

The next generation of autoinjectors...

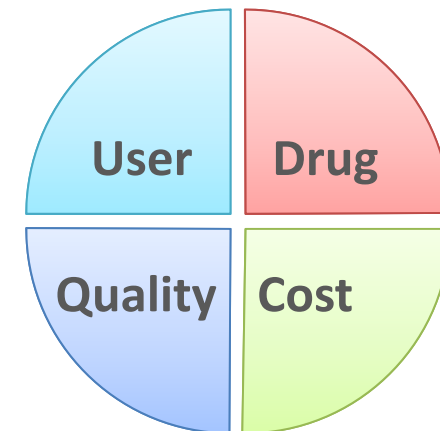
Oval Medical Technologies Ltd
Background information
September 2014

STRICTLY CONFIDENTIAL



Technology meets key market needs

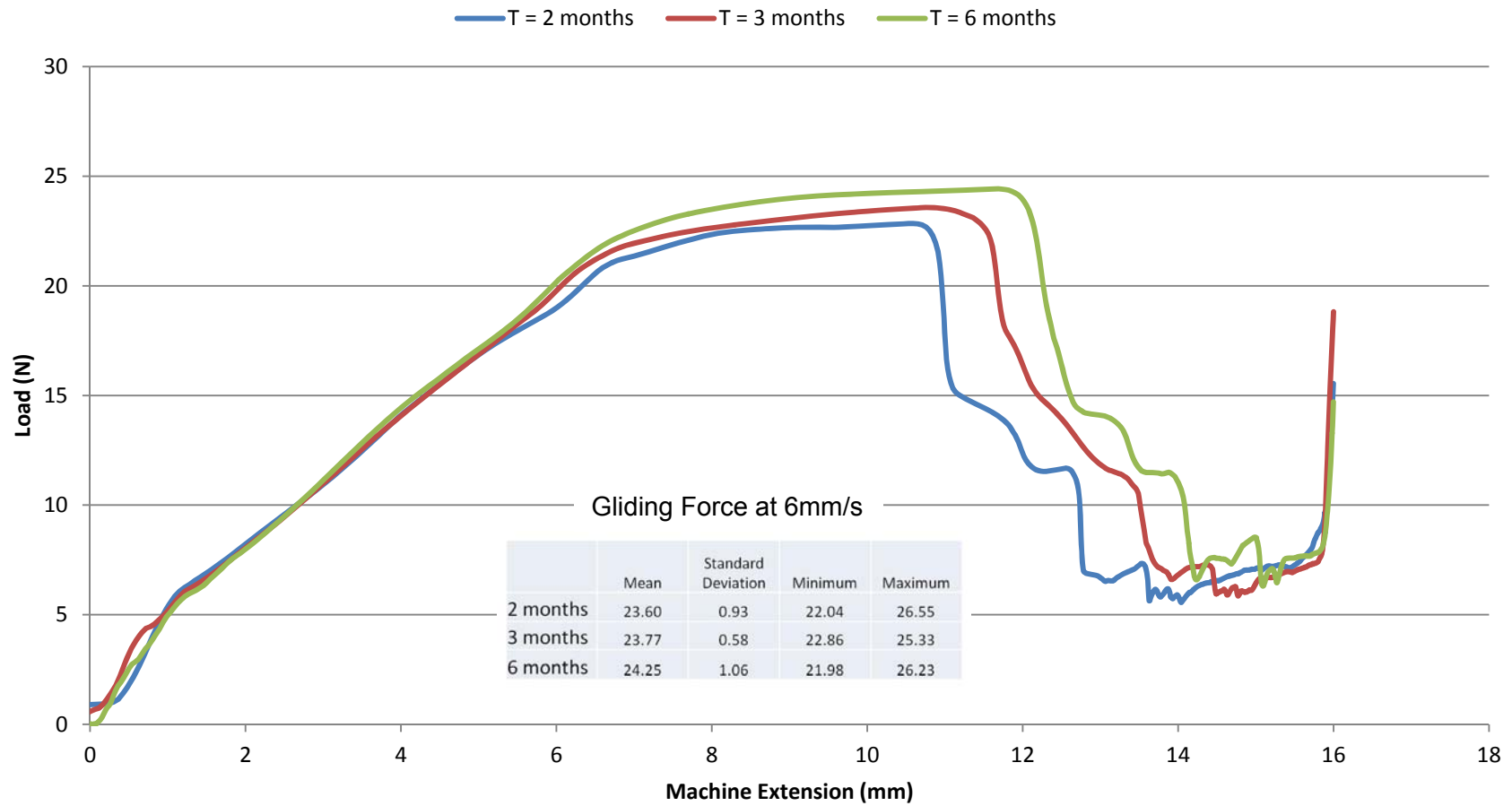
- User
 - Accessible by wider range of people (older, younger, less able, less trained, more stressed)
 - Preferred, reduced fear and pain
 - Better compliance, safer
- Drug
 - Larger drug volumes, more viscous formulations
 - Stability, (especially for biologicals)
- Quality
 - Consistency and robustness
- Cost
 - Unit cost
 - Cost of implementation, quality



