

Chapter 1 : Plastic Welding | Seminar Report, PPT, PDF for Mechanical

published report from this research project. Sixty-six tests were performed for several different welding processes using both mild and stainless steel welding electrodes.

Time for each practice is 4 hour. During the welding practical, we learn 2 type of basic welding called Arc and Gas welding. At the practical, we learn different kind of tools that use in Arc and Gas Welding. This kind of tools that use in each basic of welding is one of the most different of Arc and Gas welding. At the same time, safety is no 1 to prevent an accident while working at workshop. For me, welding is a part of automotive and welding is very important skills that student must learn because, welding is use to joining the work piece for specially to make a car body. By applying intense heat, metal at the joint between two parts is caused to intermix " directly, or more commonly, with an intermediate molten filler metal. Upon cooling and solidification, a metallurgical bond is created. Since the joining is an intermixture of metals, the final well-meant potentially has the same strength properties as the metal of the parts. This is in sharp contrast to non - fusion processes of joining i. It is extremely versatile, and with enough skill and practice you can use this types of welding for virtually any metal. Oxy-acetylene welding is simple in concept " two piece of metal are bought together, and the touching edges are melted by the flame with or without the addition of filler rod. Prepare a piece of mild steel plate 3. Use an electrode code MS or Ewith diameter 2. Adjust the ampere around 60 " for electrode diameter 3. Put an electrode at the electrode holder and make sure that there are no movement of electrode at the holder. Hold that position over a spot just inside the left edge of the base metal until a molten pool is established. Welding then proceeds from left to right for the right hand 8. Stop the process at the end of the work piece. The correct technique is hold an electrode at the start position for 1s or 2s and continue until the end of the process. At the end, hold an electrode at the last position for 1s or 2s before finishing the process. The frequency of this action will be determined by the size of the weld being deposited, and the correct action improve with practice. Prepare a piece of mild steel plate 1. Adjust the working pressures to about 0. Wear appropriate protective gear, then light and adjust the torch to neutral flame. Hold that position over a spot just inside the right edge of the base metal until a molten pool is established. Welding then proceeds by filler rod being fed or dipped into the molten pool. Do not hold the filler rod continuously in the molten pool. The correct technique is to dip the filler rod in and out of the poor of the regular interval as the word proceeds. At the same time, we learn to use a right tools and materials when doing work at welding workshop. Arc and Gas Welding is also give us more skills and preparation when we work outside later. When we see a result from the work that we have done together, we are very grateful when we have finish our work in a sharp time that have given by our lecturer. The talent that our lecturer have give to us is bring us to a new experience about welding and more information about welding. These practical also give us advantage when we work together with our team and we also can learn many information through share knowledge together. Other than that we also have been teach by our lecturer how to adjust the volume of the electric. Besides that,Our teacher always remain us to stay alert in safety while doing a work before and after finish the pratcice. Conclusion is, I want to thanks to lecturer and my friend during learning of arc and gas welding.

Chapter 2 : spot welding ppt

a project report piisw 1. 1 CHAPTER 1 INTRODUCTION List of welding processes prevailing in the company
• Arc welding
• Inert Gas (CO₂) welding
• Spot welding
• Stud Welding
• TIG Welding
ARC WELDING: Arc welding is a type of welding that uses a welding power supply to create an electric arc between an electrode and the base.

