DGUV
Deutsche Gesetzliche
Unfallversicherung
Spitzenverband

Detecting Defeating
by using coded protective devices

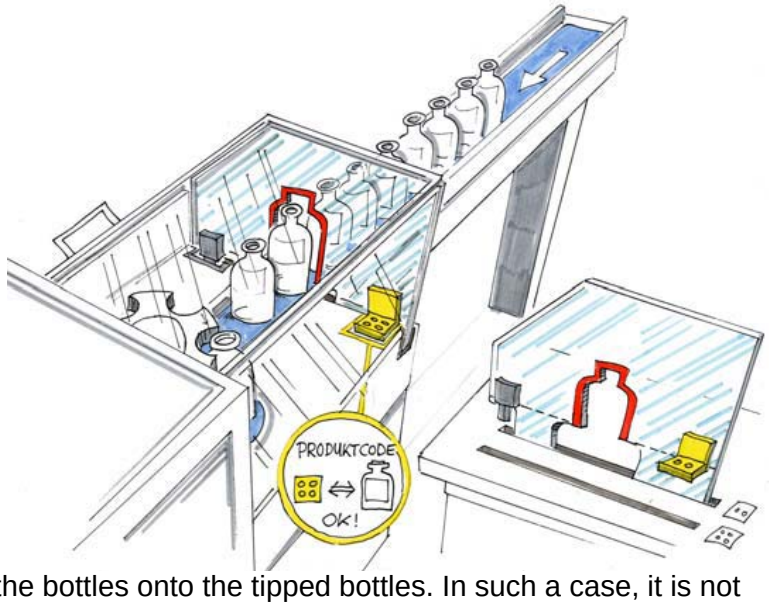
Problem:

Where, on machines or installations, it is necessary to regularly exchange protective devices, e.g. for the purpose of adapting the process to different workpieces or requirements, operators may be tempted to leave such protective devices mounted that can be used to operate the most or all processes employed. In such a case, insufficient safeguarding of the hazardous zone may generate hazards.

Measures:

The process control receives information about the protective device presently installed. Within the production programme, a comparison with the expected protective device is made. In case of divergence, the use of an inappropriate protective device is detected, and the production process is prohibited. For the purpose of detection, codes are applied to the protective device. This is also possible by retrofitting machinery that has been supplied already. The control system does not need to be a safety-related technology.

Example: Bottle feeding system



At a bottle cartoning station, bottles of different sizes are processed. Due to their shape, bottles tend to tip from time to time. Access to the hazardous zone is prevented by a position-monitored hood and an interchangeable cover (see illustration). Where no cover is mounted, this is detected via position switch, and machine start-up is safely prohibited. The interchangeable cover has an aperture matching the bottle size. In the event of an inappropriate cover with too large an aperture being used, the employees are able to reach beyond the bottles onto the tipped bottles. In such a case, it is not necessary to open the cover, the production process is not stopped; however, the operator is able to reach into the hazardous zone. In order to prevent this, measures are taken to ensure that the appropriate cover be used. For this purpose, a coding angle with different bores is fitted on the covers. The PLC reads the coding using proximity switches.
The present bottle size and thus the required cover are known in the PLC programme. A machine start-up is prevented in the event of an inappropriate cover being used.