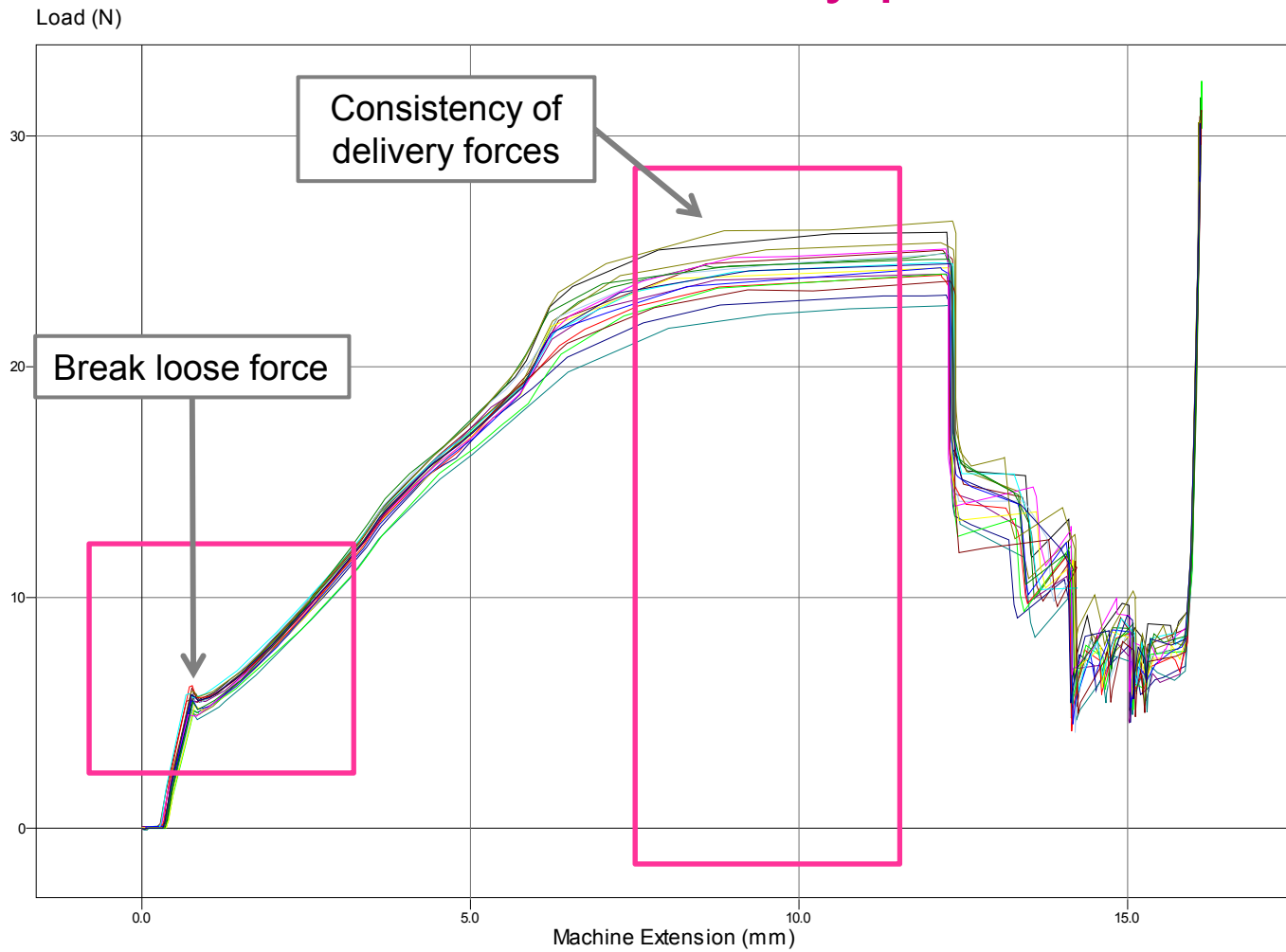
Primary Drug Container 'PDC2' for "Standard Autoinjector"



