AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
MECHATRONICS ENGINEERING DEPARTMENT
4th Year Mechatronics

Semester, 2018

MCT 151: Introduction of Mechatronics

Sheet 1: Design Methodology for Mechatronic Systems

1. Define the objectives of the VDI 2206 guidelines.
2. Sketch the basic structure of the mechatronics system according to the VDI 2206.
3. For painting mass-produced articles (kitchen appliances, audio and video equipment, aluminum wheel rims), painting systems in the form of continuous lines are often used. On these, the objects to be painted pass continuously through the system on a conveyor belt. The paint is applied by a number of spraying units, the oscillating movement of which runs either vertically (for the side surfaces of the object) or horizontally (for the upper side of the object) as shown in Figure 1. According to VDI 2206, design a mechatronic system for this process.

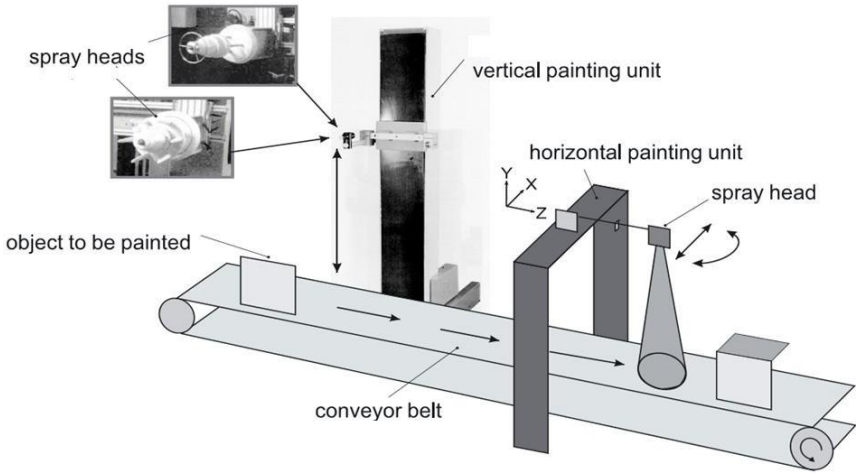
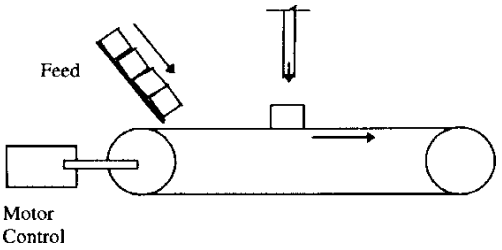


Figure 1

4. A bottling plant uses an automated mechanism for filling the containers and transporting them from one point to another as shown in Figure 2. The sensors monitor the amount of solid or liquid filled. A conveyor mechanism transports the containers. Under the concept of VDI 2206, design a mechatronic system for the case described. Identify the types and features of sensors you use, describe how the system works and explain how you are going to interface and control the system. Make suitable sketches if needed.



Figure

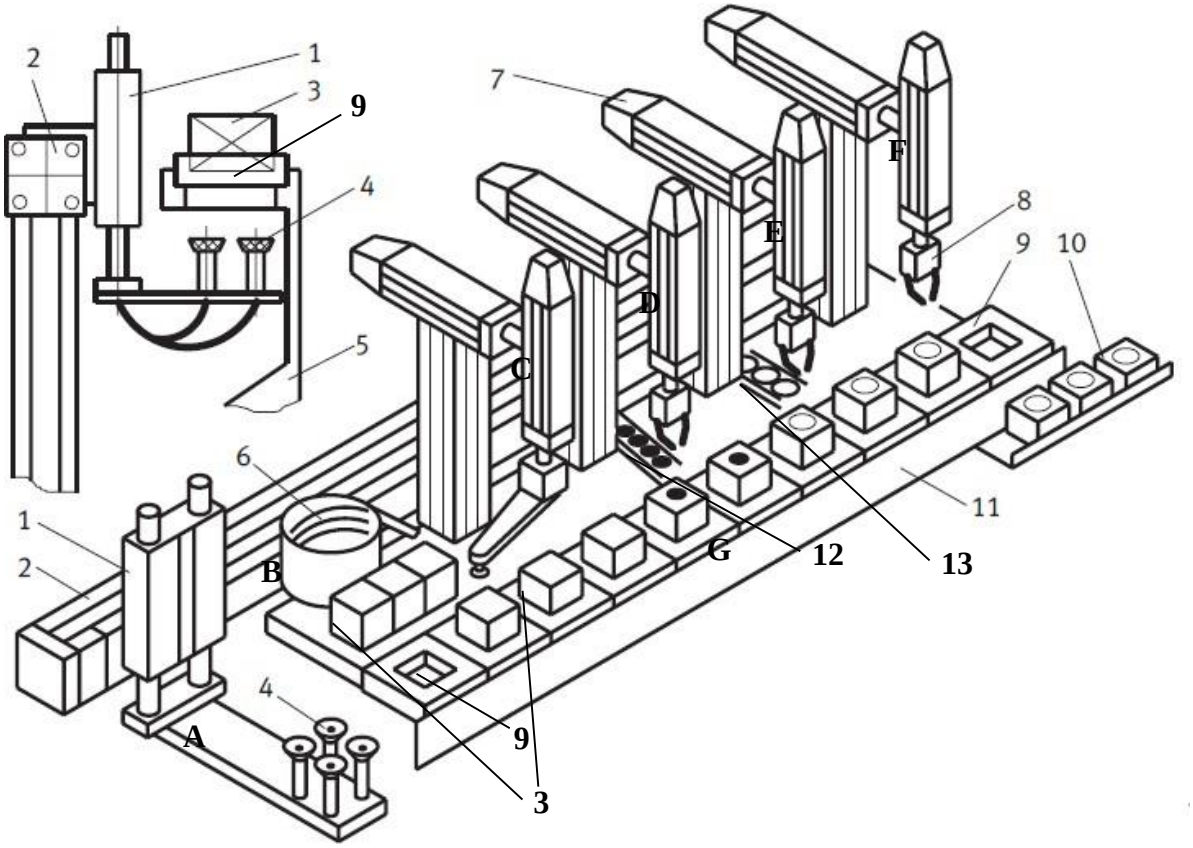


Figure 3: Assembly transfer line