Modern American Journal of Engineering, Technology, and Innovation
ISSN(E): 3067-7939
Volume 01, Issue 03, June, 2025
Website: usajournals.org

WELDING TECHNOLOGIES USED IN REPAIRING VEHICLE FRAMES AND THEIR IMPACT ON STRENGTH

Isaboev Tokhirjon Mekhmonovich
Andijan state technique institute "Technological Cars and Equipment"
Senior Lecturer of the Department

Abstract:
This article analyzes methods of restoring structural elements of a vehicle frame using welding, as well as methods for evaluating the strength of the restored zones. Welding technologies, applied materials, and factors affecting the load-bearing capacity of the structure are examined. The results of experimental studies on changes in strength indicators are also presented.

Keywords: vehicle frame, welding, restoration, strength, structure, mechanical properties.

Introduction

Car the frame of the vehicle main loader and structural from parts one It is not only car structure shape defines, perhaps to a moving vehicle falling different kind downloads, including static, dynamic, impact also its effects on behalf of takes. This because of the car frame work in the process big mechanic pressures and heavy to the conditions face Time is coming. to pass with, exploitation to the conditions related accordingly of the frames some in the plot's cracks, deformations, fatigue defects and other kind of malfunction's appearance These situations are caused by the vehicle reliability and to safety negative impact shows.

New car ramshackle replacement and often economic in terms of ineffective and difficult process is, especially big in size repair works demand attainable in cases such replacement valuable time and resources demand It will. That's why for, of the vehicle repair and working release in the process stop deadlines reduction for

Modern American Journal of Engineering, Technology, and Innovation
ISSN(E): 3067-7939
Volume 01, Issue 03, June, 2025
Website: usajournals.org

the purpose frames welding method through again restoration current and effective solution become service Welding in the way ramana separated from parts harvest was cracks and defects eliminate is done, this and your name technician status restoration and his/her work the deadline noticeable at the level extension opportunity gives.

Therefore, the car ramshackle again restoration technologies improvement, their material and technician resources effective use and reliability to increase aimed at research very important importance has. Such research as a result of vehicles exploitation safety provided, repair expenses decreases and general economic efficiency increases.

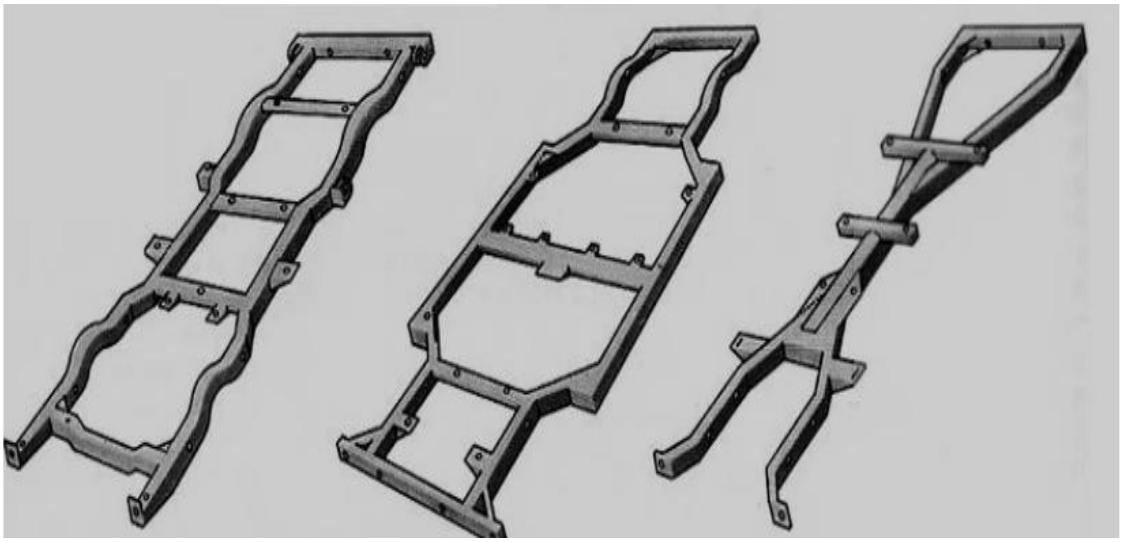

Figure 1. Three different types of car frames.

1. Welding restoration technology

The following welding methods are mainly used in the restoration of car frames:

- permanent on the vine coated electrode with at hand double welding (RDS);
- carbonaceous gas in the environment wired electrode with automatic or half automatic welding (MIG/MAG);
- argon-double welding (TIG).

Again, renewable on the spot cracks or maturity determined plots mechanic processing with cleaned, then reinforcing elements (additional floors, plates) addition possible.

