

# Anti-icing Fluid Flow off on a Wing Section During Simulated Taxi and Take-off Run

## APPENDIX A. Video Frames and Wind Tunnel Data of Test Runs

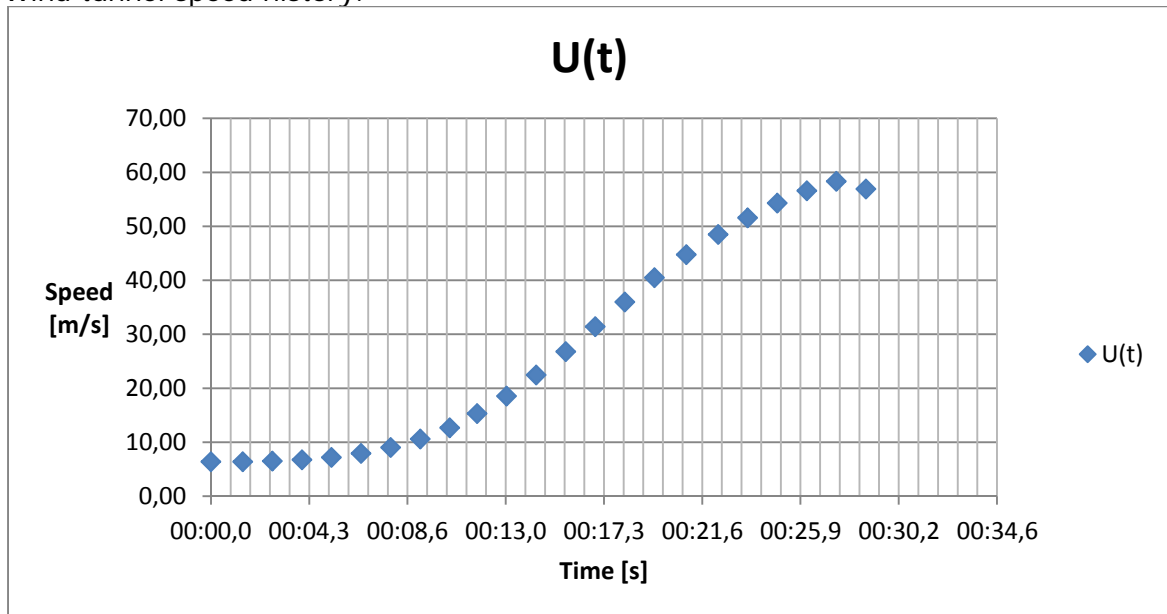
### A.1 Accelerate stop test

Fluid: 100% IV

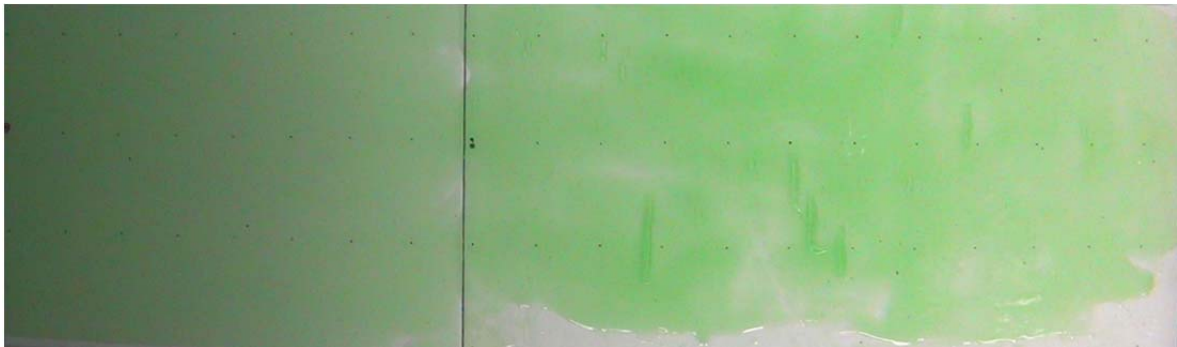
Initial Thickness: 1.8 mm

Temperatures: OAT = +2.8 °C, Coolant Tank = -5,0 °C

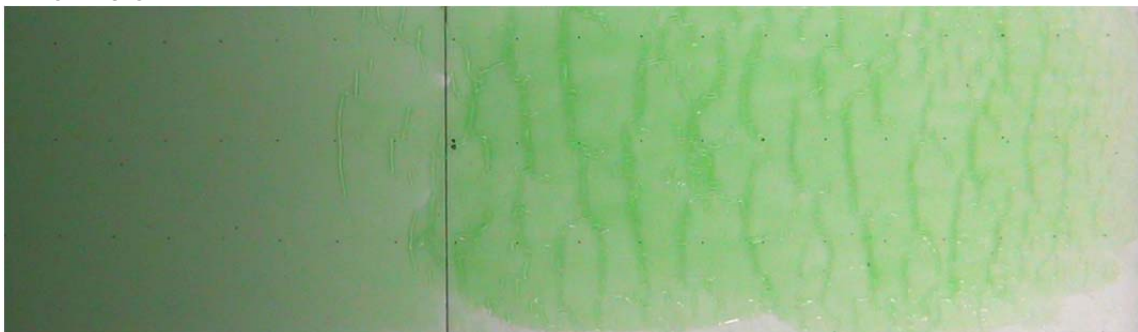
Wind tunnel speed history:



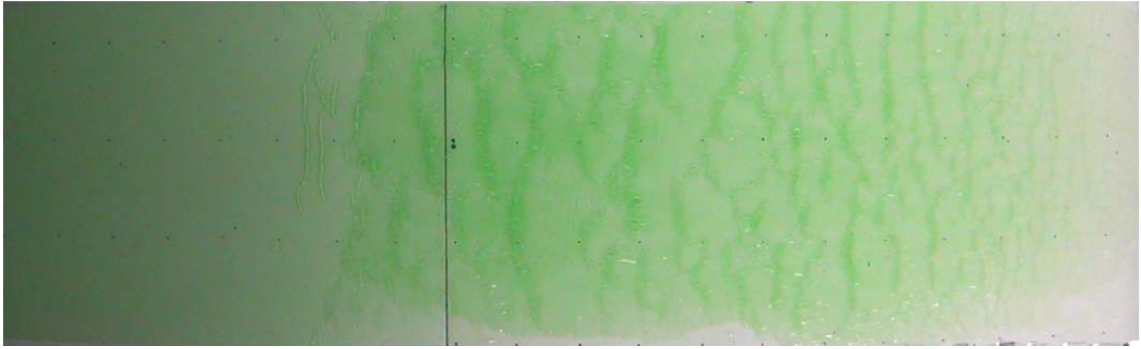
Video Frames:



