Methods of choose the way for transfer welding tandem.

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The working proposes to present a modern method of assemblage through fuse together utilized on the all scale a large maul by reason of the economic output and very good quality . In the beginning is present theoretical principes of thing in this method.

Welding with too fuse together it an which is unfurled in average of protective gas the and has to the base a classic principle, but difference is as this fuse together is done with too simultaneous fed separate wires, therefore with the of a differed potential electric possibility. The energization of the wire is done with doua separate sources Welding in tandems is a derivative method from the method of fuse together with protective gas with a fusible electrode. This new method with very big productivity use a head of fuse together special waves the feeding of the wires is can done asunder for the power the how much energetics the and as the speed of advance through two systems of separate advances. An important thing of underlined is the fact as the electric arks burn in a commune bath. This separate leads to the optimum check of the common bow. Besides this thing else assure a very important thing, the method assure a quality hello for fuse together the reduced degree of splash, a superior efficaciousness and solicitation reduced for machine.

Welding in tandem were doed with doua sources using the regimes presented hereinafter:

- Master Sincron(Master Synchron) when the phases of pulse for both sources are realizate in the same time and the value of the time on pulse is same.
- Master Alternativ .At adjustment of this characteristic guy is the fact as the two one electrodes are to supply at same frequency, but the phases of pulse are executate alternatively(in the mirror)
- Without Master Slave is an regime he works without regimes synchronized of throb this. At this method the feeder parameters is realisate on each the separate source.

In finale is presented the conclusions attempts efectuate and advantages directly ale this utilization method for a case gived. Also I am adequate the values oppress for a pieces examined from the building of waggons.

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1. Introduce . The principle of welding tandem

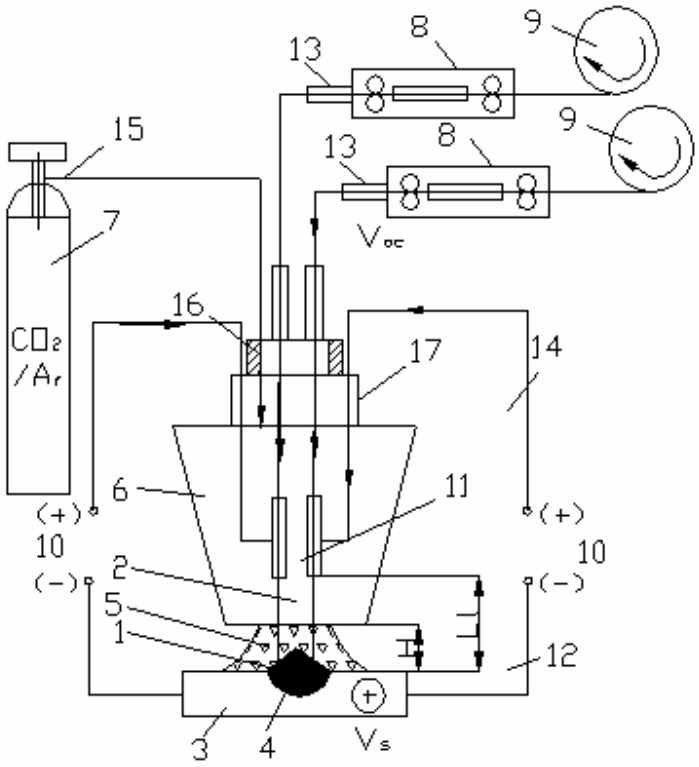


Figure 1. The principle of welding tandem.

The electric arc(1) between the fusible electrode(2)(the wire as the material of addition) and the piece(3), he produces these fount on form the crown bath. Welding using protectively a protective gas(5)(used gas to classic welding MAGE). This gas is bringed into the zone of the bow through the nozzle of gas(6) from the bottle(7). Fuse is trained through the tube of guide(bowden),(13) with the speed of advance the constant vac of to the system in advance(8) through the scroll from the coil(9). Feeding of the bow energetically electrical is done from to the source of direct current(rectifier)(10) through the nozzle of contact(11) and through cable (12). Tube of guide the wire of the electrode(13), the feeder current cable(14) and the hose of gas(15) is montate in a flexible tube of rubber(16) I carry unite with head of fuse together(17) forms place of fuse together.

