

flat steel through a series of progressive dies. As the steel moves through the press, the bracket is stamped, pierced, and finally bent into appropriate shape.

Recently customers have been complaining about having difficulty securing the bracket closed with the bolt and lock washer. The bolts have been difficult to slide through the holes and then tighten. Assemblers complain of stripped bolts and snug fittings. The problem-solving cycle begins with "Recognizing the Problem and Establishing Priorities." Bracket customers have made management at WP Inc. well aware of the problem. Because management is unsure of the root cause of the problem, they proceed with the second step of problem-solving and assemble a team. The team consists of representatives from process engineering, materials engineering, product design, and manufacturing. Beginning with Step 3. Plan: Defining the Problem, the team has decided to brainstorm the reasons why this problem has occurred.



### Assignment

Form a team and use the WHY-WHY diagram technique to determine why the bracket may be hard to assemble.

## PART 2

In conjunction with the WHY-WHY diagram for why the bracket is not easily assembled, the team has decided to develop performance measures to answer the following question: How do we know that the changes we made to the process actually improved the process?



### Assignment

What performance measures does your team feel are necessary to answer this question: How do we know that the changes we made to the process actually improved the process?

## PART 3

Continuing in the problem-solving cycle, the team proceeds with Step 5. In order to analyze the current process, the team visited the customer's assembly plant to determine where the brackets were used in the process and how the assembly was actually performed. There they watched as the operator randomly selected a strut, a bracket, a bolt, and a locknut from different bins. The operator positioned the strut in place, wrapped the bracket around it, and secured it to the frame by finger-tightening the bolt and locknut. The operator then used a torque wrench to secure the assembly. While they watched, the operator had difficulty securing the assembly several times. Back at their plant, the team also created a flowchart for WP's process of fabricating the bracket (Figure 2).