

FILLING LINE PROTOCOL: IMPROVED EFFICIENCY AND CHARACTERIZATION BY ON-SITE MEASUREMENTS

1. INTRODUCTION

One of the main reasons of glass containers' breakages is correlated to the scratches introduced on the glass container surface by glass-to-glass or glass-to-metal contacts in the filling line. To reduce the risk of breakage of the glass containers along their whole life an improvement in the performances of the filling line should be pursued. This goal might be achieved by reducing as much as possible impacts along the line.



To improve the performance of the filling line we propose the use of a new technology which is able to determine where strong impacts mostly occur, recording the ensuing bottle's accelerations and providing a map of the impacts' intensity along the whole filling line.

2. METHODOLOGY

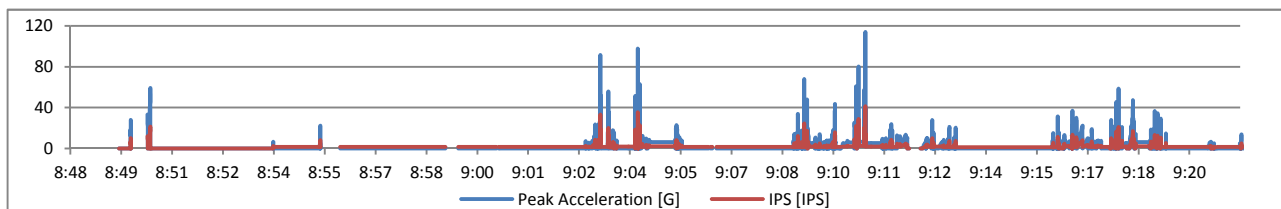
The technology is based on a sensor equipped with accelerometers distributed on different spatial coordinates X, Y, Z. The sensor is installed in an acrylic model reproducing exactly the glass container. The data gathered by the different accelerometers are delivered wireless to an external PC which stores all data for further elaborations. Impacts are expressed as ips (inch per second) and G-force. Wireless Bluetooth beacons pinpoint the acrylic testing bottle along the line tracking then the possible origin of the damage.



3. WHY TO USE?

The use of the instrument provide evidences of the performance of the filling line. You could get:

- Characterization of the line
Average impact performances of the line and location of possible specific points with stronger impacts with higher container damage potentially dangerous; Impartial insights for possible specific corrective actions .
- Comparison with other lines
Results obtained on a specific line could be compared with those of other lines in order to define possible improvements
- Quality Control Assurance
Regular monitoring of the performances of the filling line : periodical runs on the line could provide measurements which could become a useful instrument to control the performance of the line over the time and to put in evidence critical gaps or deviation with time.



4. HOW IT WORKS?

To carry out the investigation it is needed to proceed with the preparation of the acrylic model which will remain property of the customer for a repetitive use. For the construction of the model a 3D CAD drawing (IGS - STEP - DXF – DWG format) has to be provided.

Measurements will be done by SSV specialists lasting typically 4-6 hours; different runs will be carried out to obtain robust and repeatable data. A final report will be issued with results and an indication of eventual critical points along the line.

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