Transfer welding tandem is unfurled in average of protective gas and has to the base the principle described previously, but difference is as this fuse together is done with two simultaneous fed separate wires, therefore with a electric potential possibility . The energization of the wire is done with two separate sources. Principial the method is presented in the figure 2.

Welding in tandem is a derivative method from the method of two fuse together and protective gas with a fusible electrode. This new method of very big productivity accomplished with a head of fuse together special waves the feeding of the wires is can done asunder except than can the how much energetics and as the speed of advance through two systems

of separate advances. An important thing of underlined is the fact as the telectric arks burn in a commune bath . The feeding for wires is done from two sources of big power. The studious sources were Quinto 500 of the firm Cloos.

This separate leads is the optimum check for common bow. Besides this thing else assure a very important thing. The method assure a good quality for weld, reduced degree of splash, a superior efficaciousness and a very important thing is the litle solicitation in progress for equipment.

Most importance change for equipment is the use head of tandem with feeding separata for two arks.

At tandem welding exist two parcels of tub wagons for fuse together and two units of transmission(actuation) of which wire does as distances at first hand of tandem with to the point of fuse together to can be unlimited practical.

The equipments for welding tandem is complicated by-pathes, their installation requiring a hall speciala, require a remaking of the an use big precisely, which thing involve from sine and speciale equipments.

For welding tandem are shall give the marvel concrete adhibition of method directing to the method special peculiarity.

2 The transfer Sinergic in current pulsated to welding tandem .

Welding with two sources conectate by turns in one from the ways presented hereinbefore, but in the regimes presented hereinafter:

A)Master Sincron(Master Synchron) La the adjustment of this guy the phases of throbs for bots echpament are executate in the same time and the value of the time on pulse is same. From one saied result as frequent on two sources shall be same f1= f2. This the guys of regimes is less studied.

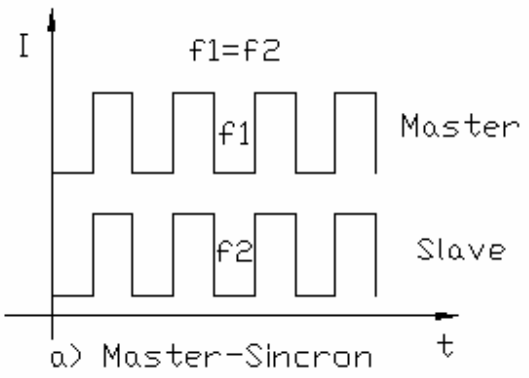
B.) Master Alternativ. The adjustment of this characteristic guy is as two electrodes are supply at same frequency, but the phases of pulse are executate with the shift(in the mirror). This thing s transliterates through fact as on first the wire have current of pulse Ip, and on two current basic wire. Must remarked an important thing for pulse tp makes ones living for basic tb. In necesar:

$$t_p \le t_b \text{ şi } f_1 = f_2 \text{ şi } t_{p1} = t_{p2}.$$

In concrete case the adjustment at welding longeron of waggon have:

- $t_p = 2{,}1ms$ şi $U_a = 37V$, $f_1 = 210 \div 220Hz$. If $f_1 = f_2$ we have result

$v_{as1} = v_{as2} = 12{,}5 \div 13m/\min$.



This is a regime" flabbily" of solicit instalatiei and the sources of fuse together. Typically this guys of regimes is the fact as the the process of fuse together is stable and is use for welding: Aluminum, inox stainless and steel carbon.

What else he is of reflection to this regime: Current is same for two wires . $I_s = 295A$

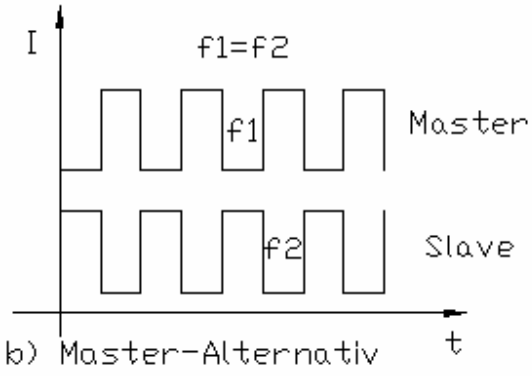
To this guy of regime he tried the of a use the regime the maul" hardly", for cresterea productivity, with the parameters of fuse together:

$t_p = 1{,}9ms$, $U_a = 40V$, $f_1 = 240Hz$.

