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Resistance welding, or more commonly called spot welding, in which the joint consists of two similar metals is primarily used for joining metals during manufacturing processes. In the case of the resistance welding process, a high current is passed through the workpiece to form a spot of welding. It is normally used to bond or weld both ends of two metal pieces to make a long continuous piece. The metals being bonded are known as the source and the anvil. The junction of the work piece may be butt or overlapping. It is typically a continuous process, not used for spot welding a short length for a given task. Welding may be by hand, by robot or by machine. Resistance welding is a manufacturing process that produces a weld at the faying surfaces of two similar metals. The seam may be a butt joint or an overlap joint and is usually an automated process. It differs from butt welding in that butt welding typically welds the entire joint at once and seam welding forms the weld progressively, starting at one end. Similar to gas tungsten arc welding, resistance welding is a welding process that produces a weld at the faying surfaces of two similar metals by passing an electric current through the joint. It relies on the materials' difference in electrical resistance that keeps a high current flowing where it is heated to its melting point to form a weld. A tape will then be used to assist the welding operation. Resistance Welding can also be used to weld stainless steel and other non-ferrous metals. The process usually uses a transformer to supply the electrical energy to the workpiece. The joint of the work piece has high electrical resistance relative to the rest of the circuit and is heated to its melting point by the current. The semi- molten surfaces are pressed together by the welding pressure that creates a fusion bond, resulting in a uniformly welded structure. Most resistance welders use water cooling through the electrode, transformer and controller assemblies due to the heat generated. The resistance welding process produces an extremely durable weld because the joint is forged due to the heat and pressure applied. Most resistance welders are hand held instruments, often with a welding rod or rod-tip, or a series of nuts and bolts that are pressed together to form the weld. The welding rod is usually made from copper to supply the current to the workpiece. The process is not suitable for thick plates. Resistance welding is commonly used in construction and manufacturing applications to connect two or more metal parts together. It may also be used to form a continuous "butted" panel.

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the book covers modern machining processes in three sections. the first of these, covered in chapter two, is mechanical processes. this chapter examines techniques that make use of mechanical energy. it looks at ultrasonic machining, water jet and abrasive jet machining methods. the typical appearance of the machined surface of a sheet metal component is very different from the original. when the component is machined, the sheet metal is usually held in a datum plane. in this paper, the effect of the datum plane is studied on the shape of the machined surface. a finite element method (fem) is used to model the deformation of the sheet metal under load. the surface is then cut by machining the machined surface. the effect of the datum plane on the shape of the machined surface is then studied. the chapters that follow are covered in the second section of the book. each chapter includes stages in the industrial machining process. at each stage of the machining process, the author briefly examines the key considerations and describes the technology employed in that stage. the second chapter is electronic processes. this chapter covers: electronic materials processing; electrochemical materials processing; electrodeposition; electroplating; electrochemical machining; electrochemical polishing; corrosion prevention, and recycling. the third chapter is chemical processing. this chapter looks at: acid etching; alkaline etching; chemical-assisted machining; corrosion-resistant materials; laser beam machining; micro electromechanical systems; and nanotechnology. 5ec8ef588b