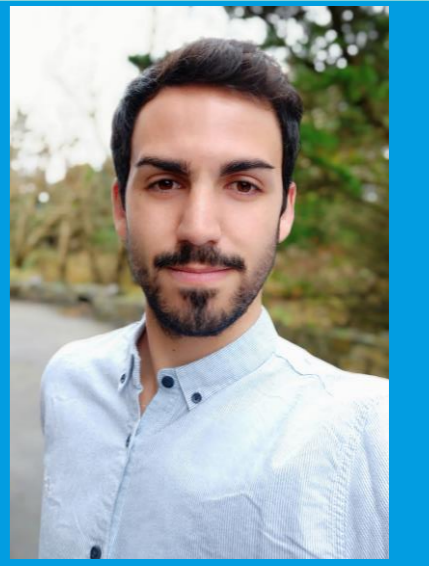
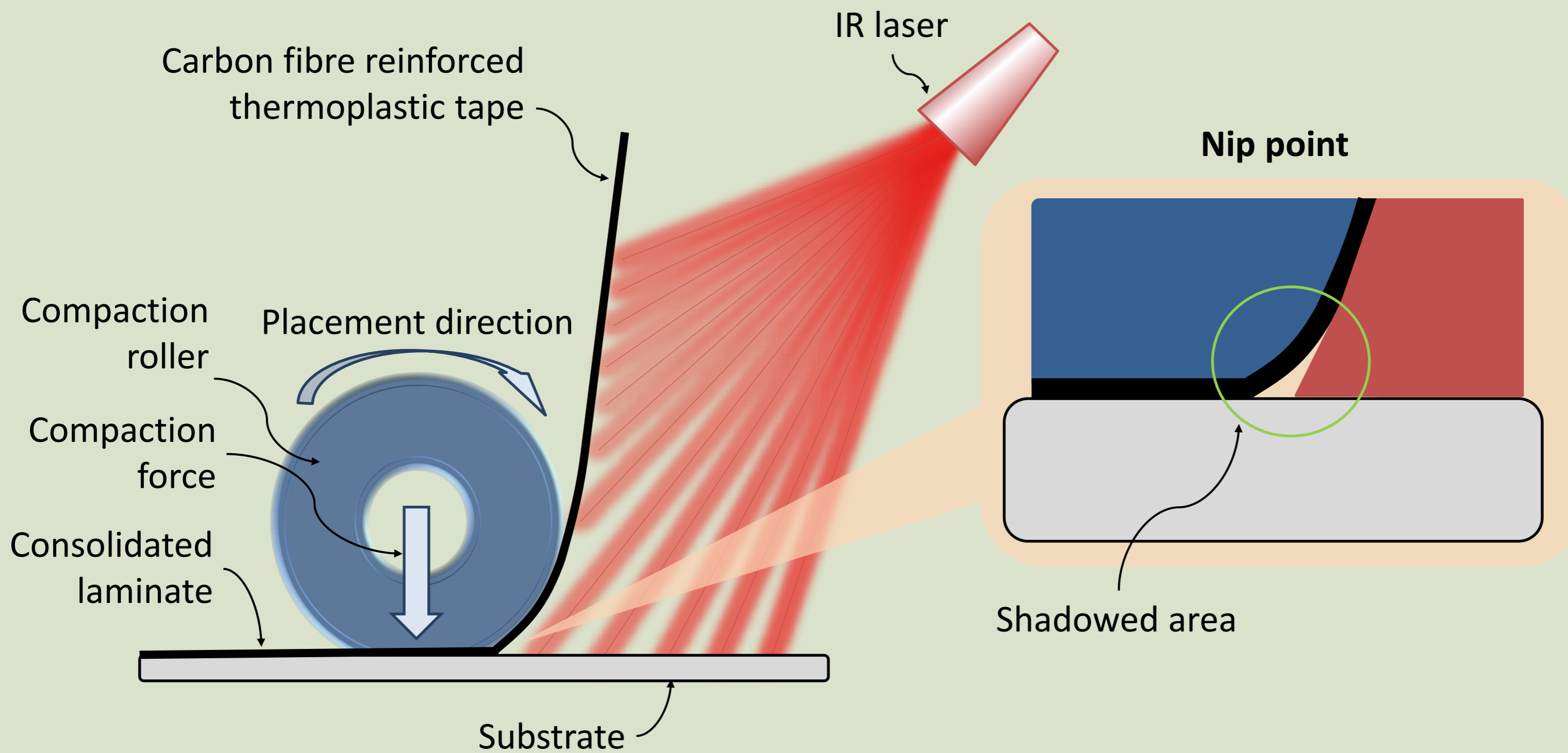