If $f_1 = f_2$ we have result $v_{as1} = v_{as2} = 14m/\min$ cu $I_s = 310A$.

And, frequent of were if we have result with. This the guy of led to augment productivity led to a detrition instalation.

This the regime burns with a stable bow, without drops and in condition first set of the parameters is obtained an equitable report between the detrition and for thing of equipments.



C.) Without Master Slave is an which regime works without regimes synchronized of throb(adjustment use most dense, because to the remaking stel or thin ally don't needs by all means a synchronization, not even alternance.) To this guy of method the feeder parameters regleaza on each the separate source.

Yet are shall prescribe the parameters folositi and one concrete problems appeared in adhibition practise the nameable method. The two wires are fed with frequent different, therefore default all the parameters of fuse together which interfere the by-pathes differ.

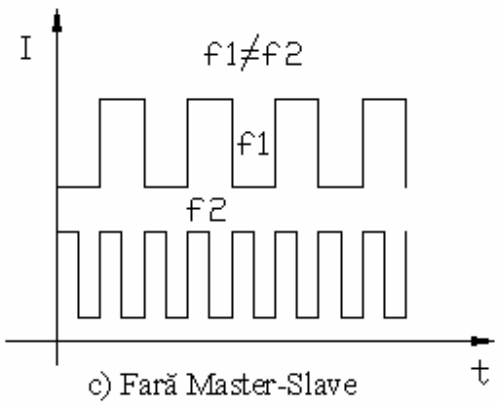


Figure 2. 1 The representation of tandem regimes.

Accelerate speed advance of the wire cause and accelerate frecventei of the pulses and default the decrease proportionala for basic. Therethrough mar the size of the drob remain constant practice even and duplicate the speed of advance of the wire on electrode because as much current of pulse, respectively force electromagnetica he who cause the detachment , quotient and for pulse in which is in progress the fount remain constantly. Conversely frequent to a duplication of the a speed of advance.

You present schematically the position of wires of fuse and directia of fuse together;

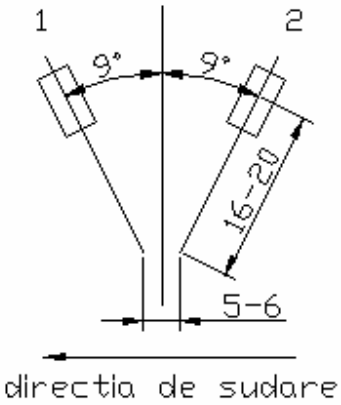


Figure 2. Pozition of two electrodes.

For the current wire 1 of fuse together you be with 30 elder than current of fuse together on the wire 2, therefore default. This thing needs for the of a creation the sufficient field wind of big around the wire 1, as the bow created on his wire 2 is attracted toward the wire 1 as two his arks burn in a bath the commune. In the case in which current on two wires burn be equal two magnetic fields scan reject and the arks burn burns creating two separate bathes.

The maul exist theoretical a possibility an of a current utilization on one of second electrodes the big maul, what thing burn create one problems concerning the fount basic material, because first the bow burn can create forward a liquid film, what thing burn leads to an aggradation and a bed penetration. This thing well studied.

Marvel ofs parameters use with this regimes to welding of the heart with the shoe to longeron of waggon with the thickness of the heart si= 10mm and st= 15mm.

3 Conclusions.

The method of fuse together in tandem leads to breed of the speed of fuse together and the efficaciousness of deposit. The eldest realization of weld without drops, with pleasant appearances of weld and with an optimum transfer.

The realization is the use as much to welding how much aluminum and welding stel.

Exist all the some certain limitations:

- Form and the length of the use am enforced of tolerantele mechanic and manevrabilitatea of the cementing outfit.

- The uses are due to is pregatite very neat the si with tolerant of very limitary abbot.

- The basic material fused together is limitary, due to the peaks of the values of hardness appeared in ZIT to material the sensitive maul.

The areas in which applied the method: construction of cars, of apparatae tub, bilding from steel , car and fittings.

This method permits the realization butt joins and weld of corner in recumbency in trough BYE-BYE and in recumbency with vertical wall PB, as ti deposits through fuse together.

An interesting result is the speed of tandem which can arrive the feather to 250 cm /min in the longitudinal weld and installment of deposit 16 kg/ h. In the case aluminum the installment of deposit arrives the feather to 7 kg/ h.

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