Modern American Journal of Engineering, Technology, and Innovation
ISSN(E): 3067-7939
Volume 01, Issue 03, June, 2025
Website: usajournals.org

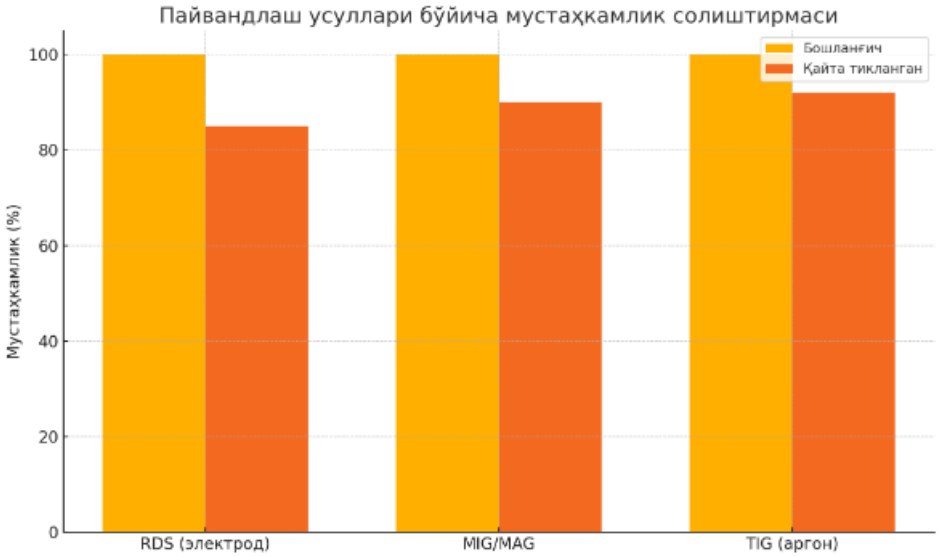

Figure 2

It compares the initial and post-restoration strength in percentages for each welding method.

No.	Welding method	Elementary strength (%)	Again since restored next strength (%)
1	RDS (electrode)	100	85
2	MIG/MAG	100	90
3	TIG (argon)	100	92
4			

2. Stability assessment methods

Ramani again from restoration after his/her strength assessment for following methods applies to :

- **Visual and capillary control** – welding in the noise internal and external defects determination for .
- **Static in the download test** – deformation level and maximum crack points to determine .
- **Metallographic analysis** – welding in the noise metal structure and thermal to the effect encountered zones check .
- **Big or partial 3D scanning** – again restored ramana general geometry check .

3. Experimental research results

Modern American Journal of Engineering, Technology, and Innovation
ISSN(E): 3067-7939
Volume 01, Issue 03, June, 2025
Website: usajournals.org

Research within two kinds of in frames (cracked and maturity to the defect has (was) welding works done increased. Again, restored in the sample mechanic tests held, in which following results determined:

From welding after restored of the frame's strength indicator average up to 85–92% restored observed.

In an argon atmosphere welded in the sample strength indicators high it has been. Additional reinforcing plates when used resource 1 .5 equally increased observed.

Summary

Car frame construction elements welding through again restoration economic and technician in terms of effective solution is considered. Correct chosen welding mode and constructive solutions strength to restore and of the frames service the deadline noticeable at the level to increase opportunity gives. In this mechanic test and metallographic analyses through weld noise's reliability assessment important importance has.

References

1.G. Herden. Sweisroboter – Berlin VerbVerlag Technik, 2015 – 286 rr
2. Edward R. Bohard . Welding: Principles and Practices - American Welding Society - Connect Learn Success, 2012 – 1147 rr .
3. Dunyashin N.S., Abralov M.A., Synopsis of lectures on the discipline "Svarka davleniem" for undergraduates. -Tashkent: TashGTU, 2003, 214 p.
4. Abralov M.A., Dunyashin N.S., Ermatov Z.D., Abralov M.M. Technology i oborudovanie svarki plavleniem. Textbook - T. Komronpress , 2014 - 460 c.
5. Kochergin KA Kontaktna svarka. 1987.-240st
6. Abralov M. A. Dunyashin NS Contact welding technology and aspects.2006-208 pages
7. Isaboev T. M., son Nasriddina t. n. Yu. Technology welding traversy trosovogo stroystva // Obrazovanie nauki i innovatsionnye idei v mire. 2023. T. 15. – No. 4. – S. 144-147.
8. Isaboev T.M. i dr. Technology vosstanovleniya korennyx zubov pogruzchika //Pedagogicheskaya nauka i innovatsionnye idei v mire. 2023. T. 15. — No. 6. S. 27-28.

Modern American Journal of Engineering, Technology, and Innovation
ISSN(E): 3067-7939
Volume 01, Issue 03, June, 2025
Website: usajournals.org

9. Isaboev T. M. ANALYSIS OF WORKS ON INCREASING THE RESISTANCE OF WORKING BODIES OF STONE EXCAVATING MACHINES TO BENDING //News of Education: Research in the XXI Century. – 2023. – T. 1. – No. 6. – P. 752-762.
10. Mekhmonovich I . T . et hand . LOAD CARS FUEL PUMP DETAILS AGAIN RESTORATION TECHNOLOGY ANALYSIS DO //OBRAZOVANIE NAUKA I INNOVATSIONNYE IDEI V MIRE. - 2023. - T. 15. – no. 4. – S. 119-125.
11. Umidjon o'g'li SA, Mekhmonovich IT DEVELOPMENT OF THE TECHNOLOGY PROCESS FOR MANUFACTURING THE HEAD BEAM OF A BRIDGE CRANE //EDUCATION SCIENCE AND INNOVATIVE IDEAS IN THE WORLD. – 2023. – T. 16. – No. 3. – P. 37-40.