar	Markovičová Lenka
Bolibruchová Dana	Meško Jozef
Bronček Jozef	Mičian Miloš
Brůna Marek	Mičietová Anna
Bulej Vladimír	Moravec Ján
Císar Miroslav	Neslušan Miroslav
Czán Andrej	Nový František
Čilliková Mária	Palček Peter
Čuboňová Nadežda	Pastirčák Richard
Donič Tibor	Pilát Peter
Drbúl Mário	Pilc Jozef
Ďurčanský Peter	Sládek Augustín
Fabian Peter	Stančeková Danko
Hrček Slavomír	Šajgalík Michal
Hurtalová Lenka	Tillová Eva
Konečná Radomila	Trško Libor
Koňár Radoslav	Uhrčík Milan
Kopas Peter	Uríček Juraj
Kuba Jozef	Váško Alan
Kumičáková Darina	Váško Milan
Kuric Ivan	Zatkalíková Viera

Note:

Author/s are responsible for language contents of their papers



Optimization of Welding of the Truck's Rear Axle Semi-housing

¹Vukić Lazić, ²Dušan Arsić, ³Ružica R. Nikolić, ⁴Srbislav Aleksandrović,
⁵Milan Djordjević, ⁶Branislav Hadzima

^{1,2,3,4,5}University of Kragujevac, Faculty of Engineering, Sestre Janjić 6, 34000 Kragujevac, Serbia
^{3,6}University of Žilina, Research Center, Univerzitna 1, 010 26 Žilina, Slovakia

E-mails: ¹vlazic@kg.ac.rs; ²dusan.arsic@fink.rs; ³ruzicamikolic@yahoo.com; ⁴omdlab@kg.ac.rs;
⁵milan.djordjevic@fink.rs; ⁶branislav.hadzima@rc.uniza.sk

Abstract. The welding technology of the truck's semi-housing is presented in this paper. Steels of different mechanical properties and chemical composition were tested and influence of welding on those base metals was monitored. Their weldability was first analyzed (semi-housing tube, ring and flange), then the welding procedure and filler metals were selected and finally the welding technological parameters were defined. The analytical (computational) methods, the TTT diagrams were applied for estimates of the base metals weldability, as well as the experimental methods based on hardness measurements in the weld's critical zones and analysis of their microstructure.

Keywords: Welding, truck, semi-housing, cored wire, high strength steel.

1. Introduction

The semi-housing assembly with the ring and flange is manufactured by welding. All the necessary dimensions are being measured from the front of the smaller diameter of the semi-housing tube (Figure 1) [1]. The welding procedure assumes welding of a flange (3) (fillet joint 5×5) and then the ring (2) with the fillet weld of the same dimensions. After that the other side of the flange is welded by the fillet weld of dimensions 7×7 which is turned towards the ring. During the whole welding period positioning was done by the special tools. The positioner also has a role to prevent appearance of deformation on the assembly.

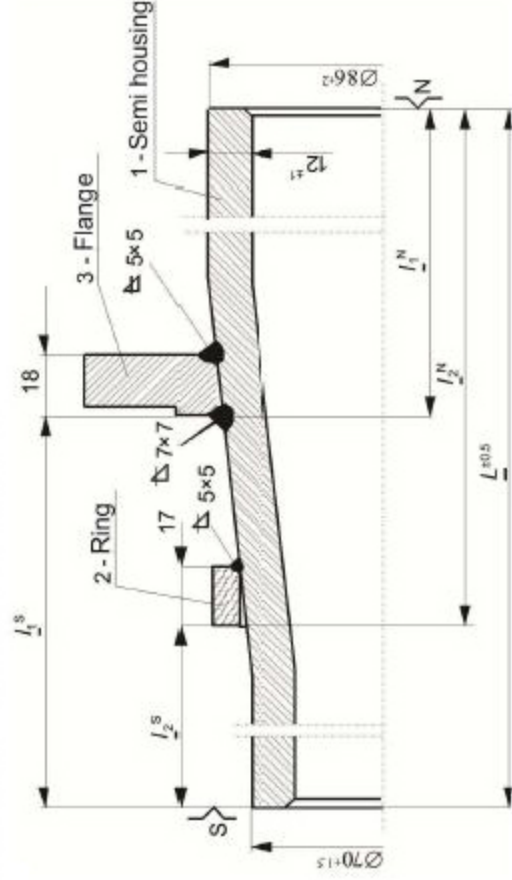


Fig. 1. Semi-housing assembly with the ring and the flange