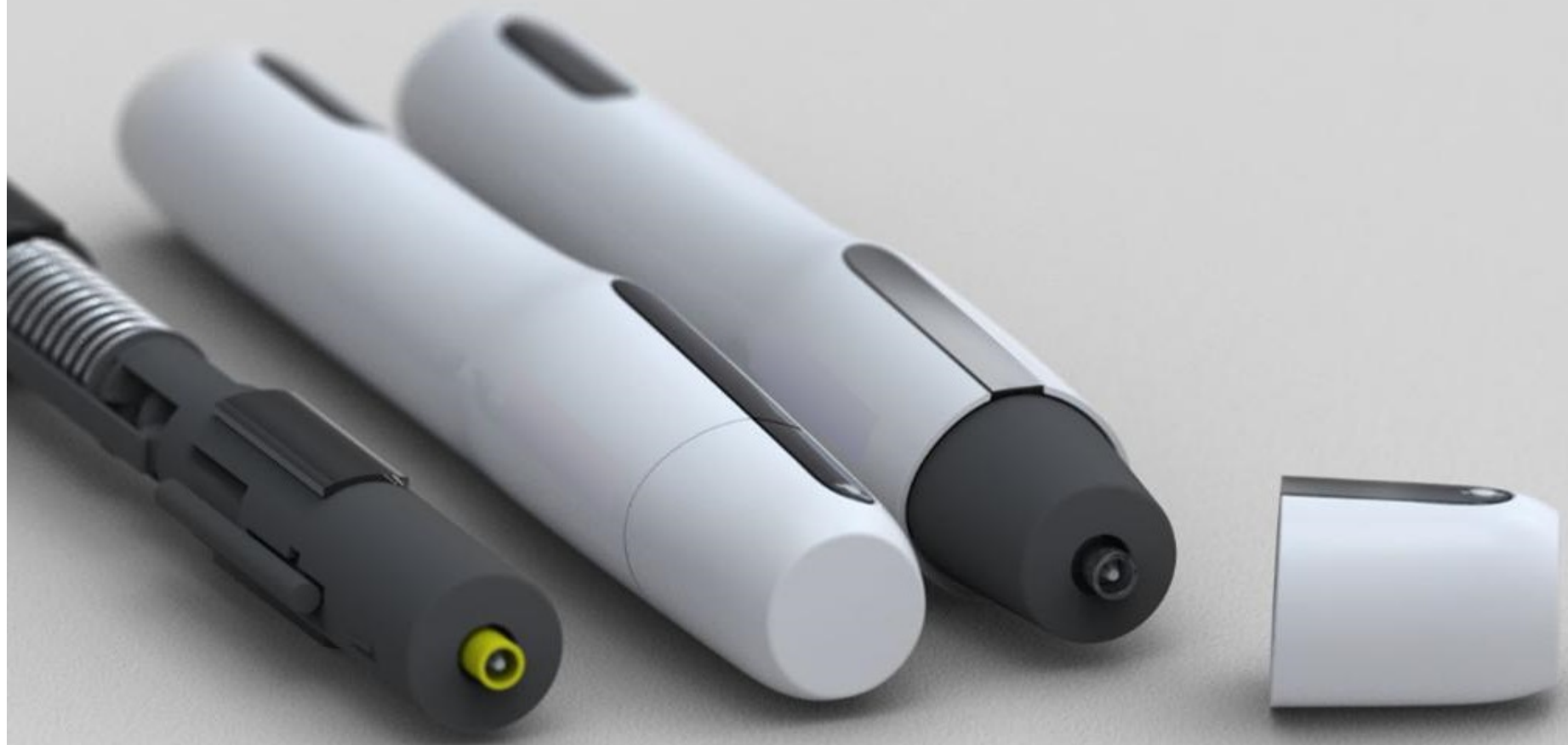
Consistency of delivery force over time



T = 6 months delivery profiles



High-viscosity autoinjector



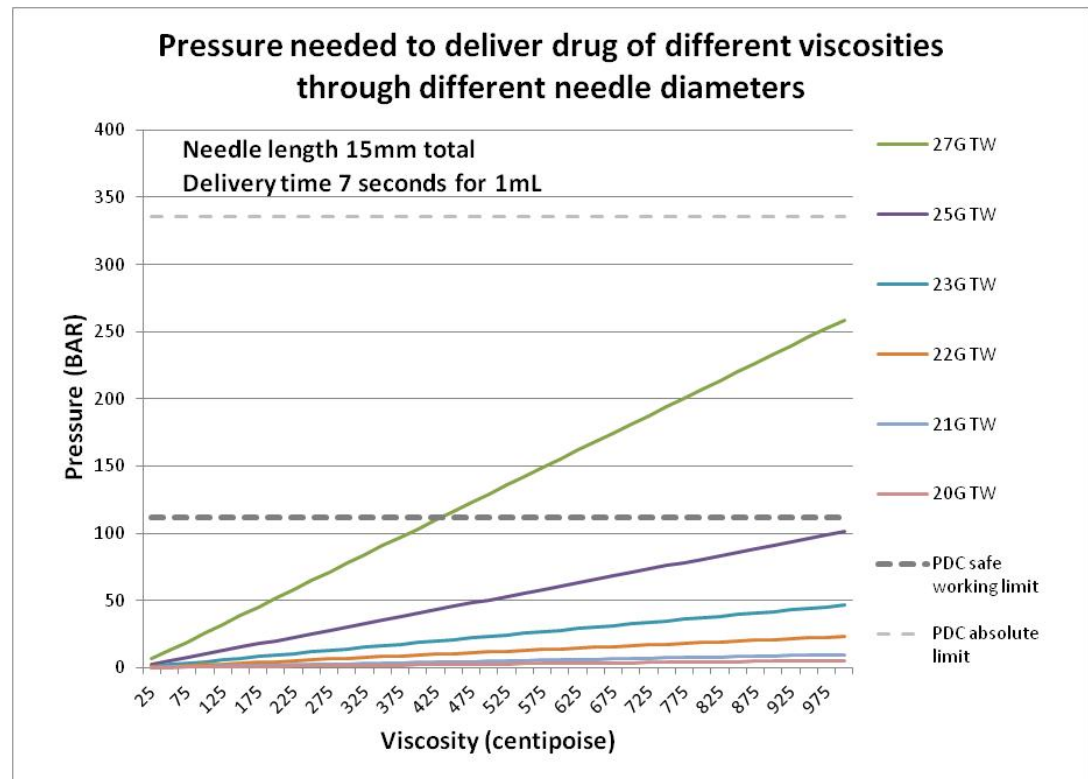
Bursting of container

Oval 'High Viscosity' primary drug container

- Designed specifically for high pressures
- Maintains integrity over **335 BAR**
- Allowing a 3x safety margin, this gives a working range of up to **112 BAR**

