2008 European PV Conference

Improving the Tools Continuing to look for improvements in the Design and Production of the Pole Vault Pole

Overview

- Bamboo to Steel to Fiberglass to ?
- Refining the production process
- Probing the material properties envelop
- Testing at the Plant Data
- Using the tools Vaulting
- Right tool for the right person

Stroll through Gill Athletics, Inc. and a short history of poles

- 1918 Harry Gill starts making track and field equipment
- 1949 Herb Jenks and his first fiberglass pole
- 1951 Fiberglass poles carried in a track equipment booklet
- 1951 Giltal Vaultmaster Metal Poles
- 1960 Gill Fiberlite (fiberglass pole) carried steel, bamboo and fiberglass poles
- 1966 Gill Big Red Fiberglass pole
- 1967 "New in 1967" Training Poles also 16' Big Red's
- 1967 Rankin Method weight rating versus hand hold height for fiberglass poles
- 1976 Gill Vaultmaster II brown fiberglass pole is being phased out and Gill is now carrying Dark Blue Skypoles

1976 – Patent on Fiberglass Vaulting Pole issued, Herbert Jenks, Assignee, AMF Incorporated. Bob Prideaux a pattern cutter at Pacer is still helping make poles at Gill Athletics, Inc.

1984 – Skypole and equipment sold to Gill. Ralph Paquin is 1st Gill Employee trained on Skypole manufacturing, Ralph is still working at Gill in Engineering Group.

1985 – A few Light Blue Skypoles had carbon material - prototyping

1987 – Pacer Line and equipment for building poles, Herb Jenks patent and technology sold to Gill.

- 1988 Gill is testing Carbon Skypoles
- 1991 Mean Green Skypole introduced, Carbon Poles hit the scene

1994 – Ms.Stic girls vaulting pole introduced

2001/2002 – FX (Functional Design) – 2003 Started looking at advanced materials

Display of Poles



Pole Production

- Controlled Production Environments
- Automated Production Controls
- Advance Measurement and Logging
- The human part patterns, cutting, wrapping











Controlling the Process

- PLC based control of the process
- Flow phase is temperature and pressure controlled and monitored
- Curing the pole (curing the resin)
- Measurement and Data logging
- Recoverable Information

Computer Control through flow and Cure Process





Data Storage

- When label printed data is stored
- Individual Serial Numbers
- Retrievable Information



Taping the Poles



Testing and Data Collection

- In Plant Testing
 - Standard Production Testing
 - Dynamic Testing for Data Collection
- Behind the Plant Data Collection
 - Factory Vaults
 - Data Collection/Test Vaulting
- Competitive Vaults by top level vaulters

Production Structural Check



72 percent chord length





65 percent chord length





3D Modeling







Tools to Understand Better

- Video Taping
- Arc Lines Factory Vaults
- Dynamic Testing
- Dartfish Anaylsis Software
- 3D Solid modeling (SolidWorks)
 Motion Capabilities
 FEA Capabilities



Overbending

- Some Vaulters will overbend poles
- Shortening the chord or compressing the pole versus vaulting high
- Applying a moment



What works for the vaulter

- The right tool
- F1 versus limo
- Beginner versus elite
- One pole versus various poles
 - Different lengths
 - Different ratings or flexs
 - Different Designs