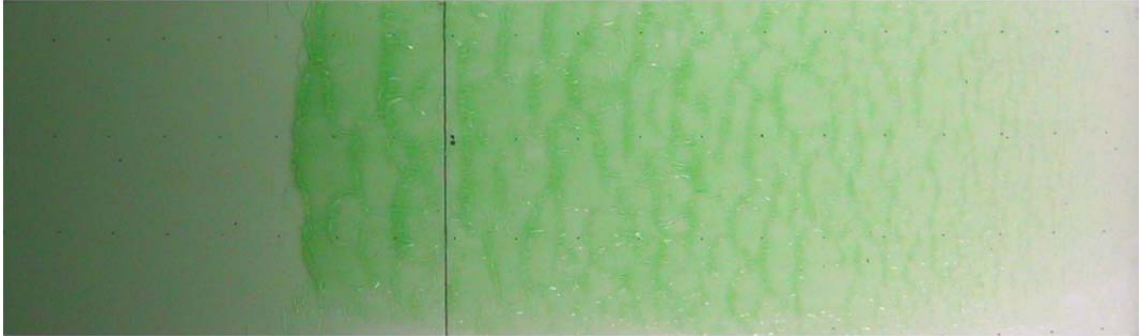
Time = 0 s



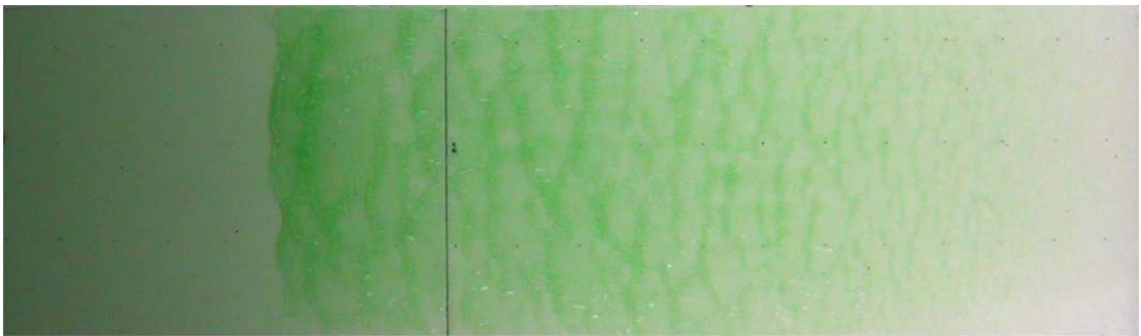
Time = 4 s



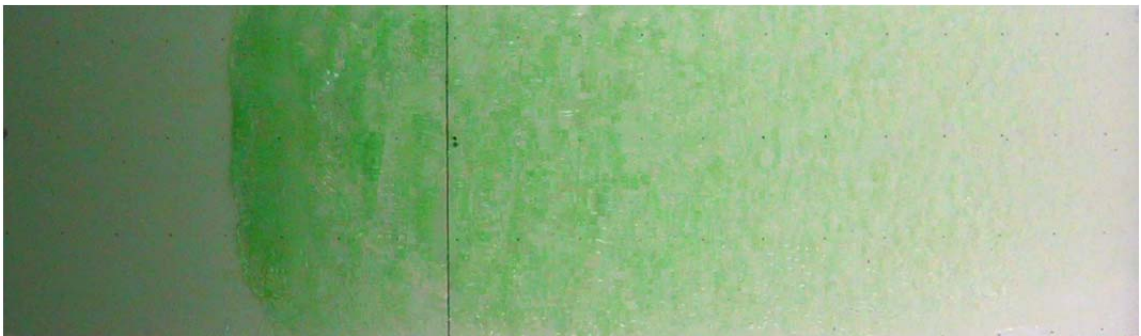
Time = 5 s



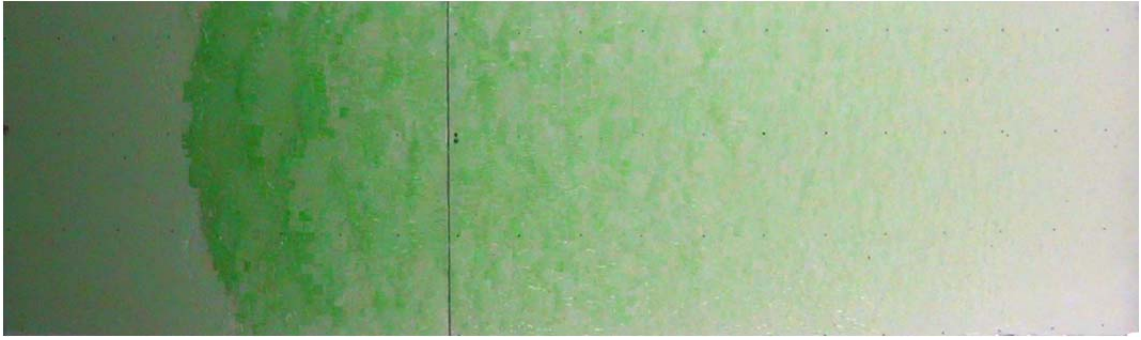
Time = 6 s



Time = 7 s



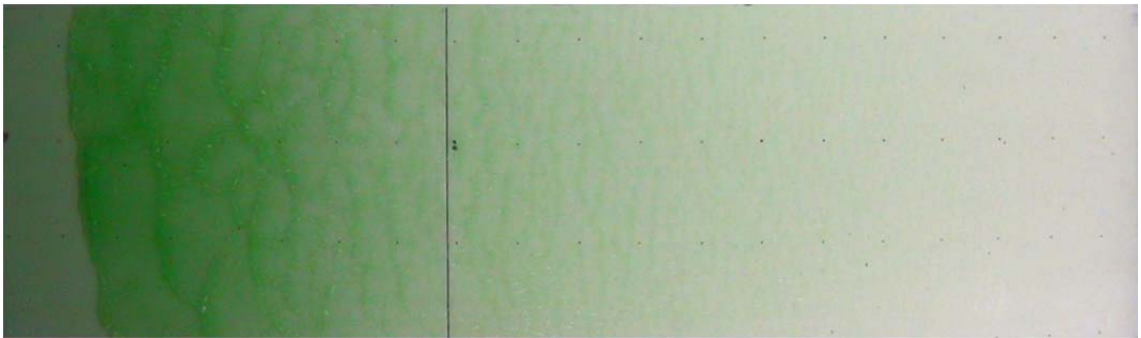
Time = 8 s



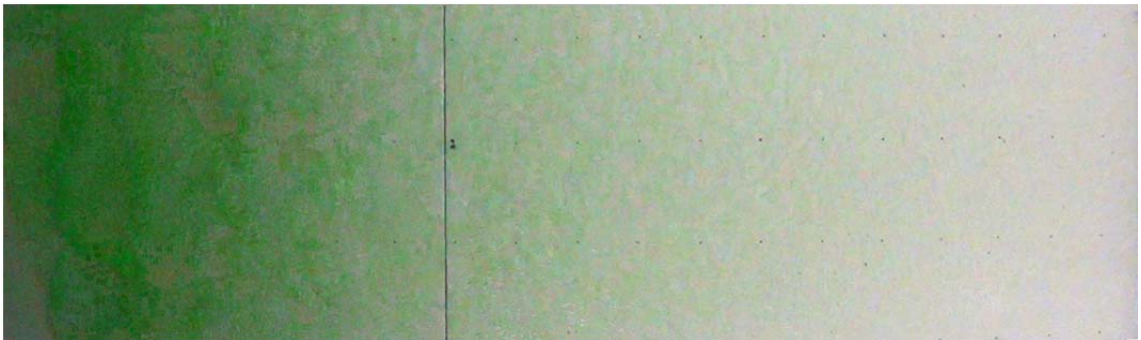
Time = 9 s



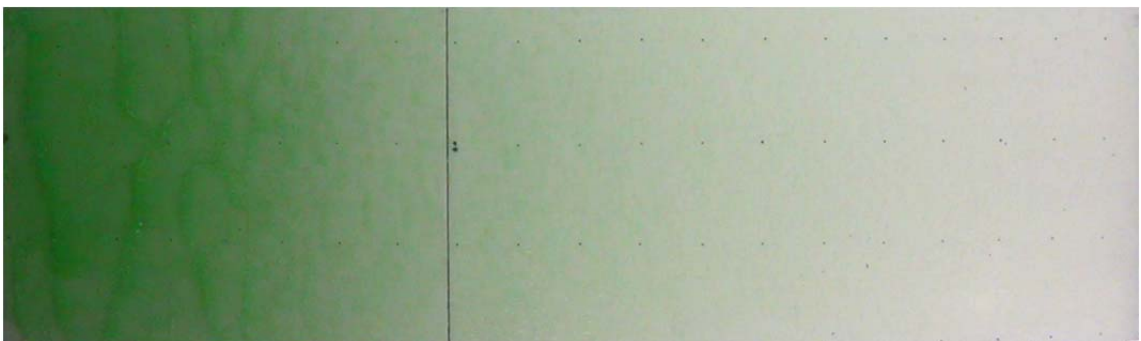
Time = 10,5 s



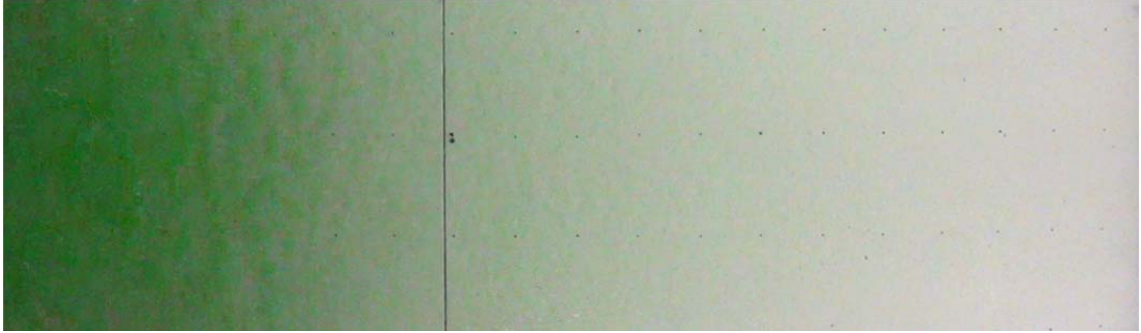
Time = 11 s



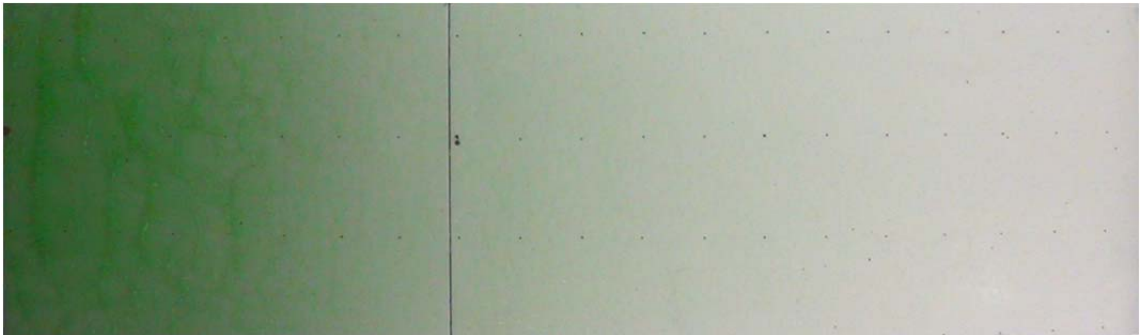
Time = 12 s



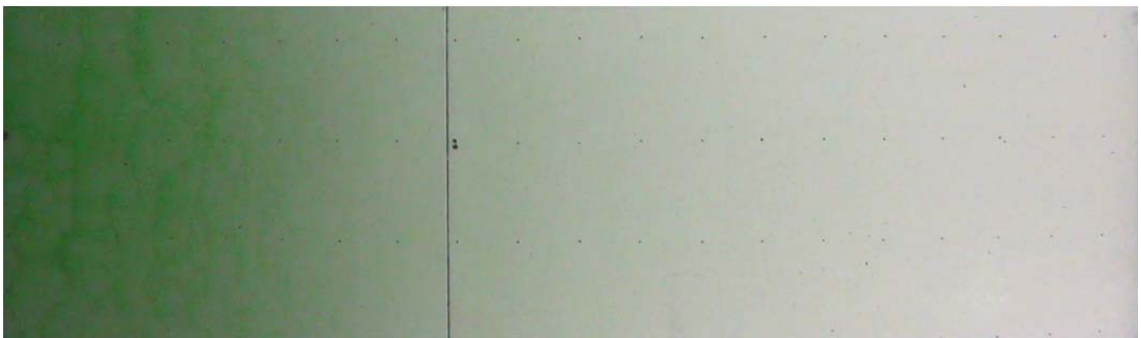
Time = 13 s



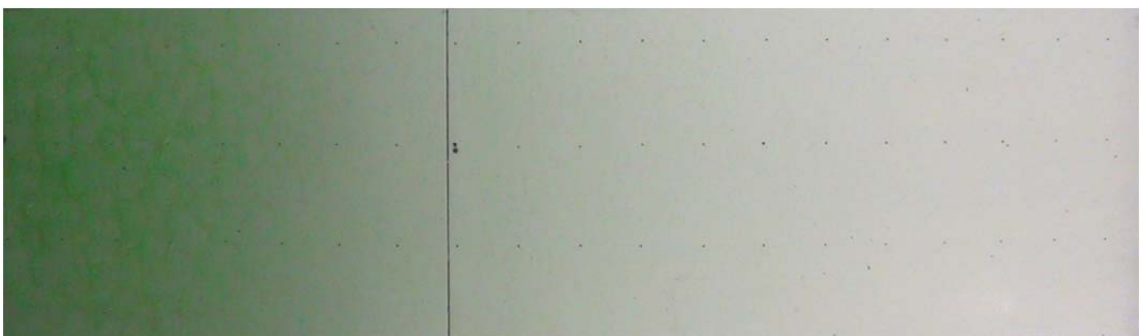
Time = 13,5 s



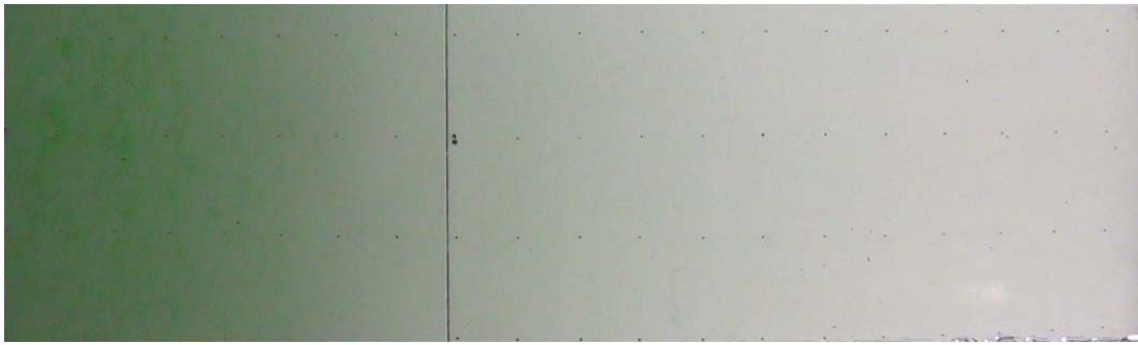
Time = 15 s



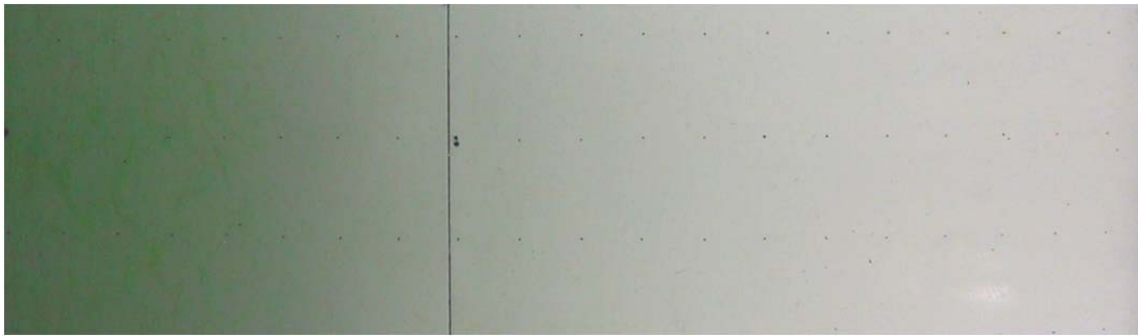
Time = 16 s



Time = 18 s



Time = 20 s



Time = 24 s

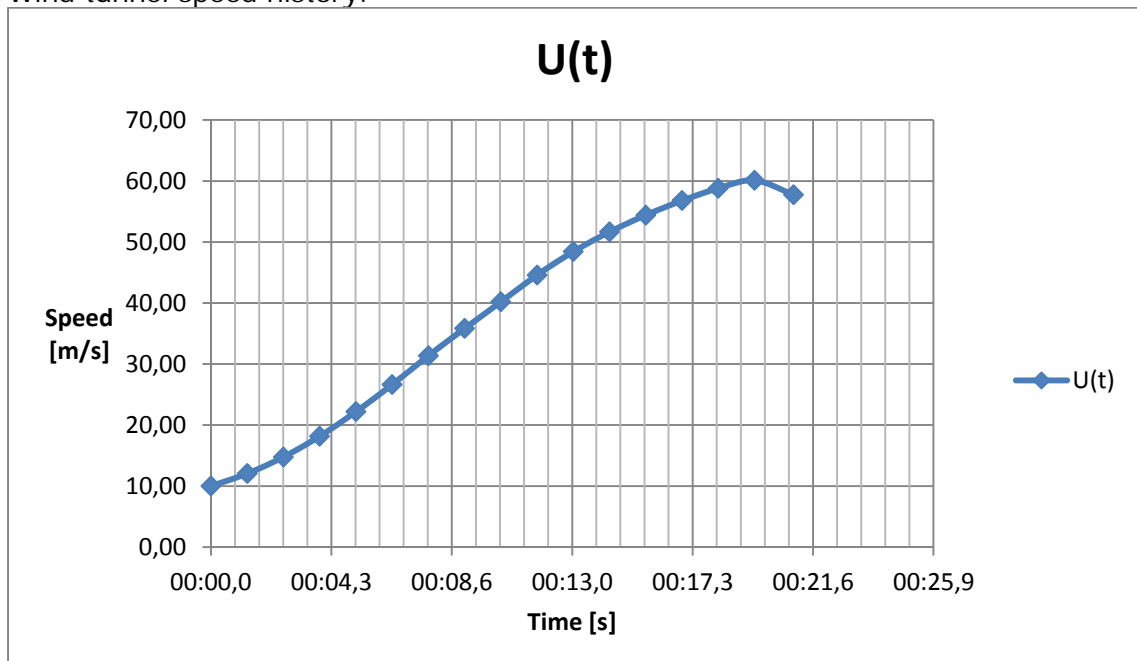
### A.2 Accelerate stop test

Fluid: 100% IV

Initial Thickness: 1.9 mm

Temperatures: OAT = +2.8 °C, Coolant Tank = -0 °C

Wind tunnel speed history:



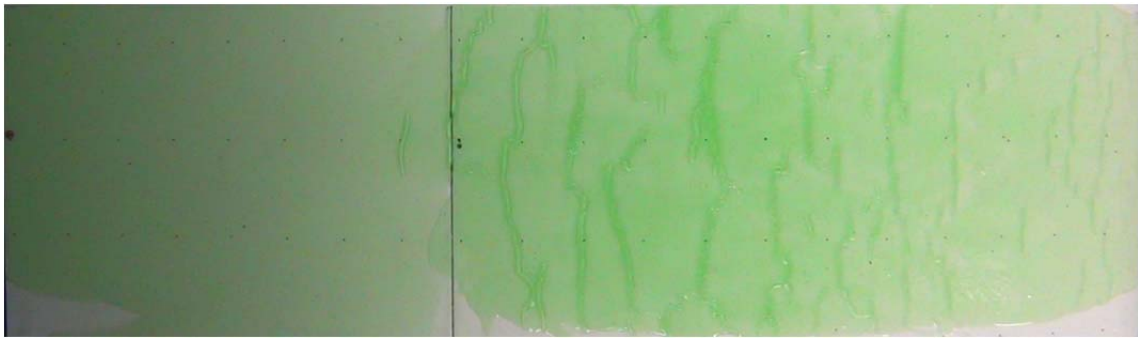
Video Frames:



Time = 0 s



Time = 2 s



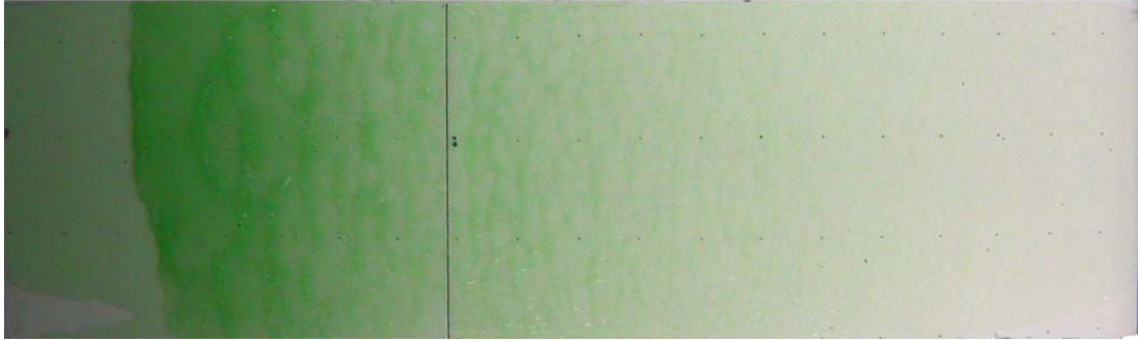
Time = 3 s



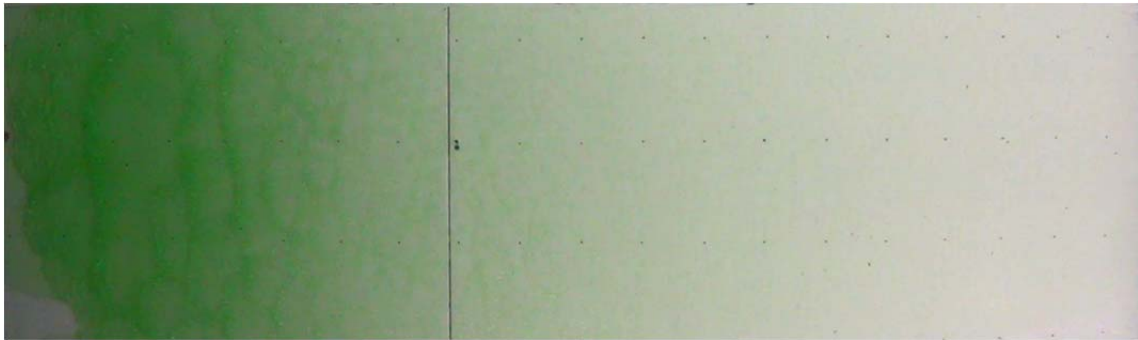
Time = 4 s



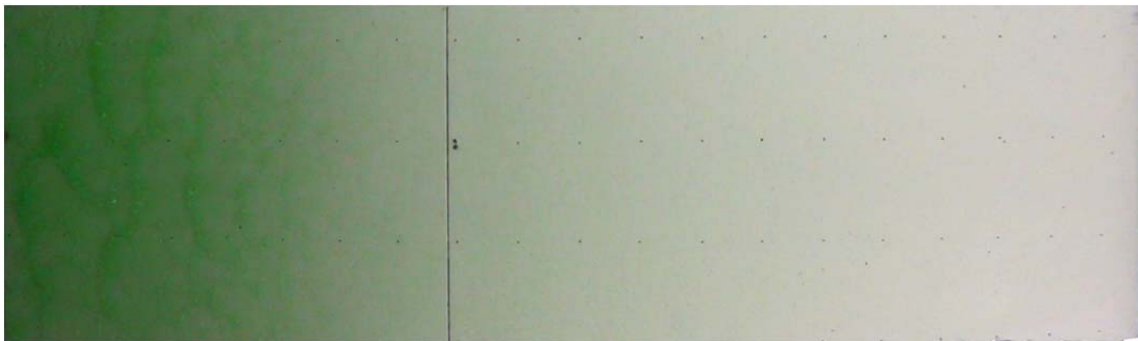
Time = 7 s



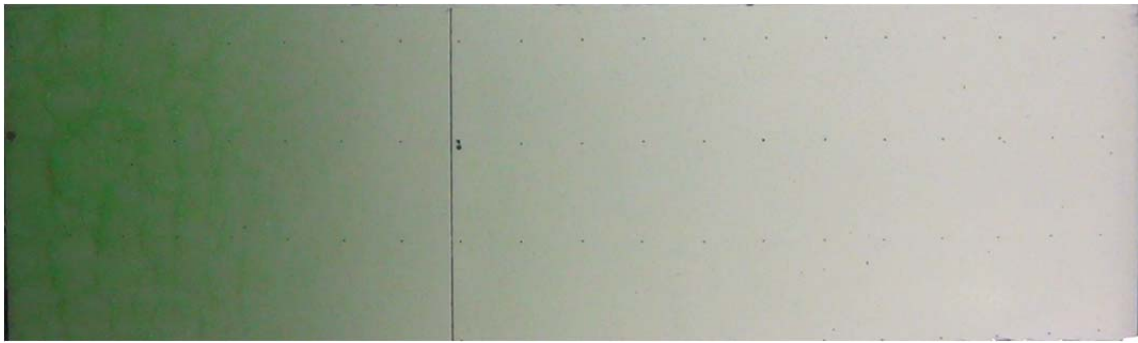
Time = 10 s



Time = 12 s



Time = 14 s



Time = 16 s

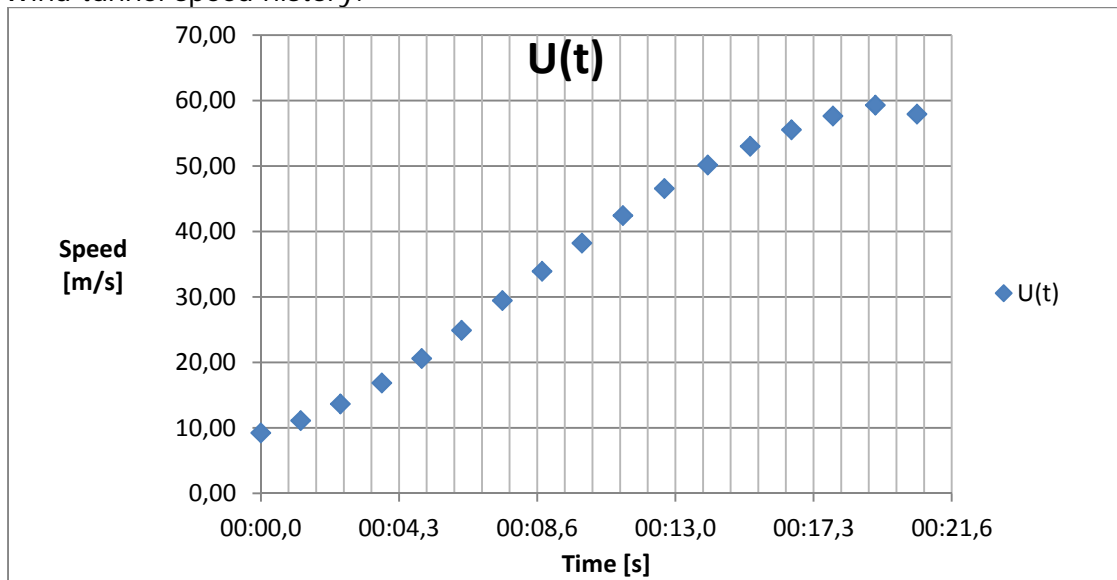
### A.3 Accelerate stop test

Fluid: 100% IV

Initial Thickness: 1.0 mm

Temperatures: OAT = -2.1 °C, Coolant Tank = -18 °C

Wind tunnel speed history:



Video Frames



Time = 0 s





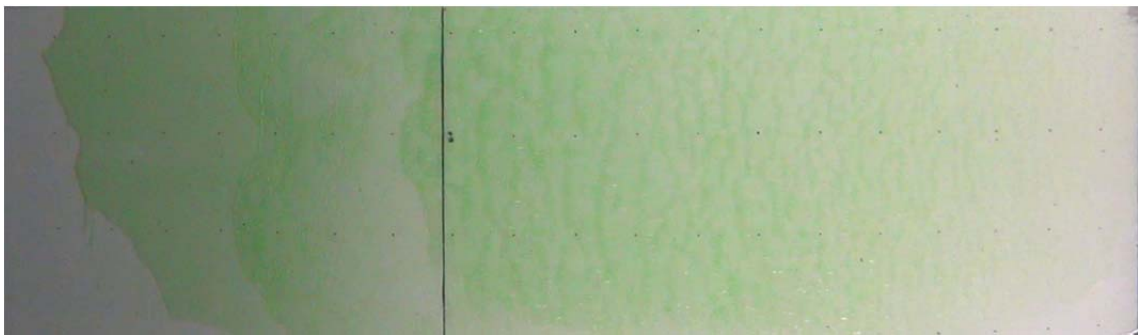
Time = 2 s



Time = 4 s



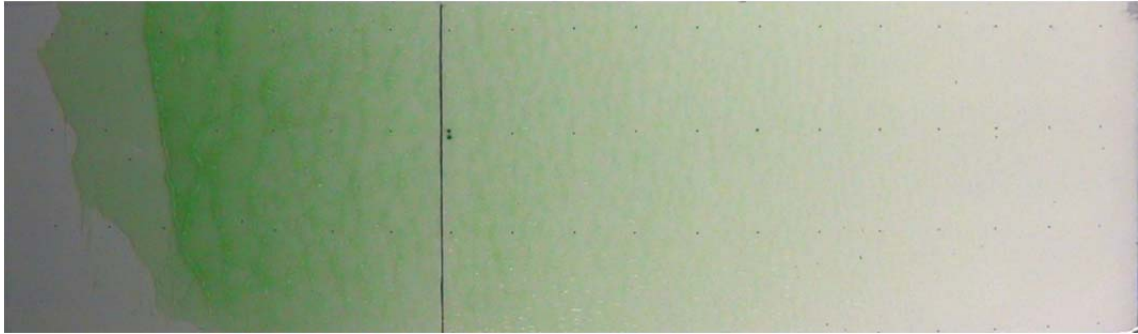
Time = 6 s



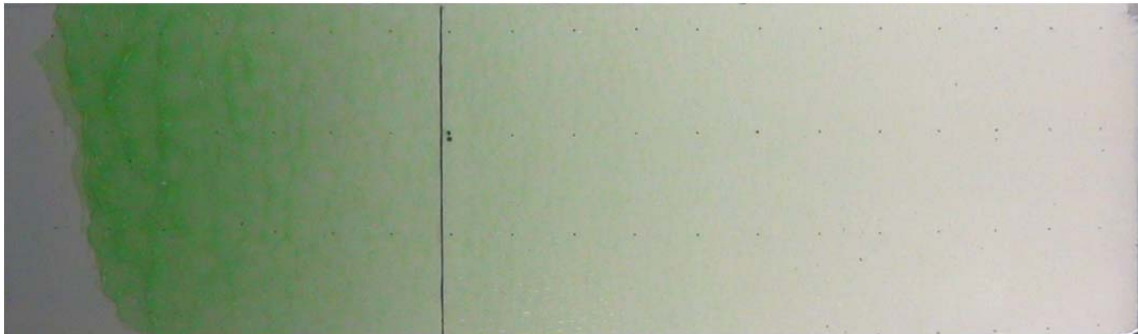
Time = 8 s



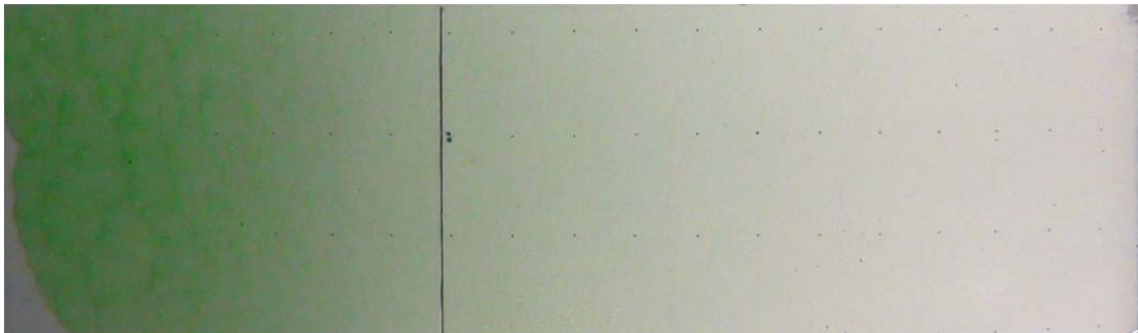
Time = 10 s



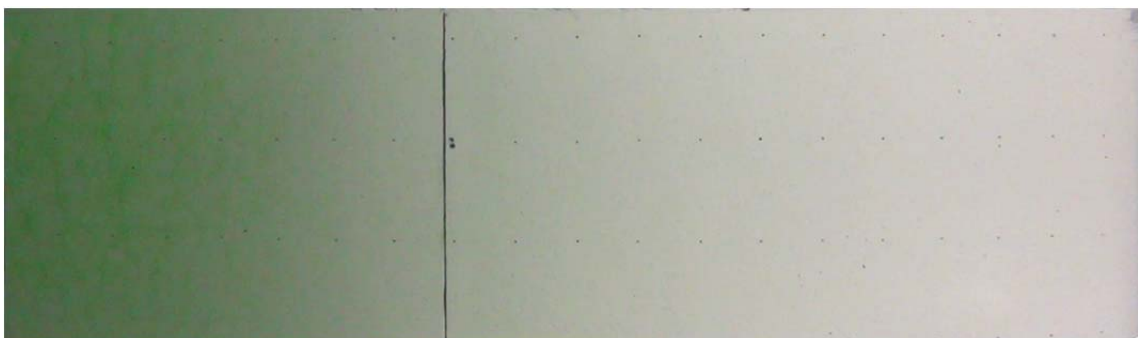
Time = 12 s



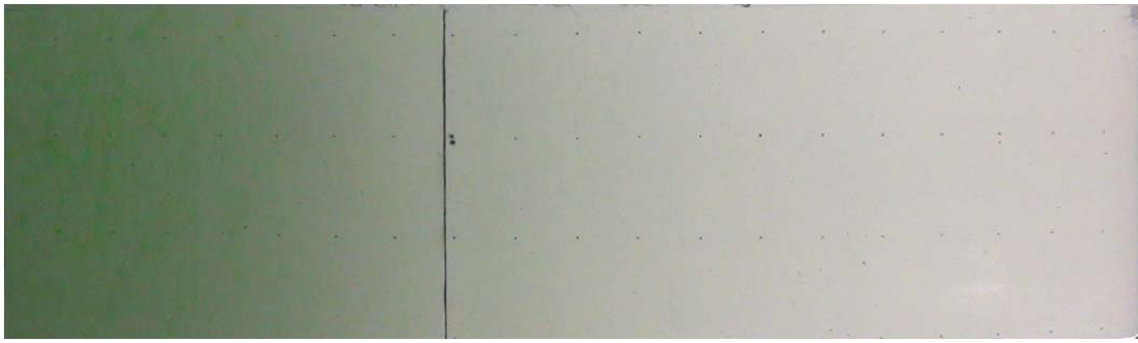
Time = 15 s



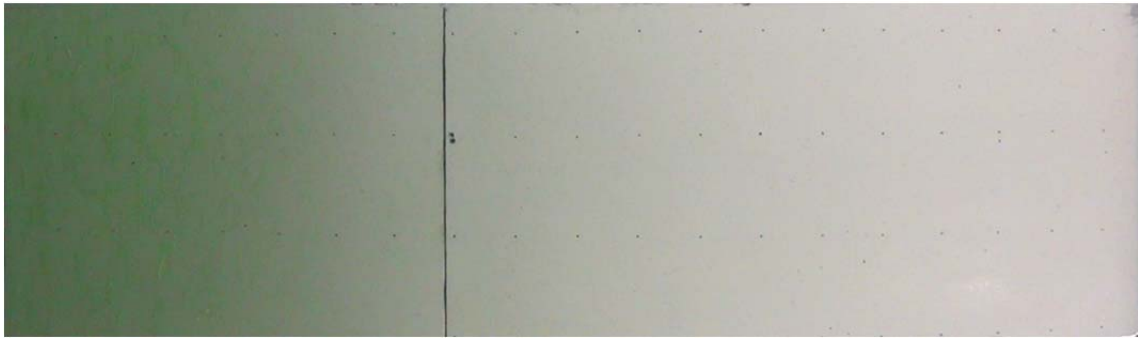
Time = 17 s



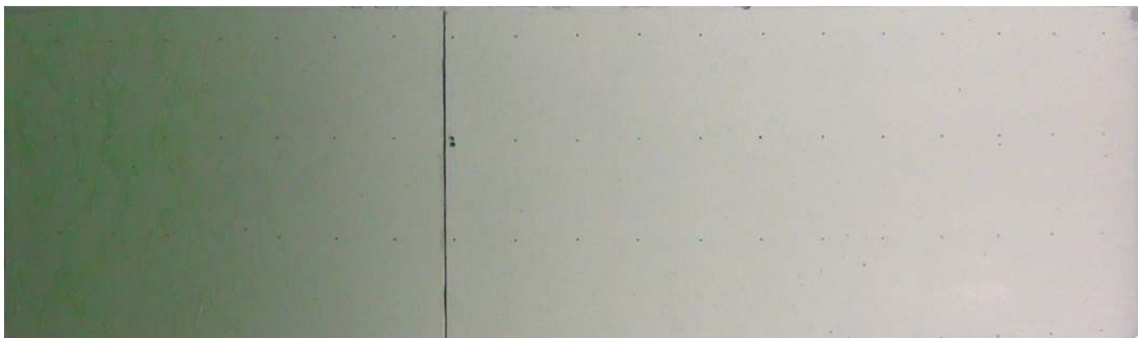
Time = 20 s



Time = 24 s



Time = 26 s



Time = 30 s

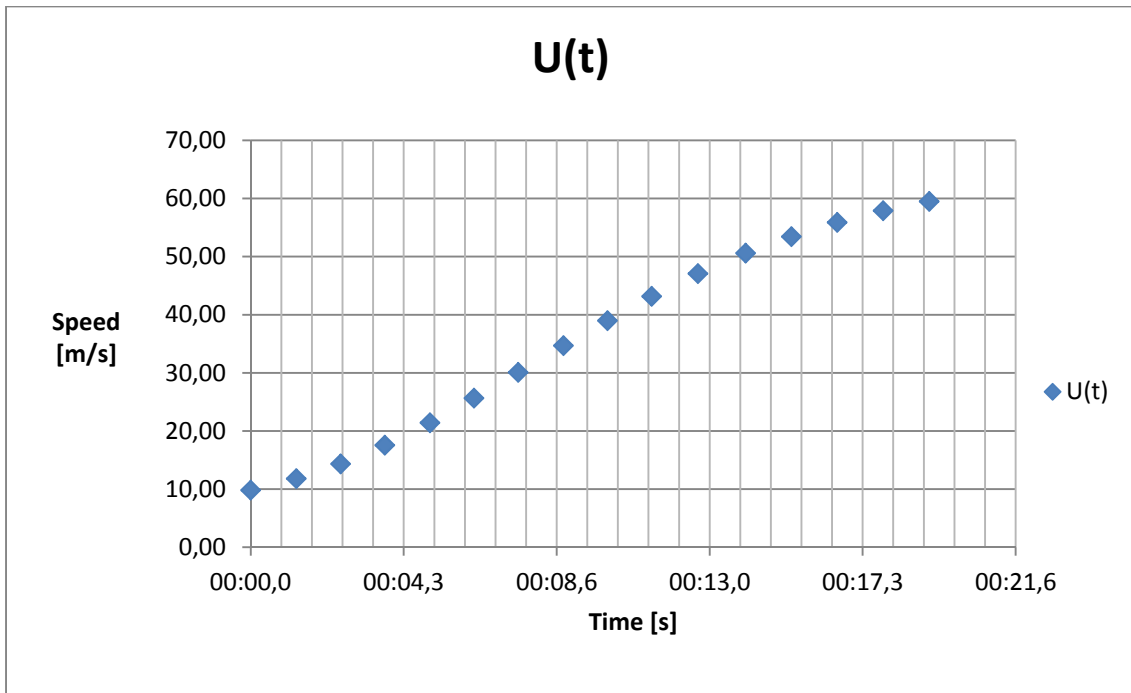
#### A.4 Accelerate stop test

Fluid: 100% IV

Initial Thickness: 0,9 mm

Temperatures: OAT = -1,5 °C, Coolant Tank = -12 °C

Wind tunnel speed history:



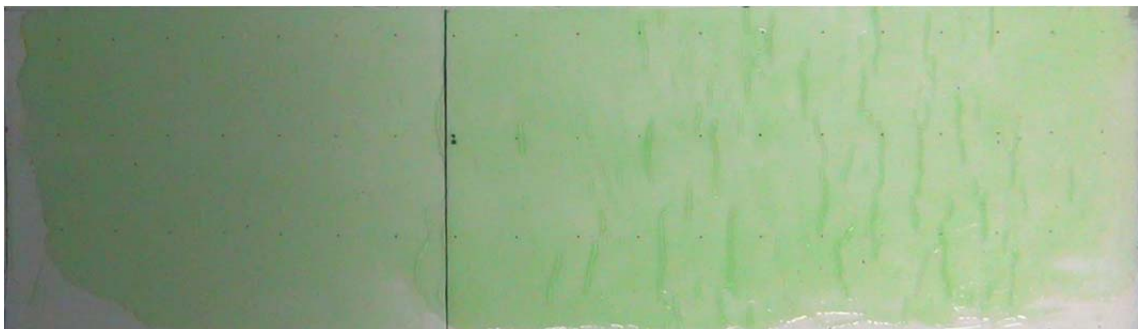
Video Frames:



Time = 0 s



Time = 1 s



Time = 2 s



Time = 3 s



Time = 5 s



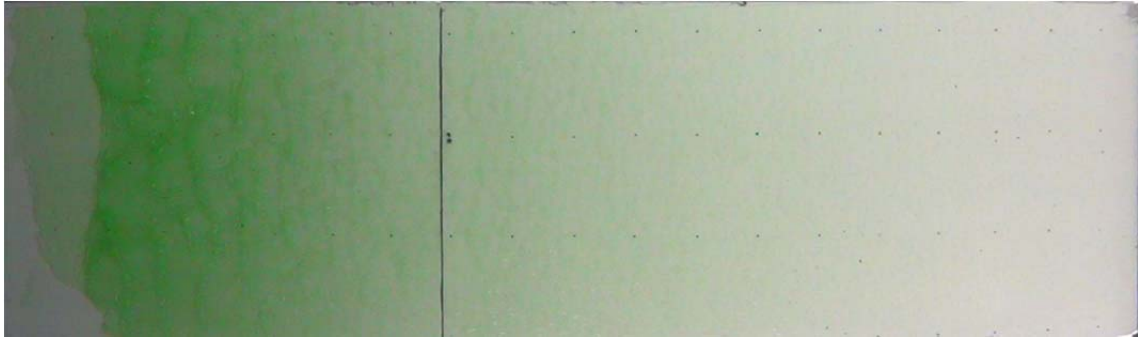
Time = 7 s



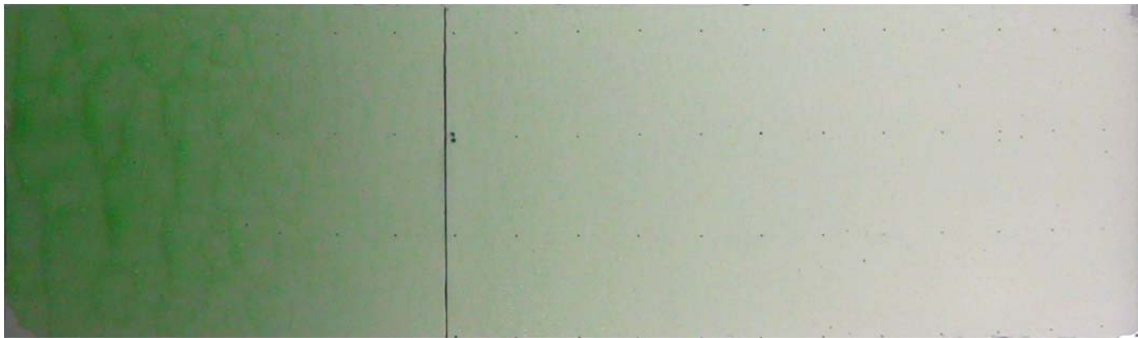
Time = 9 s



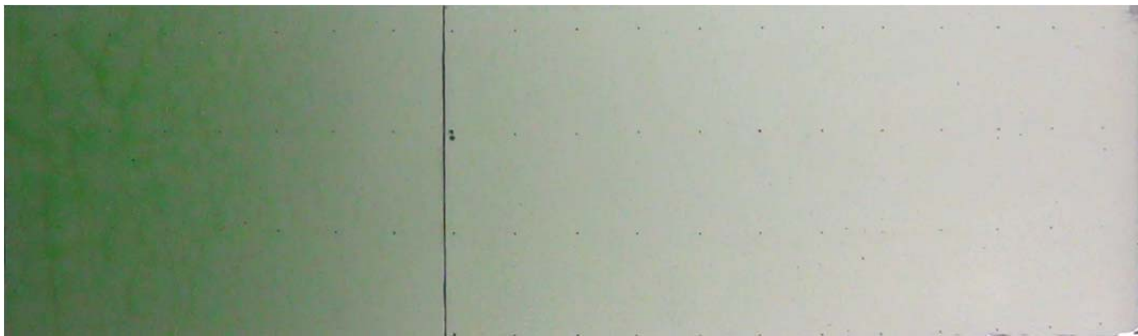
Time = 11 s



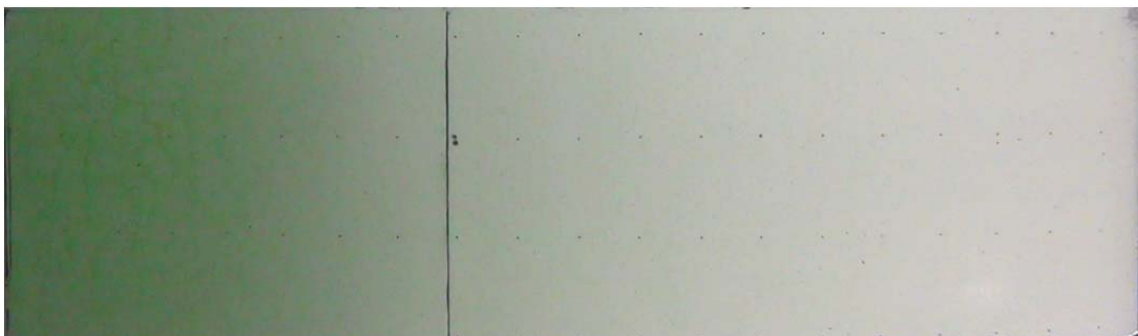
Time = 14 s



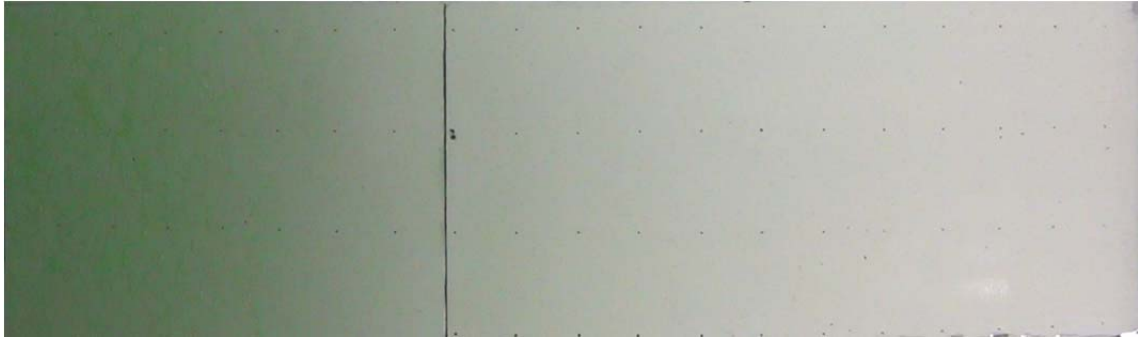
Time = 16 s



Time = 18 s



Time = 21 s



Time = 25 s

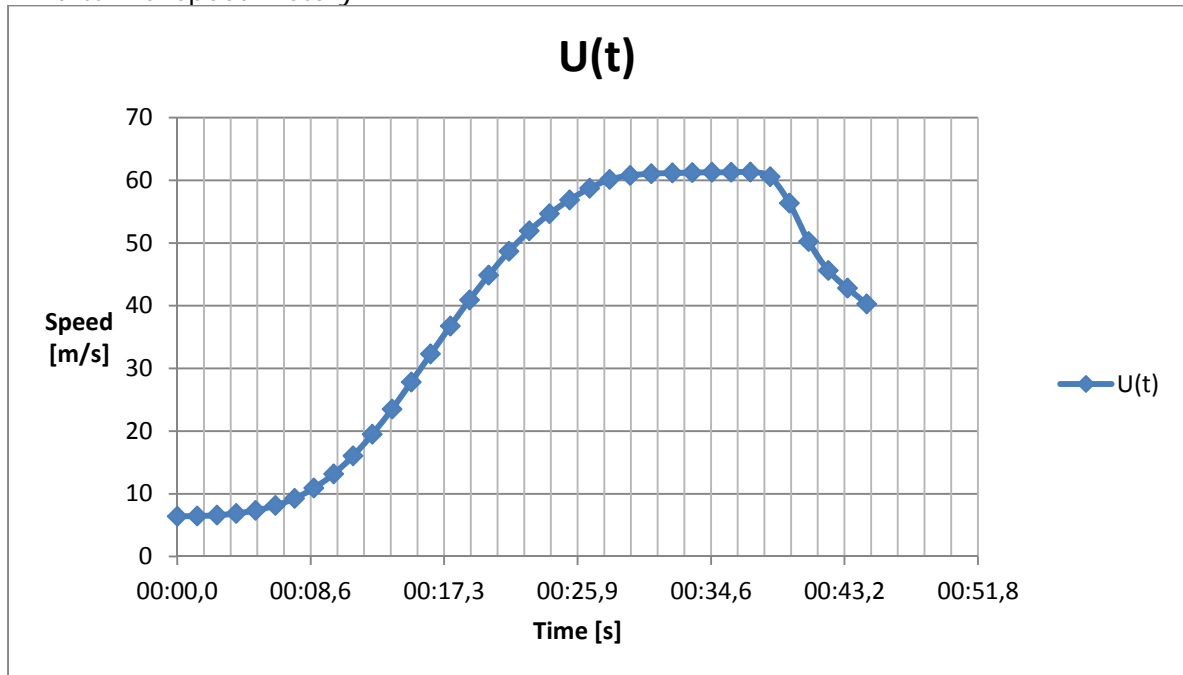
### A.5 Accelerate + constant speed (12 s) test

Fluid: 100% IV

Initial Thickness: 1,2 mm

Temperatures: OAT = - 1,0 °C, Coolant Tank = - 6 °C

Wind tunnel speed history:



Video Frames:



Time = 7 s



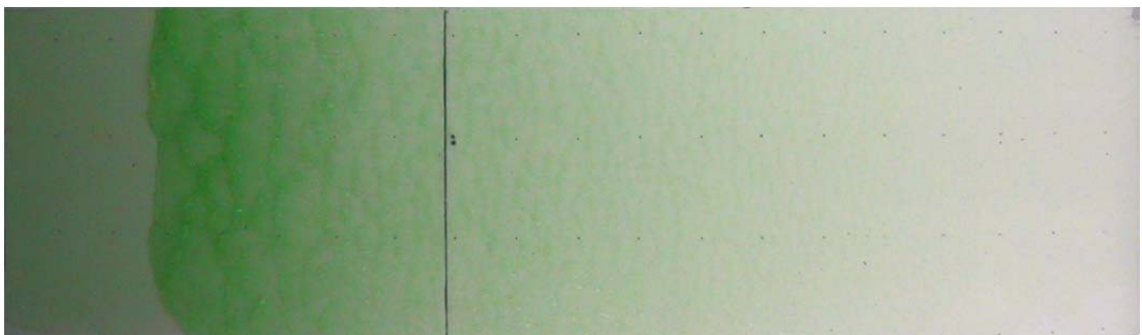
Time = 9 s



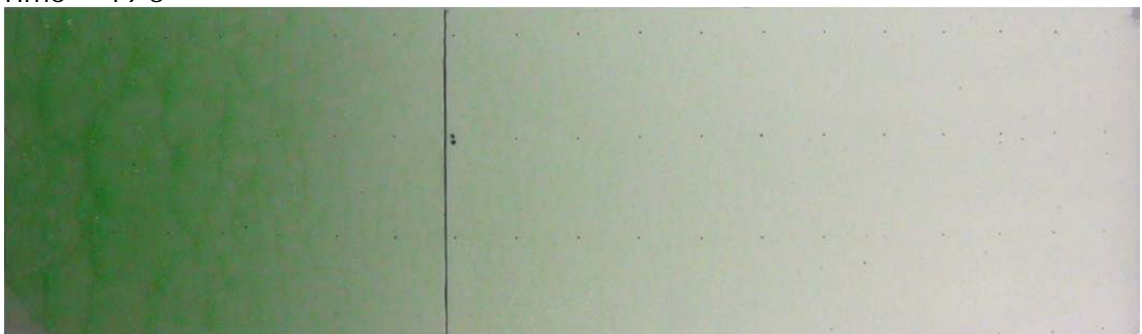
Time = 12 s



Time = 15 s

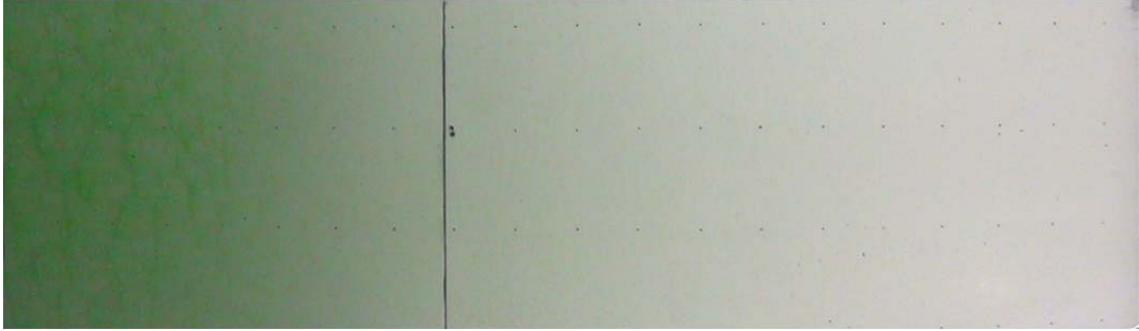


Time = 19 s

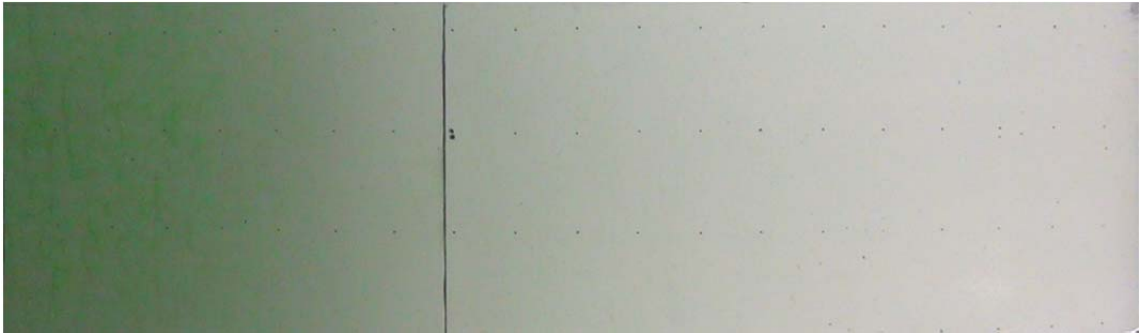




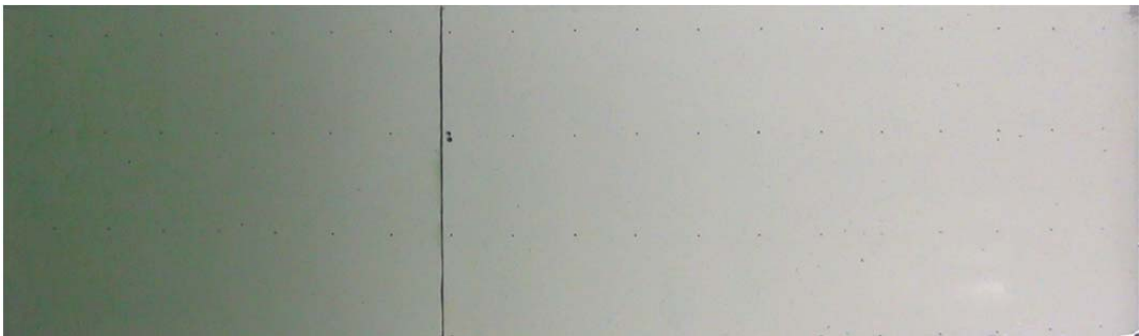
Time = 22 s



Time = 25 s



Time = 28 s



Time = 35 s

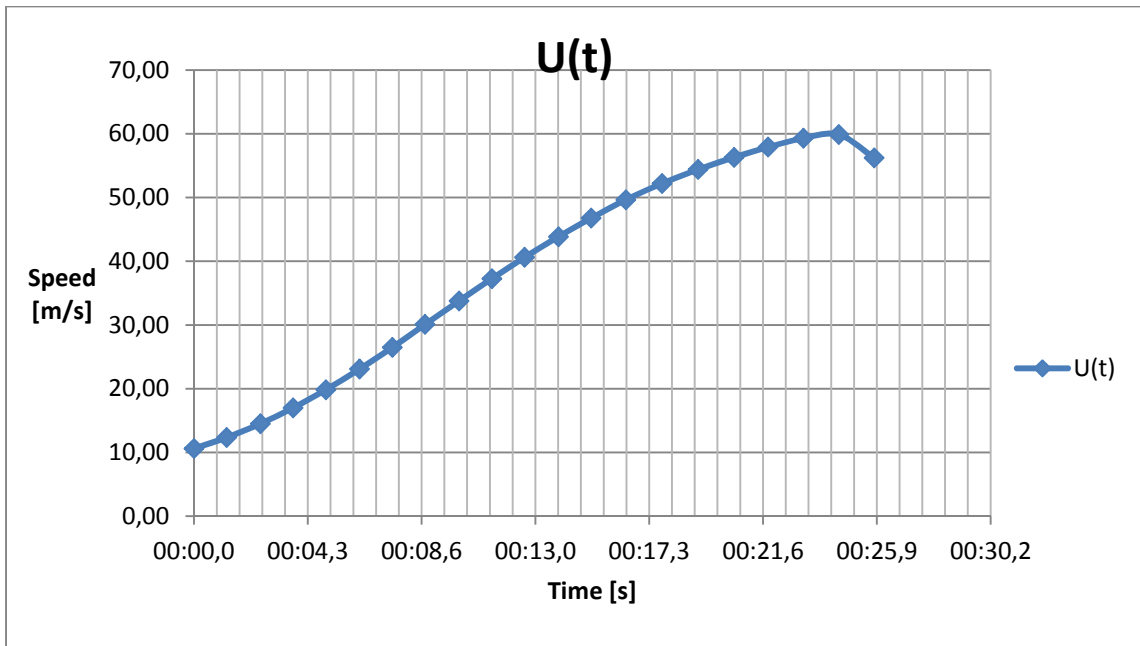
#### A.6 Accelerate stop test

Fluid: 100% IV

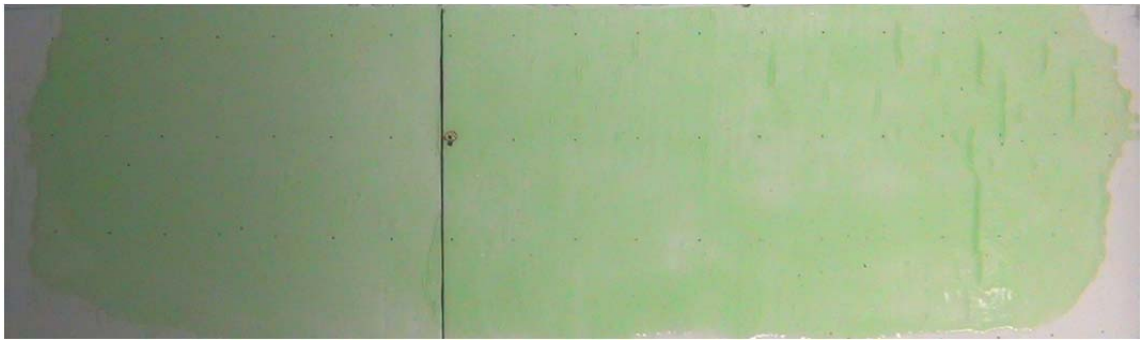
Initial Thickness: 1,1 mm

Temperatures: OAT = - 2,6 °C, Coolant Tank = - 6 °C

Wind tunnel speed history:



Video Frames:



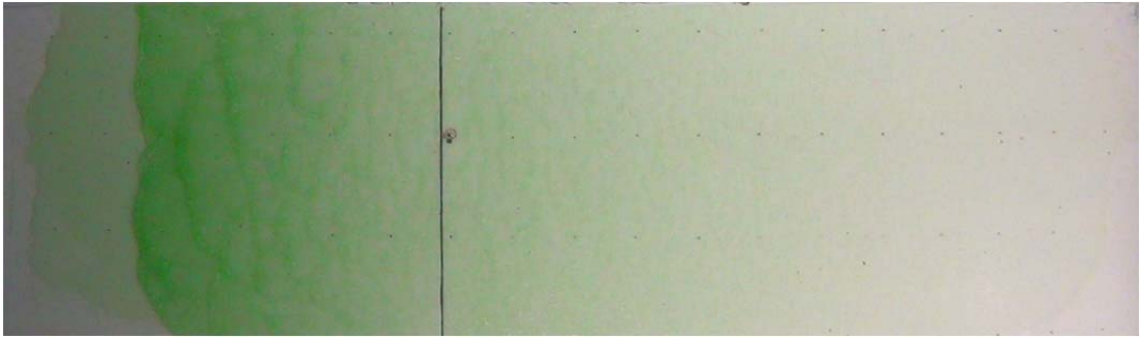
Time = 0 s



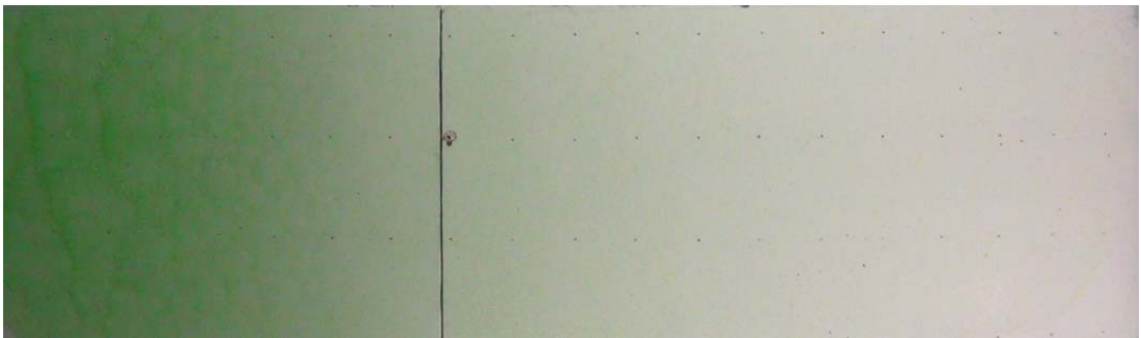
Time = 4 s



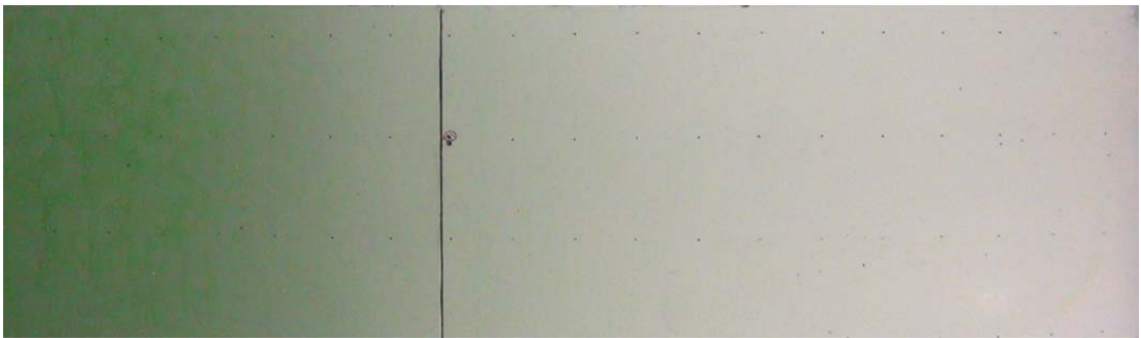
Time = 8 s



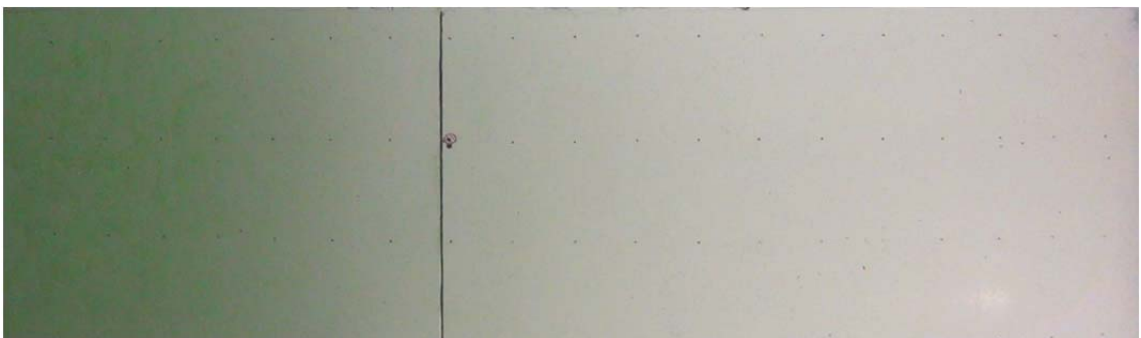
Time = 12 s



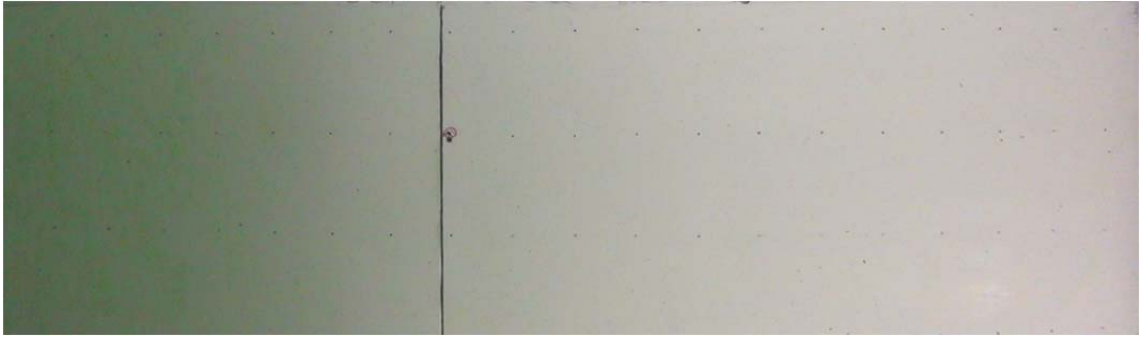
Time = 17 s



Time = 20 s



Time = 23 s



Time = 29 s



Time = 35 s

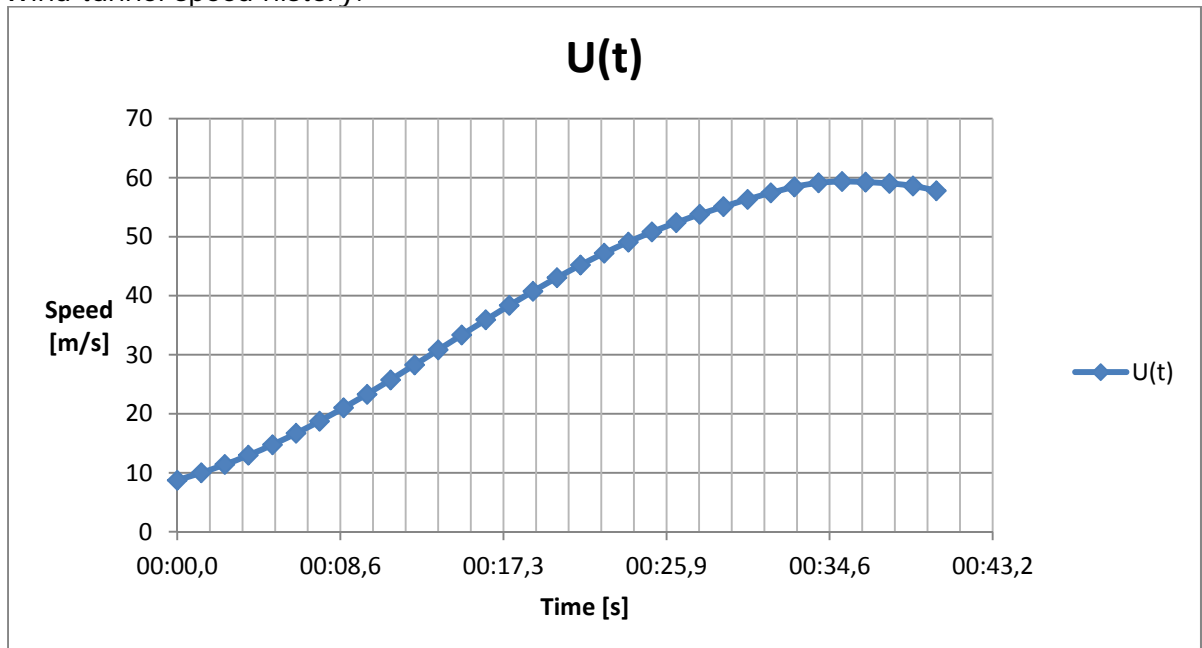
#### A.7 Accelerate stop test

Fluid: 100% IV

Initial Thickness: 1,3 mm

Temperatures: OAT = - 1,0 °C, Coolant Tank = - 3 °C

Wind tunnel speed history:



Video Frames:



Time = 0 s



Time = 5 s



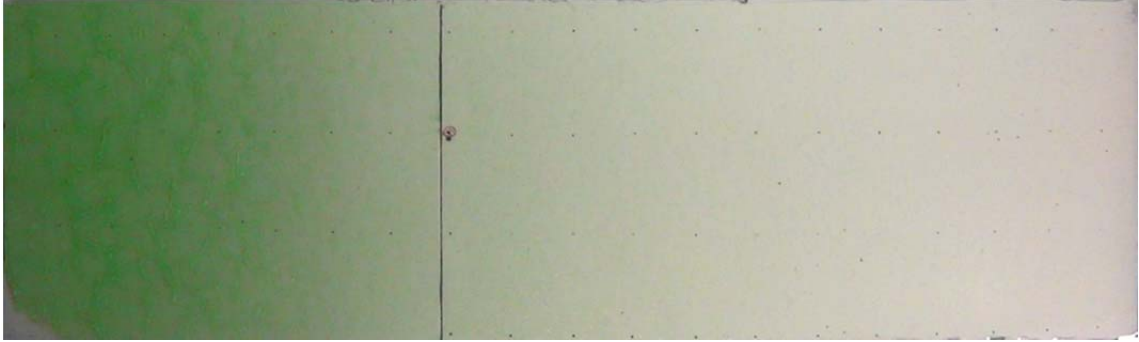
Time = 9 s



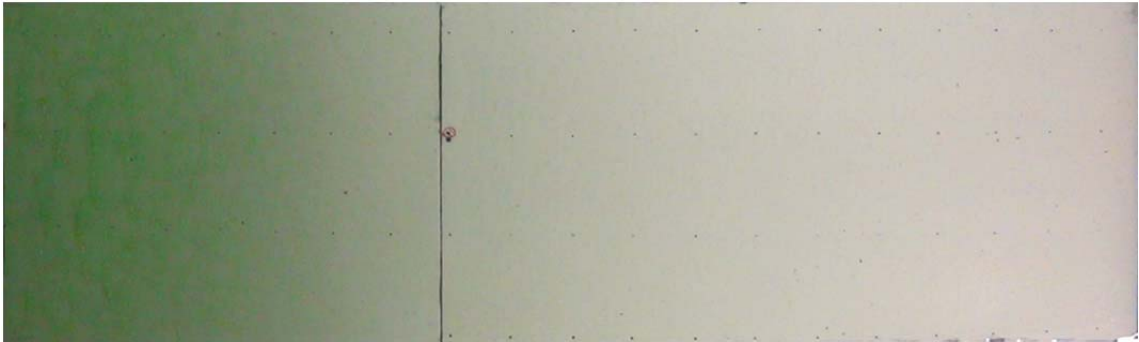
Time = 14 s



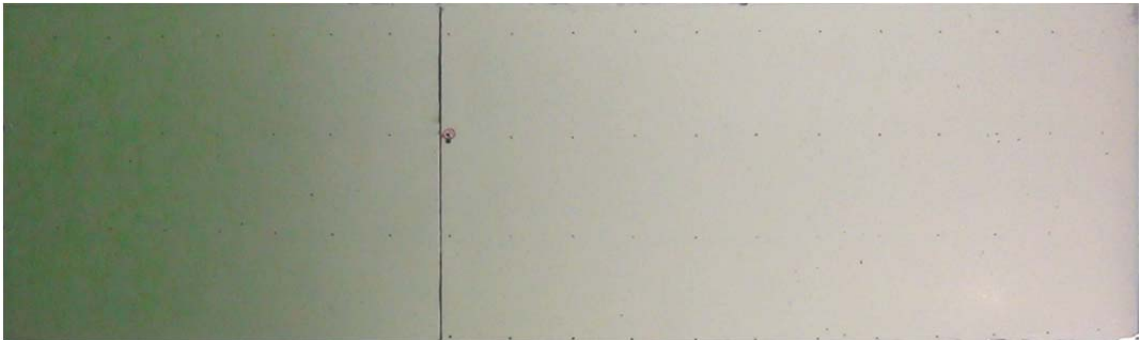
Time = 19 s



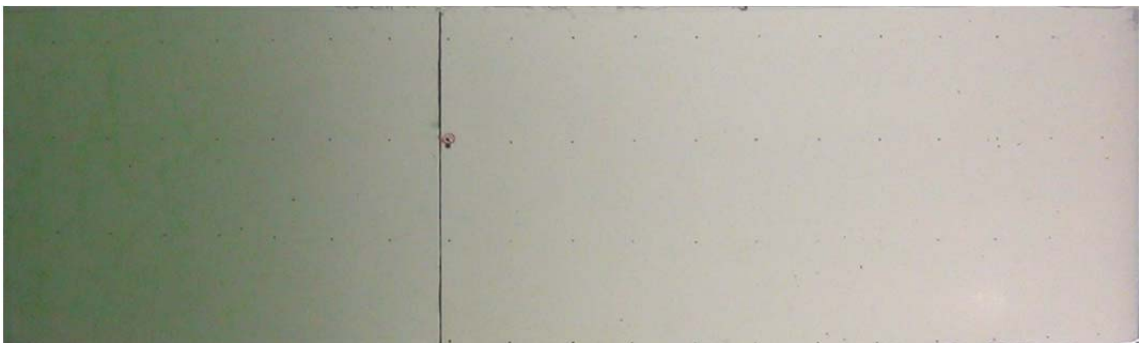
Time = 22 s



Time = 26 s



Time = 30 s



Time = 32 s

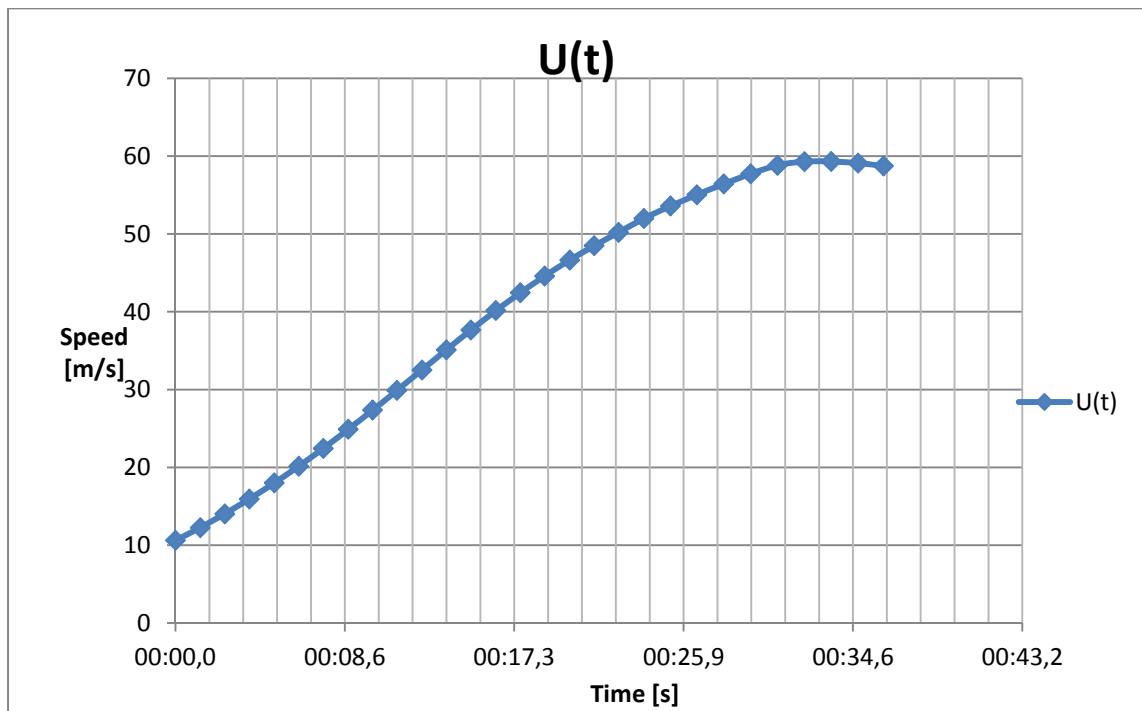
#### A.8 Accelerate stop test

Fluid: 100% IV + 30 % I

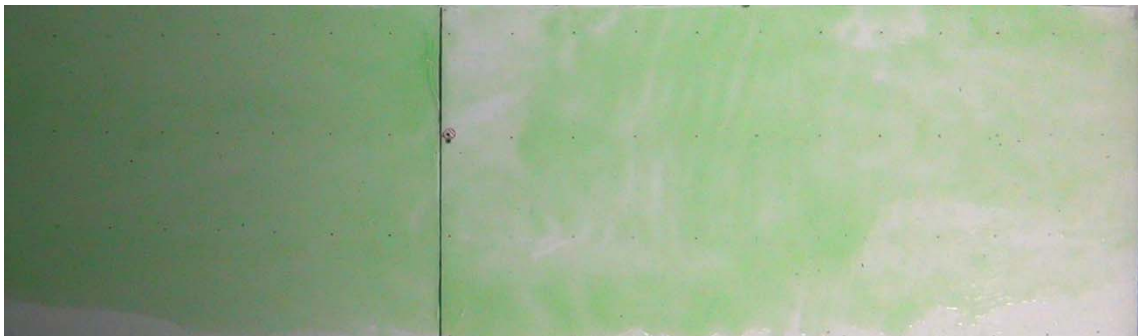
Initial Thickness: 1,2 mm

Temperatures: OAT = +4,0 °C, Coolant Tank = - 8 °C

Wind tunnel speed history:



Video Frames:



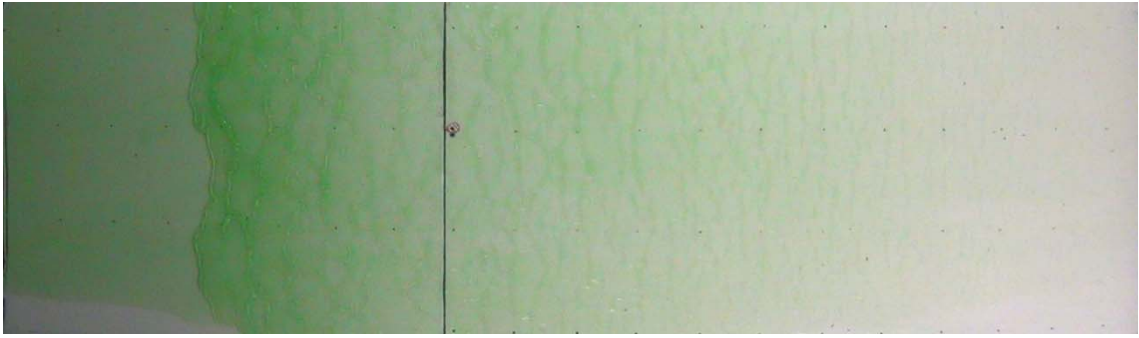
Time = 0 s



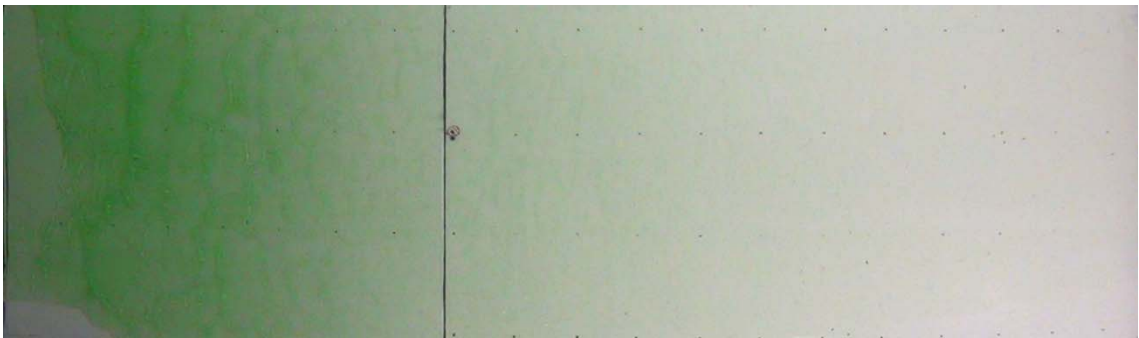
Time = 3 s



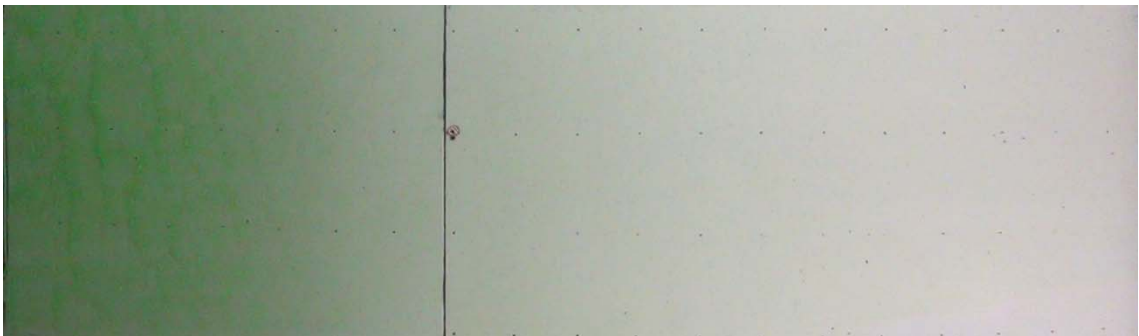
Time = 7 s



Time = 13 s



Time = 18 s

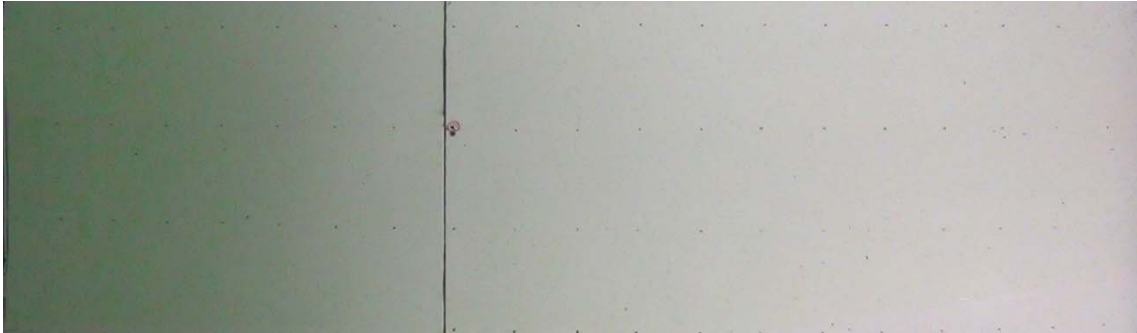


Time = 23 s

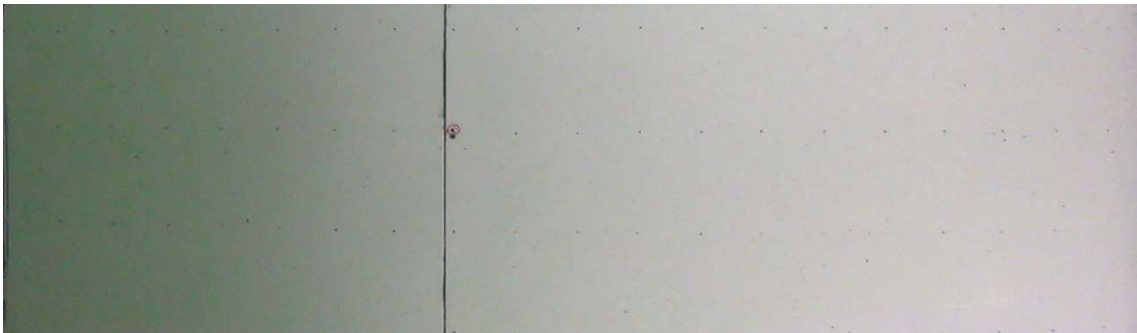




Time = 27 s



Time = 31 s



Time = 33 s

#### A.9 Stepwise constant speed test (Taxi test)

Fluid: 100% IV

Initial Thickness: 1,3 mm

Temperatures: OAT = +3,5 °C, Coolant Tank = 7 °C

Video frames at different wind tunnel speeds:



Speed 5,0 m/s



Speed 7,1 m/s



Speed 9,9 m/s



Speed 12,0 m/s



Speed 12,8 m/s



Time 13,9 m/s

A.10 Stepwise constant speed test (Taxi test)

Fluid: 100% IV + 10 % I

Initial Thickness: 1,3 mm

Temperatures: OAT = +4,0 °C, Coolant Tank = 6 °C

Video frames at different wind tunnel speeds:



Speed 6 m/s



Speed 8 m/s



Speed 9,9 m/s



Speed 11,0 m/s



Speed 12,0 m/s



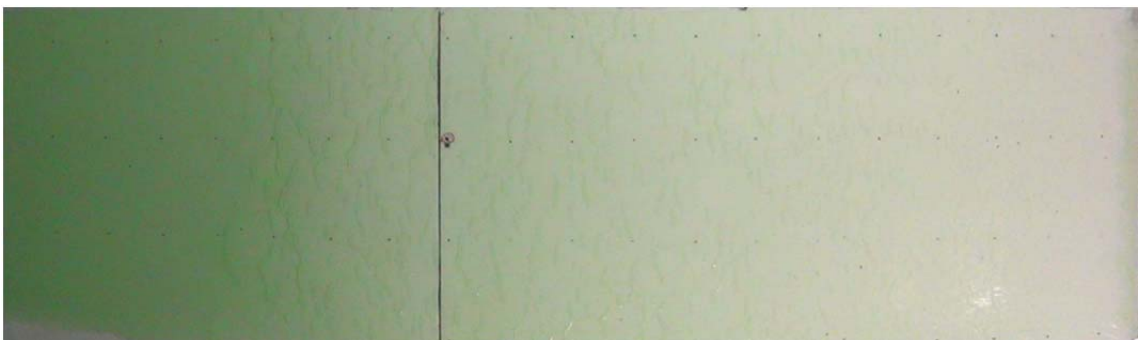
Speed 13,0 m/s



Speed 14,0 m/s



Speed 16 m/s (10 s @ 16 m/s)



Speed 16 m/s (120 s)

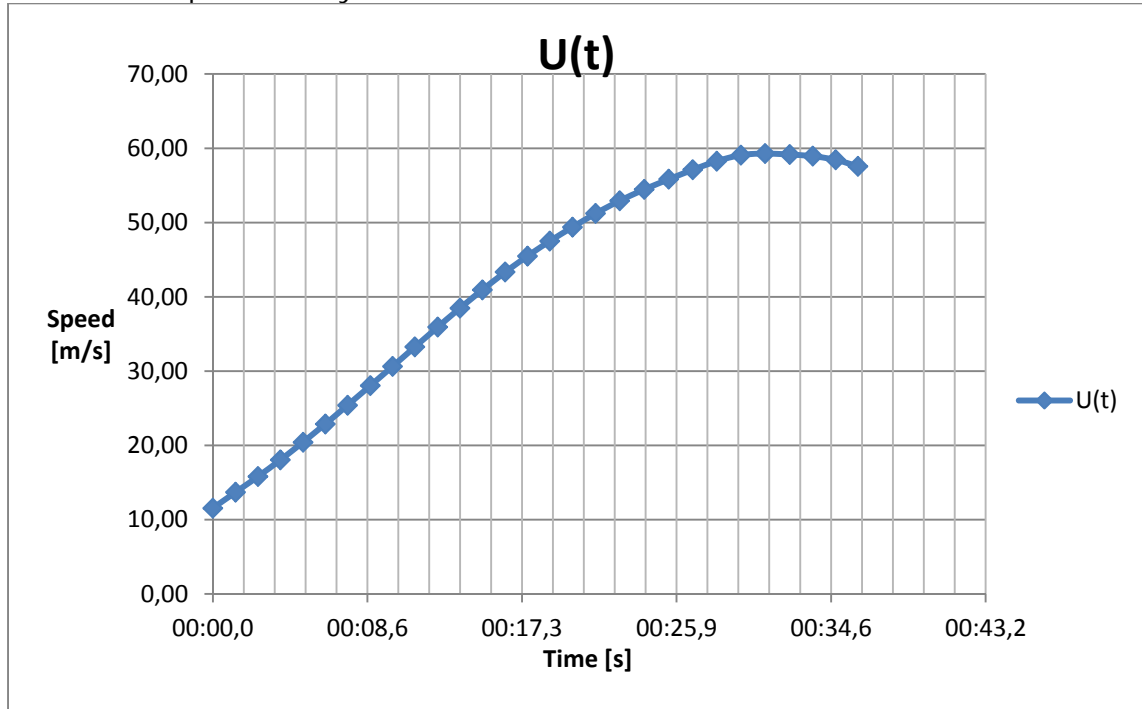
A.11 Accelerate stop test

Fluid: 100% IV + 30 % I

Initial Thickness: 1,25 mm

Temperatures: OAT = +0,8 °C, Coolant Tank = - 5 °C

Wind tunnel speed history:



Video frames:



Time = 0 s



Time = 2 s



Time = 5 s



Time = 10 s



Time = 15 s



Time = 20 s



Time = 25 s