Applications[edit] Spot welding is typically used when welding particular types of sheet metal , welded wire mesh or wire mesh. Thicker stock is more difficult to spot weld because the heat flows into the surrounding metal more easily. Spot welding can be easily identified on many sheet metal goods, such as metal buckets. Aluminium alloys can be spot welded, but their much higher thermal conductivity and electrical conductivity requires higher welding currents. This requires larger, more powerful, and more expensive welding transformers. BMW plant in Leipzig, Germany: Perhaps the most common application of spot welding is in the automobile manufacturing industry , where it is used almost universally to weld the sheet metal to form a car. Spot welders can also be completely automated , and many of the industrial robots found on assembly lines are spot welders the other major use for robots being painting. Another application is spot welding straps to nickel-cadmium , nickel-metal hydride or Lithium-ion battery cells to make batteries. The cells are joined by spot welding thin nickel straps to the battery terminals. Spot welding can keep the battery from getting too hot, as might happen if conventional soldering were done. Good design practice must always allow for adequate accessibility. Connecting surfaces should be free of contaminants such as scale, oil, and dirt, to ensure quality welds. Metal thickness is generally not a factor in determining good welds. Processing and Equipment[edit] Spot welding involves three stages; the first of which involves the electrodes being brought to the surface of the metal and applying a slight amount of pressure. The current from the electrodes is then applied briefly after which the current is removed but the electrodes remain in place for the material to cool. Weld times range from 0. The tool holders function as a mechanism to hold the electrodes firmly in place and also support optional water hoses that cool the electrodes during welding. Tool holding methods include a paddle-type, light duty, universal, and regular offset. The electrodes generally are made of a low resistance alloy, usually copper, and are designed in many different shapes and sizes depending on the application needed. The two materials being welded together are known as the workpieces and must conduct electricity. Workpiece thickness can range from 0. Both water and a brine solution may be used as coolants in spot welding mechanisms. Tool Styles[edit] In the case of resistance spot welding, there are two main parts of the tooling system, the features of which fundamentally influence the whole process: In such application, where the gun layout should be as rigid as possible due to the high applying forces e. As well as the high resulting rigidity, this arrangement leads to a high tooling flexibility, as the motion of the electrodes is collinear. Unlike the C-type, the so-called X-type arrangement provides less rigidity, although the reachable workspace is far larger than with the C-type, thus this layout is very common, where thin and flat objects are being processed e. However, it offers less flexibility in terms of tooling, because the paths of the moving electrodes are not collinear like the tips of a scissor , so a dome-shaped electrode tip should be used. Electrodes used in spot welding can vary greatly with different applications. Each tool style has a different purpose. Radius style electrodes are used for high heat applications, electrodes with a truncated tip for high pressure, eccentric electrodes for welding corners, offset eccentric tips for reaching into corners and small spaces, and finally offset truncated for reaching into the workpiece itself. Effects[edit] The spot welding process tends to harden the material, causing it to warp. The physical effects of spot welding include internal cracking, surface cracks and a bad appearance. Electrical notes[edit] The basic spot welder consists of a power supply, an energy storage unit e. The energy storage element allows the welder to deliver high instantaneous power levels. The switch causes the stored energy to be dumped into the welding transformer. The welding transformer steps down the voltage and steps up the current. An important feature of the transformer is it reduces the current level that the switch must handle. There is also a control box that manages the switch and may monitor the welding electrode voltage or current. The resistance presented to the welder is complicated. There is also the

contact resistance between the welding electrodes and the workpiece. There is the resistance of the workpieces, and the contact resistance between the workpieces. At the beginning of the weld, the contact resistances are usually high, so most of the initial energy will be dissipated there. That heat and the clamping force will soften and smooth out the material at the electrode-material interface and make better contact that is, lower the contact resistance. Consequently, more electrical energy will go into the workpiece and the junction resistance of the two workpieces. As electrical energy is delivered to the weld and causes the temperature to rise, the electrodes and the workpiece are conducting that heat away. The goal is to apply enough energy so that a portion of material within the spot melts without having the entire spot melt. The perimeter of the spot will conduct away a lot of heat and keep the perimeter at a lower temperature. The interior of the spot has less heat conducted away, so it melts first. If the welding current is applied too long, the entire spot melts, the material runs out or otherwise fails, and the "weld" becomes a hole. The voltage needed for welding depends on the resistance of the material to be welded, the sheet thickness and desired size of the nugget. When welding a common combination like 1. This decrease in voltage results from the reduction in resistance caused by the workpiece melting. The open circuit voltage from the transformer is higher than this, typically in the 5 to 22 volt range. Modern welding equipment can monitor and adjust the weld in real-time to ensure a consistent weld. The equipment may seek to control different variables during the weld, such as current, voltage, power, or energy. Clamping[edit] Welding times are often very short, which can cause problems with the electrodes—they cannot move fast enough to keep the material clamped. Welding controllers will use a double pulse to get around this problem. During the first pulse, the electrode contact may not be able to make a good weld. The first pulse will soften the metal. During the pause between the two pulses, the electrodes will come closer and make better contact. Fields[edit] During spot welding, the large electric current induces a large magnetic field, and the electric current and magnetic field interact with each other to produce a large magnetic force field too, which drives the melted metal to move very fast at a velocity up to 0. As such, the heat energy distribution in spot welding could be dramatically changed by the fast motion of the melted metal. Resistance spot welding generates no bright arc, so UV protection is not required. OSHA requires transparent face shields or goggles for splatter protection, but does not require any filter lens.

