***SMAW Repair Welding Process For Medium Carbon Steel using Austenitic Stainless Steel Electrode***

**Eko Yuli Mariyanto**

*Program Pasca Sarjana Teknik Mesin Universitas Pasundan, Bandung*

*ekoyulim@gmail.com*

**ABSTRACT**

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*Repair welding Crankshaft* merupakan alternatif pilihan, dibandingkan pembelian komponen baru yang semakin mahal serta membutuhkan waktu proses pembuatan maupun pemesanan. Menggunakan *SMAW* dengan *electrode E309Mol-17* dan *316L* dengan proses Pre heat, *PWHT*, berserta pengujian tarik, kekerasan, dan metalografi untuk mendapatkan parameter yang terbaik untuk menghasilkan produk yang dapat dimanfaatkan ulang sebagai komponen mesin otomotif.

**DAFTAR PUSTAKA**

1. *” MATERIAL SCIENCT AND ENGINEERING INTRODUCTION* ”oleh ***William D. Callister, Jr.*** tentang *Applications and Processing of Metal Alloys,* halaman 394*.*
2. ANALISA PARAMETER PENGELASAN TIDAK SEJENIS PADA MATERIAL ASTM A36 (SS400) DAN SS316 DENGAN PROSES PENGELASAN SMAW, Tesis AFRIANSYAH, 26 Juni 2020.
3. Artikel (Weldability of Steel \_ The Metal Press by onlinemetals.com), <https://metalpress.onlinemetals.com/weldability-steel/>
4. Artikel (Evaluasi *Weldability* dan Temperatur Transformasi C-Mn Steel , Yanuar dan Yurianto Yurianto dkk., 2015).
5. *H. K. Lee, K. S. Kim, C. M. Kim, “Fracture Resistance of a Steel Weld Joint Under Fatigue Loading, Engineering Fracture mechanics*”, 2000.
6. Web site : (<https://www.totalmateria.com/page.aspx?ID=CheckArticle&site=kts&NM=68>)
7. Jurnal teknik Mesin, Fakultas Teknik, Universitas Negeri Malang, ”PENGARUH VARIASI ARUS LAS SMAW TERHADAP KEKERASAN DAN KEKUATAN TARIK SAMBUNGAN *DISSIMILAR STAINLESS STEEL* 304 DAN ST 37” , M. Yogi Nasrul L dkk, APRIL 2016*.*
8. Web page : (<http://www.tokopedia.com/rseed-garage/super-crankshaft-kruk-as-brt-honda-tiger-68-20?refind=true&whid=0>).
9. *The ABC’s of Arc Welding and Inspection by KOBE STEEL, LTD 2015, 5-9-12.Kita-Shinagawa, Shinagaw-Ku, Tokyo 141-8688 Japan*
10. *ASM Metal Handbook Vol. 06, “Welding, Brazing and Soldering*”, 1996
11. *ASME Section IX ASME\_Section\_IX\_2015\_Welding\_Brazing\_ WPS (welding procedure specification).*
12. Buku Teknologi Pengelasan Logam, cetakan VIII ( Prof. Dr. Ir. Harsono Wiryosumarto 2000).
13. Buku ” PETUNJUK KERJA LAS ” (Sri Widharto 2001).
14. *H. K. Lee, K. S. Kim, C. M. Kim, “Fracture Resistance of a Steel Weld Joint Under Fatigue Loading, Engineering Fracture mechanics”, 2000.*
15. Department of Mechanical Engineering, University of Minho, Azurém, 4800-058 Guimarães, Portugal ”***Analysis of a vehicle crankshaft failure***” Received 11 December 2002, Accepted 16 January 2003, Available online 4 April 2003, <https://doi.org/10.1016/S1350-6307(03)00024-4>.
16. Laser reconditioning of crankshafts: From lab to application (Koehler, H.a, dkk), LANE 2010, 1875-3892 c⃝2010 Published by Elsevier B.V, doi:10.1016/j.phpro.2010.08.160 , CC BY-NC-ND license.
