Unit 15 Non-cutting operations in detail

Task 07

Announcer: Listen to Lilly and David and their supervisor Mr Kaup, talking about bending.

Mr Kaup: Ok, today we are going to speak about bending, the most common technique of non-cutting metal forming operations. Do you know why bending is used so often?

Lilly: Yes, because coverings, construction parts and many other parts are made of sheet metal, tubes and profiles. These are easy to bend.

Mr Kaup: Right, and do you know why?

Lilly: Yes, I do … because only one part of the work piece is changed, the bending zone. The outer side of the material expands without ripping, while the inner side is compressed.

Mr Kaup: Excellent, that's right. The outer fibres of the material are extended, while the inner fibres are shortened. In between, there is an unchanged zone, the "neutral fibres". David, could you tell me which materials are suitable for bending?

David: Certainly. Soft steel, copper, zinc, aluminium and their alloys.

Mr Kaup: Great! And what happens if sheet metal is bent over a sharp edge?

David: Tiny cracks may develop at the outer bending line.

Mr Kaup: You're right, of course … and I'm sure you also know what is important to know when bending tubes, Lilly?

Lilly: Yes, I do. For bending tubes you need special techniques to avoid deforming the pipe cross section. Therefore, pipes are bent by filling them with sand or by special tube benders or hydraulic tube-bending machines.

Mr Kaup: Excellent, Lilly. And what about parts of sheet metal?

Lilly: They can be bent using a folding machine.

Mr Kaup: Well done! I see you've been paying attention in your lessons …