Chapter 3 : spot welding defects ppt

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Welding uses various energy sources: Advances in the technology allow now to weld not only in factories, but also in various outside conditions, underwater, and even in outer space. The welding process is always related to the risk of fire, electric shock, toxic gases poisoning, eye, and other body parts damages by the heat, ultraviolet, infrared radiation, and spatters of molten metal. The process of welding appeared in the Bronze Age, when people began to gain experience in the metals processing for making tools, military weapons, jewelry, and other products. If you need research paper writing help on Welding topics try this site! The first known method of welding was forge welding. It provided the high enough quality of joining at that time, especially when working with plastic metals, such as copper. With the discovery of bronze, which is harder and more difficult for forging, mould welding came. This type of welding can be found in bronze vessels of ancient Greece and Rome. Such welding was used in the construction of an iron pillar in Delhi, India. In , Vasily Petrov, a scientist from Russia, noticed that when electric current passes between two coal or metal stick, there is a bright electric arc, which has a very high temperature. He studied and described this phenomenon and pointed out the possibility of using the heat of an electric arc to melt metals, and thus laid the foundations for the arc welding of metals. However, there is some information that the English chemist Sir Humphry Davy was the first researcher who discovered, examined, and described the electric arc in In , Nikolay Benardos invented a method of arc welding using carbon electrode. In the following years he developed methods of arc welding, in which arc burns between two or more electrodes, welding in the protective gas atmosphere, spot welding using tongs, designed and built a number of welding machines, Nikolai Benardos patented in Russia and abroad a wide variety of inventions in the field of welding equipment and welding processes. A good research proposal on welding has to consider all the important moment of this process. To do this, you must thoroughly analyze all the data available on the phenomenon. In this case, free example research paper topics on welding can become a great source of helpful information you can use for your work. Your research paper will be written from scratch. We hire top-rated Ph. Each customer will get a non-plagiarized paper with timely delivery. Just visit our website and fill in the order form with all research paper details: Enjoy our professional research paper writing service!

Chapter 4 : Spotwelding home made

Welding Machine - Project Report - Free download as Word Doc (.doc / .docx), PDF File (.pdf), Text File (.txt) or read online for free. Like spot welding, seam.

Published on Jan 10, Abstract Plastic welding and spot welding - both are almost similar to each other. There is a difference noted. In plastic welding, heat is supplied through convection of the pincher tips, instead of conduction. The two plastic pieces are brought together. At the time of welding, a jet of hot air is liberated. This melts the parts to be joined along with the plastic filler rod. As the rod starts melting, it is forced into the joint and causes the fusion of the parts. Plastic identification is the first point to be noted in order to choose a suitable plastic welding rod. A plastic welding rod or thermoplastic welding rod is of a constant cross-section shape. Using this, two plastic pieces can be joined. It may have a circular or triangular cross-section. Porosity of the plastic welding rod is an important factor. Air bubbles in the rod will be created due to its high porosity. This is responsible for decreasing the quality of the welding. So, the rods used must maintain zero porosity. Otherwise, they should be void less. Products like chemical tanks, water tanks, heat exchangers and plumbing fittings are manufactured by using the technique of plastic welding. By adopting this technique, money can be saved. Using plastic welding, two plastics can be welded together. In order to join the thermoplastics, when they are heated under a particular pressure, this type of welding is employed. In normal practice, using filler material, the pieces are joined together. There are certain occasions wherein filler material can be avoided. Generally, plastic is not durable and has a shorter life span. Natural elements like cold weather, ultraviolet radiation from the sun or continuous exposure to chemicals causing contamination, will create damage to plastic products. Plastic can be subjected to damage if it is hit on a hard surface. But, as the price of new parts is high, it is preferred to repair the existing products. As there are different types of plastics, we must know which one we are working with in order to find the exact welding material to be used. We must know the difference between thermoplastics and thermo sets because it is not possible to weld thermo sets. If you use the wrong welding rod for the plastic to be repaired, bonding will not take place. When you are repairing plastic, there are usually two types of defects - a crack or a broken part. In the case of a crack, there is a particular stress affecting the inside of the material. You have to repair the crack and you should not continue through the piece. There are many types of plastic welding. They produce heat and hot gas. In order to weld two pieces, ultrasonic welding uses a high frequency acoustic vibration. After subjecting them to high pressure, they are exposed to the vibrations until the weld is completed. These parts are rotated. The rotation stops at a particular point and the weld is completed. The two pieces are subjected to pressure due to which a friction is created which generates heat. Metal Arc Welding It is a process of joining two metal pieces by melting the edges by an electric arc. The electric arc is produced between two conductors. The electrode is one conductor and the work piece is another conductor. The electrode and the work piece are brought nearer with small air gap. When current is passed an electric arc is produced between the electrode and the work piece. The work piece and the electrode are melted by the arc. Both molten pieces of metal become one. This flux produces a gaseous shield around the molten metal. It prevents the reaction of the molten metal with oxygen and nitrogen in the atmosphere. The flux removes the impurities from the molten metal and forms a slag. This slag gets deposited over the weld metal. This protects the weld seam from rapid cooling. Carbon Arc Welding In carbon arc welding, the intense heat of an electric arc between a carbon electrode and work piece metal is used for welding. DC power supply is used. So carbon from the electrode will not fuse and mix up with the metal weld. If carbon mixes with the weld, the weld will become weak and brittle. To protect the molten metal from the atmosphere the welding is done with a long arc. In this case, a carbon monoxide gas is produced, which surrounds the molten metal and protects it. Carbon arc welding is used to weld both ferrous and non ferrous metals. Sheets of steel, copper alloys, brass and aluminium can be welded in this method. Oxy-Acetylene welding In gas welding, a gas flame is used to melt the edges of metals to be joined. The flame is produced at the tip of welding torch. Oxygen and Acetylene are the gases used to produce the welding flame. The flame will only melt the metal. A flux is used during welding to prevent oxidations and to remove impurities. Metals