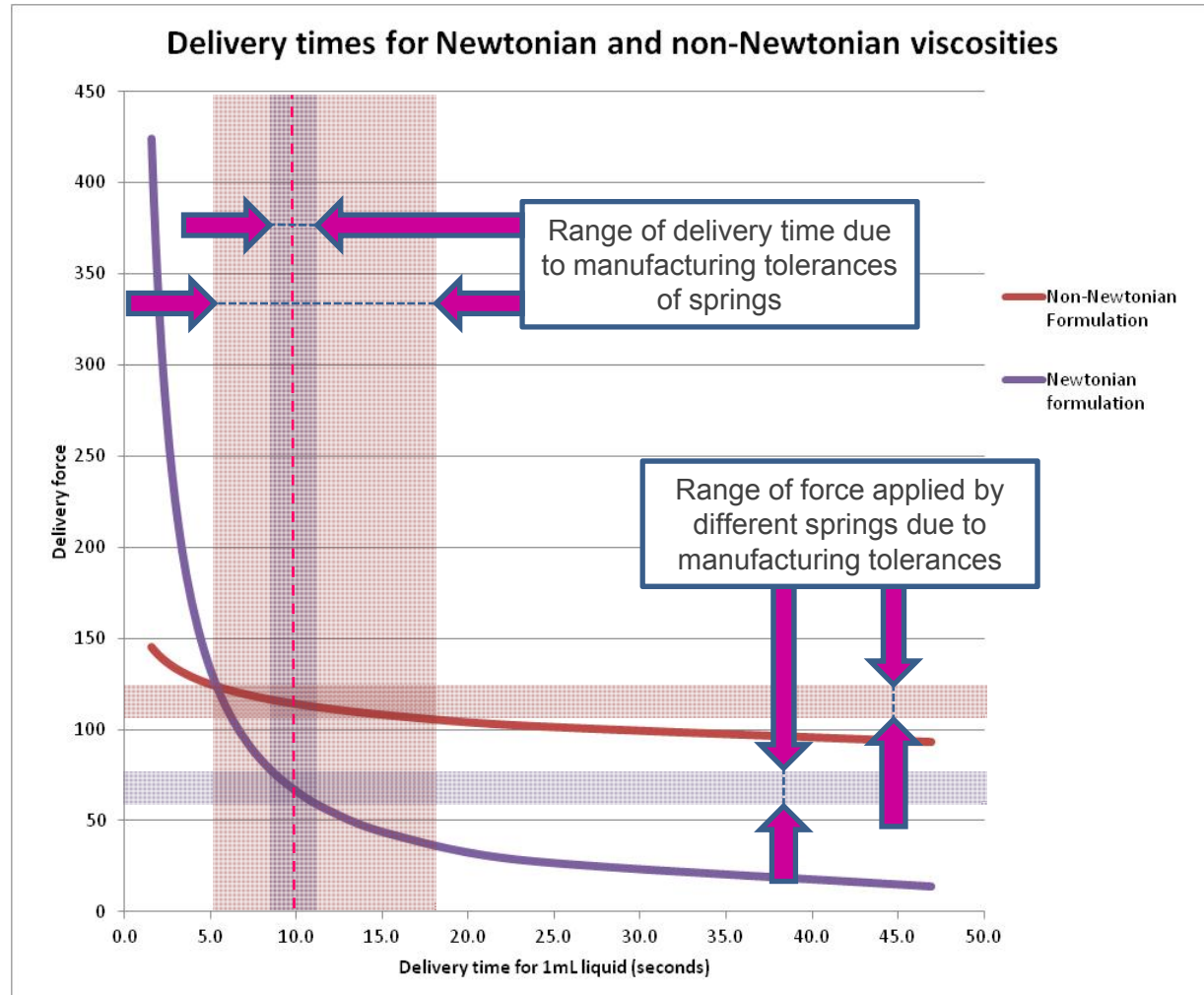
Limitations of Oval's 'High Viscosity' primary drug container on this basis:

- **430 cP**, with 27 G TW needle
- **1100 cP**, with 25 G TW needle



Effect of non-Newtonian viscosity on delivery time

Oval have developed methods to characterise drugs for non-Newtonian viscosity and its impact on autoinjector performance.



Primary drug container

- Filling –current offering
 - Aseptic filling capability available at CMO
 - Capable of 1000's of primary drug containers
 - Fill, stopper placement, foiling
 - Can handle biologicals (including live), controlled drugs
 - Development scheduled with leading filling equipment supplier



Current status

- Primary drug containers available for stability
 - Custom volumes available within 3 months
- Aseptic filling process available (in UK)
 - Equipment also available for in-house filling
- Injection molded autoinjectors available
 - Up to 50cPs
- High viscosity primary drug containers available
 - Up to 250,000 cPs, 0.4mL
 - Delivery rigs available



For further information please contact
Bastiaan de Leeuw or Matthew Young
+44 (0) 1223 437 137