17. MUHAMMAD ARIF RAHMAN Skripsi 2020, UNIVERSITAS MUHAMMADIYAH SURAKARTA, ”PROSES PERBAIKAN *CRANK SHAFT PATAH ENGINE CUMMINS MARINE QSK 60”*
18. To cite this article: O R Chivu *et al* 2015 *IOP Conf. Ser.: Mater. Sci. Eng.* **95** 012002 ”*The effect of reconditioning techniques by welding on the quality of deposits on crankshafts, case study SMAW*”.
19. *EXPERIMENTAL RESEARCH ON STRUCTURAL HARDENING OF THE MAXIMUM STRESSED CRANKSHAFTS SURFACES OBTAINED BY THERMAL SPRAYING (Alina Elena BUȘARU1, Mariana GORAN2* ,dkk), U.P.B. Sci. Bull., Series D, Vol. 79, Iss. 4, 2017 ISSN 1454-2358
20. *AUGUSTIN SEMENESCU1, OANA ROXANA CHIVU1*,dkk, ***”****Formation Mechanism Emissions in Case of Reconditioning by Welding in the Automotive Industry Cranckshafts****”*** *REV.CHIM.(Bucharest)♦67♦No. 7 ♦2016, 1 University Politehnica of Bucharest, Department of Materials Technology and Welding, 202 Splaiul Independentei, 060021, Bucharest, Romania.*
21. Padang Yanuar1\* dan Yurianto2, dkk, **”**EVALUASI *WELDABILITY* DAN TEMPERATUR TRANSFORMASI C-Mn STEEL PRODUK LOKAL SEBAGAI BAHAN BAKU BAJA TAHAN AUS**” ,** Prosiding SNST ke-7 Tahun 2016 Fakultas Teknik Universitas Wahid Hasyim Semarang, ISBN 978-602-99334-5-1.
22. Artikel Las *SMAW* - Komponen Dan Prosedur Pengelasan Yang Baik, <https://www.cnzahid.com/2016/06/teknik-las-smaw-komponen-dan-prosedur.html>.
23. Artikel ”*Kerusakan Dan Reparasi Pada Crankshaft*” :[*https://docplayer.info/64733327-Kerusakan-reparasi-pada-crankshaft.html*](https://docplayer.info/64733327-Kerusakan-reparasi-pada-crankshaft.html)*.*
24. *Artikel ”Prosedur Pemeriksaan Crankshaft”*: [*https://maintenanceserviceheavyequipment.wordpress.com/2015/11/02/prosedure-pemeriksaan-crankshaft/*](https://maintenanceserviceheavyequipment.wordpress.com/2015/11/02/prosedure-pemeriksaan-crankshaft/)*.*
25. *Consumables for stanless and high-alloyed steels, ESAB welding Handbook page* 188,206, 229 *and* 230*.*
26. Artikel :Tristanto Prasetya, dkk ”KEAUSAN *CRANK PIN JOURNAL CRANKSHAFT* PADA *DIESEL ENGINE GENERATOR* DI. MV. KARTINI BARUNA”.
27. *AWS A5.4/A5.4M:2006 An American National Standard, 550 N.W. LeJeune Road, Miami, FL 33126.*
28. Buku Pedoman Reparasi ”Honda Tiger 2000”, PT. PT. Astra International Honda Sales Operation Technical Service Division Jakarta, Indonesia.
29. *Welding metallurgy book , second edition Sindo Kou Professor and Chair Department of Materials Science and Engineering University of Wisconsin, A JOHN WILEY & SONS, INC., PUBLICATION.*
30. *ASME Section I ASME\_Section\_1\_2015\_**RULES FOR CONSTRUCTION OF POWER BOILERS (welding procedure specification)*
31. Triyono1 dkk, ”*VALIDASI DIAGRAM SCHAEFFLER, DELONG DAN WRC-1992 DALAM MEMPREDIKSI STRUKTUR MIKRO PADA PENGELASAN LOGAM BERBEDA ANTARA BAJA KARBON RENDAH”,* Mekanika, Volume 3 Nomor 3, Mei 2005.

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