

446.686A Design For Manufacturing

3rd Presentation: DFM



Development of portable golf ball
case to increase driving distance

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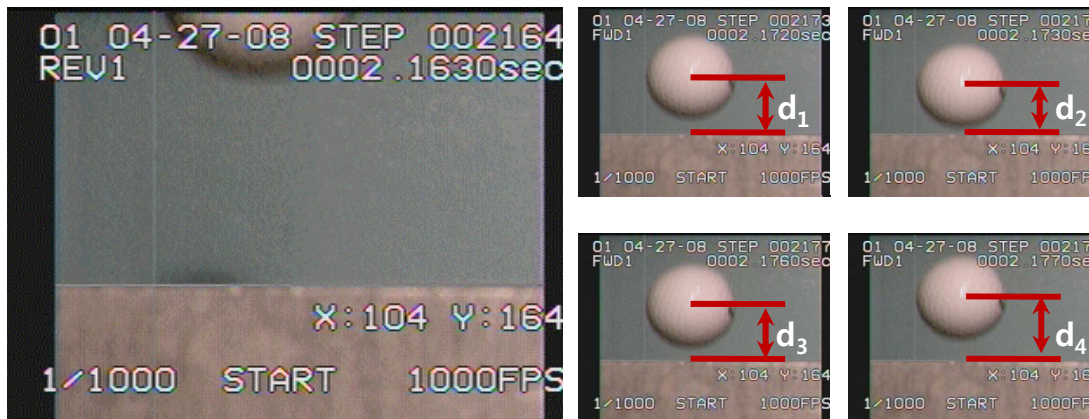
Experiment: Drop test

■ Purpose

- To find effect of temperature & humidity to golf ball's mass, diameter, and COR *

■ Test method

- Conditioning the golf ball
- Measure mass, diameter
- Drop the ball and measure time, height and calculate COR



$$COR = \frac{v_2' - v_1'}{v_1 - v_2} = \frac{v_2'}{-v_2} = \frac{\frac{d_4 - d_3}{\Delta t}}{\frac{d_1 - d_2}{\Delta t}} = \frac{d_4 - d_3}{d_1 - d_2}$$

* COR: Coefficient of Restitution



Prototype fabrication (cont.)

- Manufacturing process: hand lay-up method (Cover part)



Conclusion & Future works

■ Conclusion

- Effect of humidity to the golf ball was checked
- Hitting test was performed
- Prototype v1.0 fabricated

■ Future works

- Prototype fabrication (v2.0)
 - Detail package design/fabrication
- Evaluation of prototype v1.0



Future works (cont.)

Plans

| Plans | Dates | March | | | | | April | | | | May | | | | June | |
|--|-------|-------|---|---|---|---|-------|---|---|---|-----|----|----|----|------|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Concept generation | | | | | | | | | | | | | | | | |
| - Mission statement & Brainstorming | | | | | | | | | | | | | | | | |
| - Market survey | | | | | | | | | | | | | | | | |
| Design & analysis | | | | | | | | | | | | | | | | |
| - Conceptual design | | | | | | | | | | | | | | | | |
| - Detail design | | | | | | | | | | | | | | | | |
| - Finite element analysis | | | | | | | | | | | | | | | | |
| Finding conditions | | | | | | | | | | | | | | | | |
| - Finding optimal temperature conditions | | | | | | | | | | | | | | | | |
| - Finding optimal humidity conditions | | | | | | | | | | | | | | | | |
| Prototype | | | | | | | | | | | | | | | | |
| - Prototype manufacturing | | | | | | | | | | | | | | | | |
| - Evaluation | | | | | | | | | | | | | | | | |
| Presentation | | | | | | | | | | | | | | | | |





Thank You !