# IN-SITU CONSOLIDATION (IC) IN LASER-ASSISTED AUTOMATED FIBRE PLACEMENT (LATP) OF CARBON FIBRE REINFORCED THERMOPLASTICS (CFTP)

**Alejandro Jiménez del Toro**  
 AWEF & ASM  
 WE & AMT  
 Dr. J.J.E. Teuwen  
 Dr. S.J. Watson, C.A. Dransfield  
 a.jimenezdeltoro@tudelft.nl



LATP-CFTP  
 BASIC COMPONENTS



**Typical high placement speed processing conditions**  
 Laser power: > 2 kW  
 Heating time: < 500 ms  
 Heating rate: > 1000 °C/s  
 Compaction time: < 100 ms  
 Cooling rate: > 10 °C/s

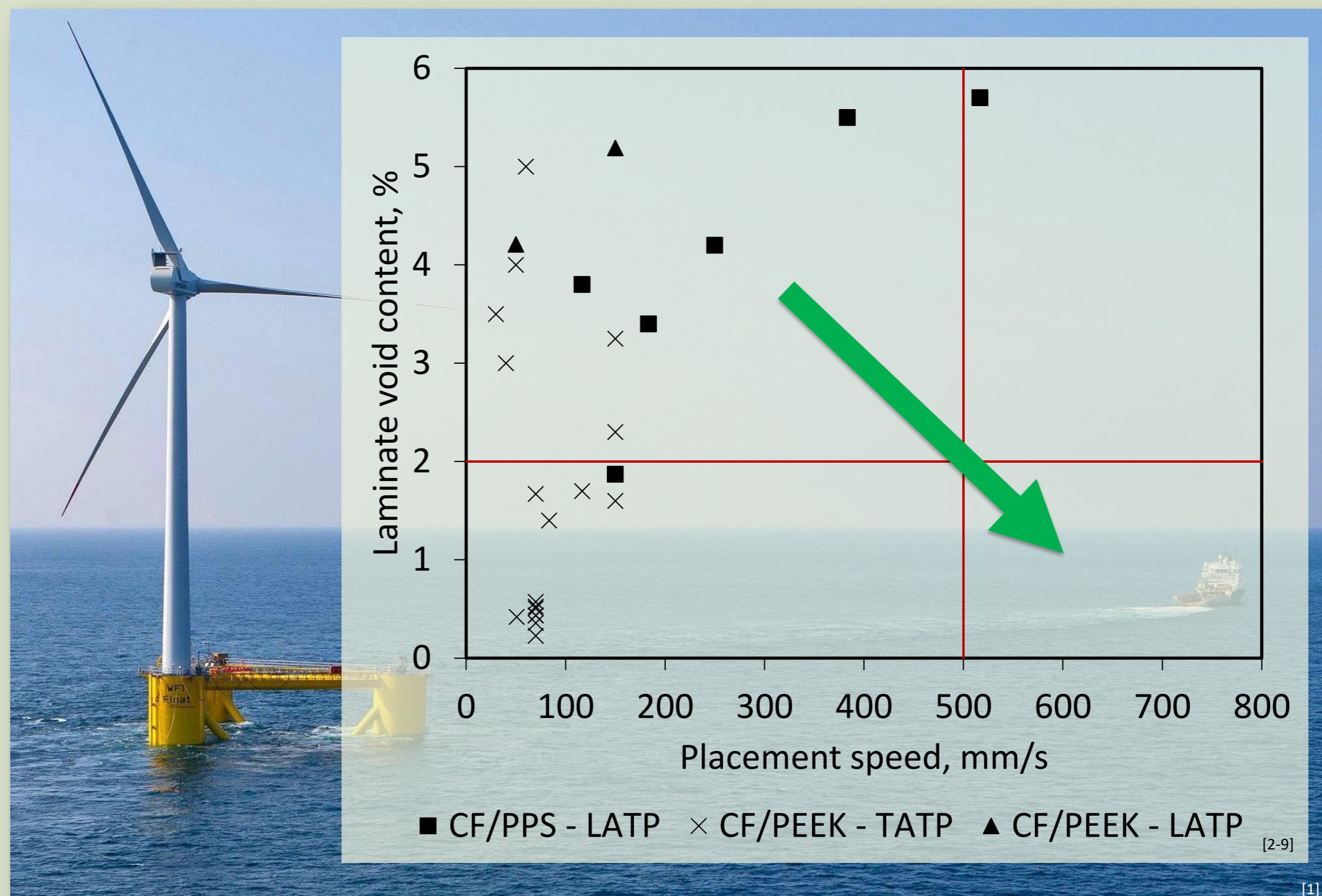
LATP-CFTP  
 PROS, CONS AND CHALLENGES

## CFTP

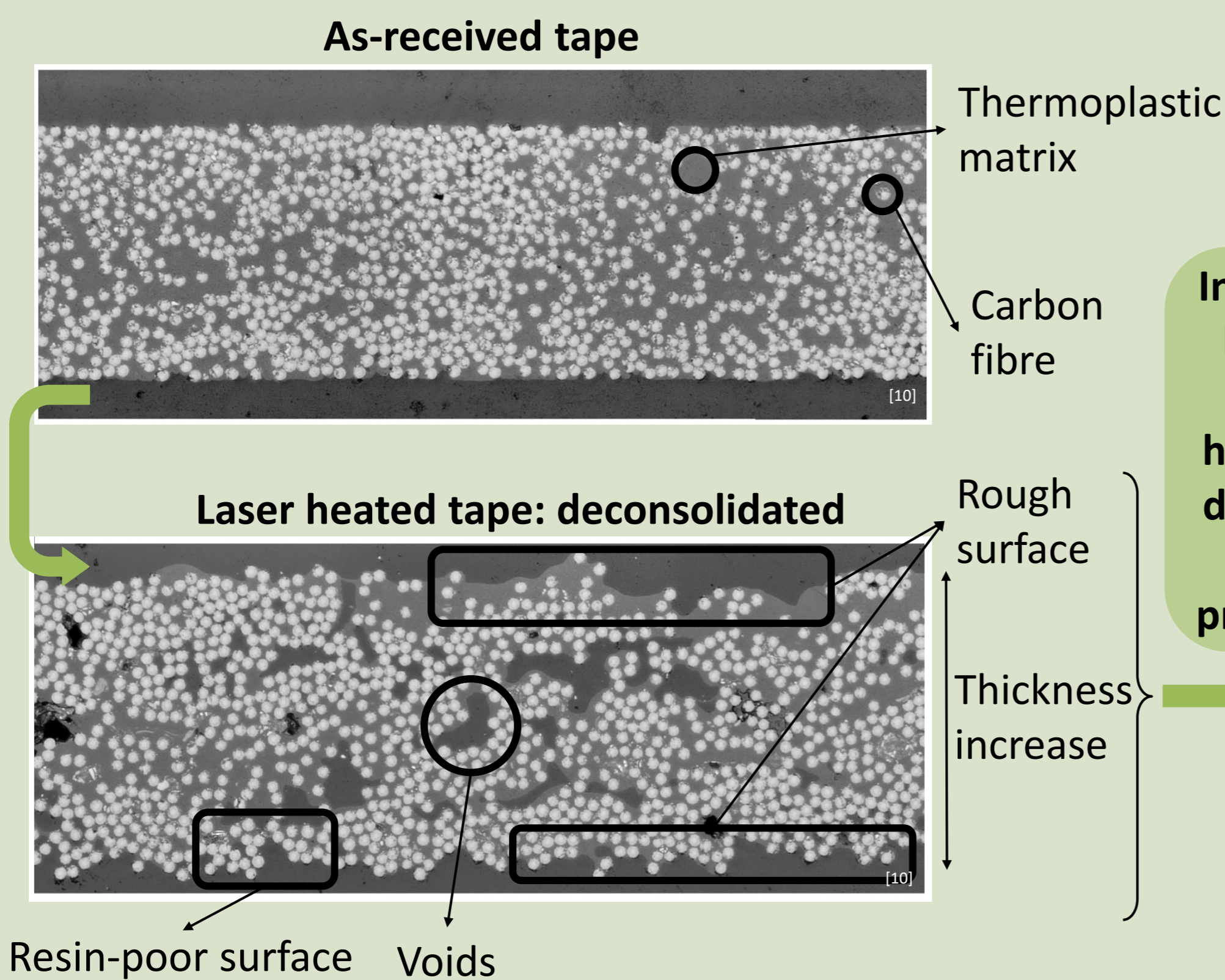
- ✓ In-situ consolidation
- ✓ Weldable
- ✓ Infinite shelf-life
- ✓ Recyclability
- ✗ Expensive