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2mm to 50mm thick are welded by gas welding. Fig shows Gas welding equipments. Are you interested in this topic. Then mail to us immediately to get the full report.

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Electrodes to test the transformer. It was a miserable performance. The cables were really warm and soft. Cable shoes were really hot. With a little laying on of hands may be the transformer is able to weld. But the primary windings can not be dimensioned for more than I abandoned this project. Larger transformer is needed. Project closed. Next project Another transformer, VA, looking up in the junkbox. This transformer is designed to work from V to V in a machine to be independent of external zero. In some countries there are not loadable zero in industries. Here I drive transformer "backwards". Unfortunately, the V windings extremely, so the space that was available was only 8mm wide. The cables and tools on the table, jumping around when I welded samples. It needed stronger stuff. It will not do in principle with jumper cables. After having found a "real" spot welding, so machine plate showed that it took 10kVA, also was transformer and electrodes water cooled. But this should not become a production machine, so we skip water.. With a 2 "x 8" plank as machine frame started a new test build. Clearly this area needs up to the leaders of the transformer and the welding arms. With these started a crafts business of cutting, drilling and threading to increase the area between the electrodes and the transformer. Yes, now there were no losses in the wire to the electrodes, with the result that the transformer overload was significantly, it got dark in the basement! With 8mm available space in the transformer New searching the recesses. But it took another handicraft work with copper strips, a new approach to the copper bin for more rails.. Now there were only opportunity with one 1 turn around transformer. The hinge consists of the M12 nuts. It was the easiest and fastest to the test. Lateral displacement due to the thread moving in a hundred parts, so it will not interfere. Flat bands have clamped securely. Now, it was to weld without one was warm on the way to the electrodes. Circuit voltage of the transformer. Voltage of the transformer during welding. That means big overload, W, the transformer during the seconds that the weld duration. It was lucky I did not get there more turns around transformer. Control of the transformer is via a thyristor that can handle 40A. Trigger signal is fed from a 9V battery via the push button in the handle. Believe that it has "Zero Start" So thyristor trig, when the voltage is zero V. Then there will be no power-line surges. No flashing lights are on test.

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spot welding is a widely used joining process for fabricating sheet metal assemblies such as automobiles, truck cabins, rail vehicles and home applications due to its advantages in welding efficiency and suitability for automation.

Chapter 7 : WELDING REPORT | Muhammad Taufiq - calendrierdelascience.com

For me, welding is a part of automotive and welding is very important skills that student must learn because, welding is use to joining the work piece for specially to make a car body.

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Project title: Adaptive tip dress control for automated resistance spot welding Period covered: from 01/12/ to 30/11/ Name of the scientific representative of the project's co-ordinator.

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