## LATP

- ✓ One-step manufacturing
- ✓ High degree of automation
- ✓ Layup optimisation
- ✓ Robustness
- ✓ Minimise scrap
- ✗ Laminate quality

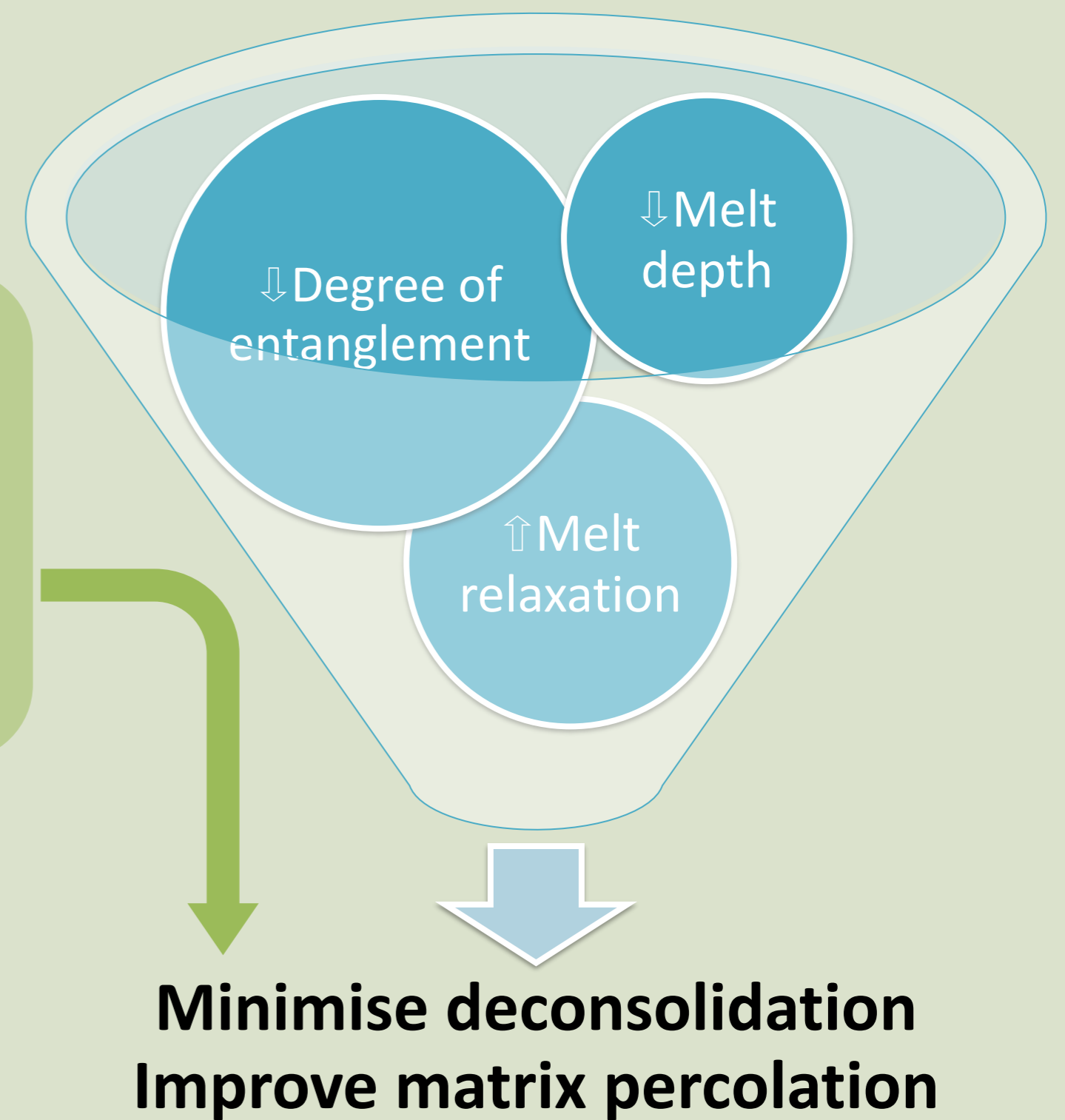


LACK OF IN-SITU CONSOLIDATION.  
 CAUSES AND POSSIBLE SOLUTIONS



**Intimate contact between tape and substrate hindered due to deconsolidation and short processing times**

## Strategies to improve IC



**Minimise deconsolidation  
 Improve matrix percolation**

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