

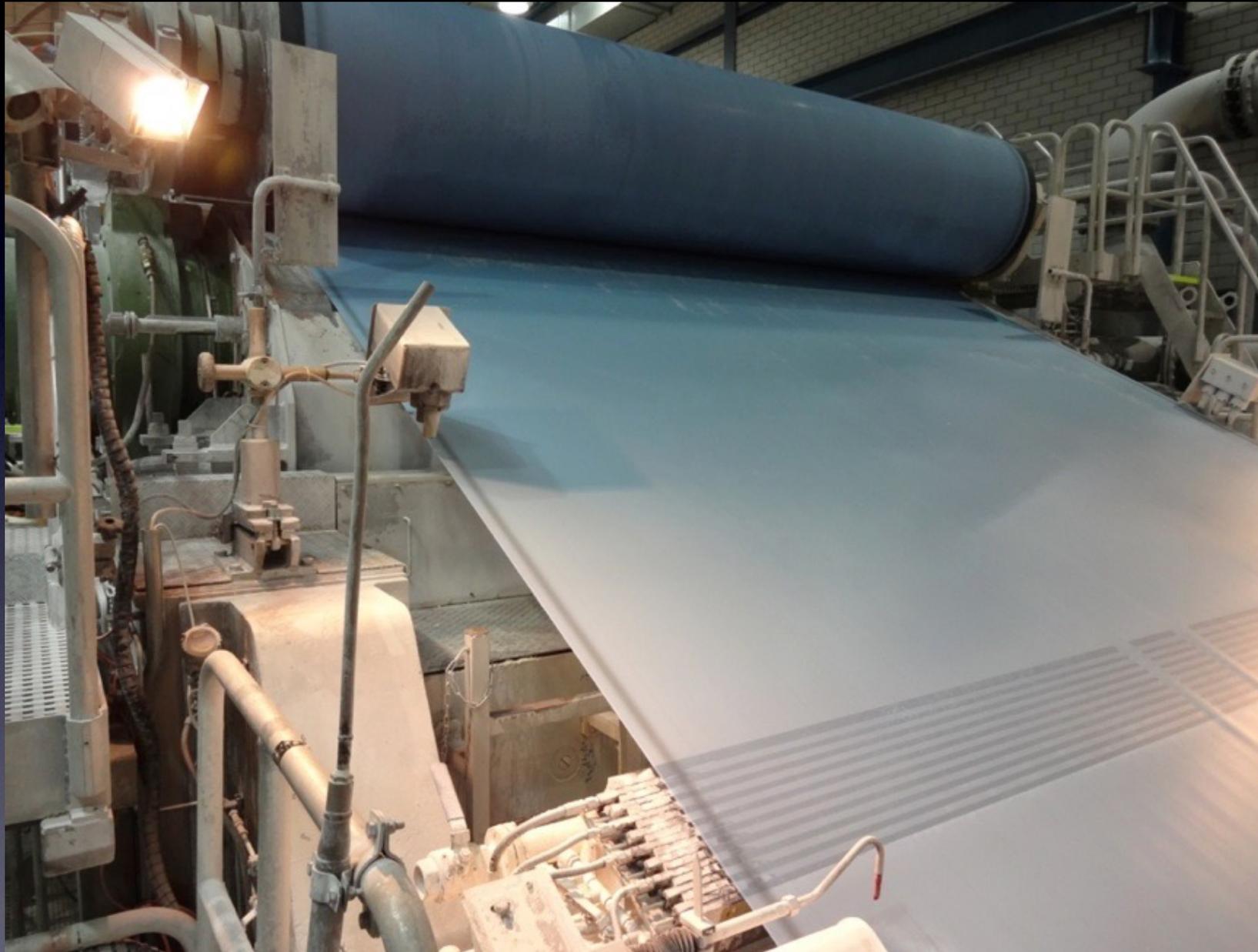


## Using a LED Flashlight for High Speed Photography in Industrial Settings

Till Hänisch, Baden Württemberg State University, [www.tillh.de](http://www.tillh.de)  
Stefanie Hänisch, Voith Paper Fabric & Roll Systems GmbH & Co KG

Idea: Measure fabric wear while running to save money ...

---



Use a high quality camera with high quality macro lens

---



# High speed photography

---



	Speedlight	Airgap flash	Vela One
Typical fastest pulse	More than 50 $\mu$ s	1 $\mu$ s	0.5 $\mu$ s
Power supply	4 x AA	AC power	4 x AA
Strobe?	Yes	No	Yes
Likely to kill you?	No	 Yes	No
Available to buy?	Everywhere	eBay, DIY & specialist	<b>Pre-order now!</b>

<https://www.vela.io/vela-one-high-speed-flash/>

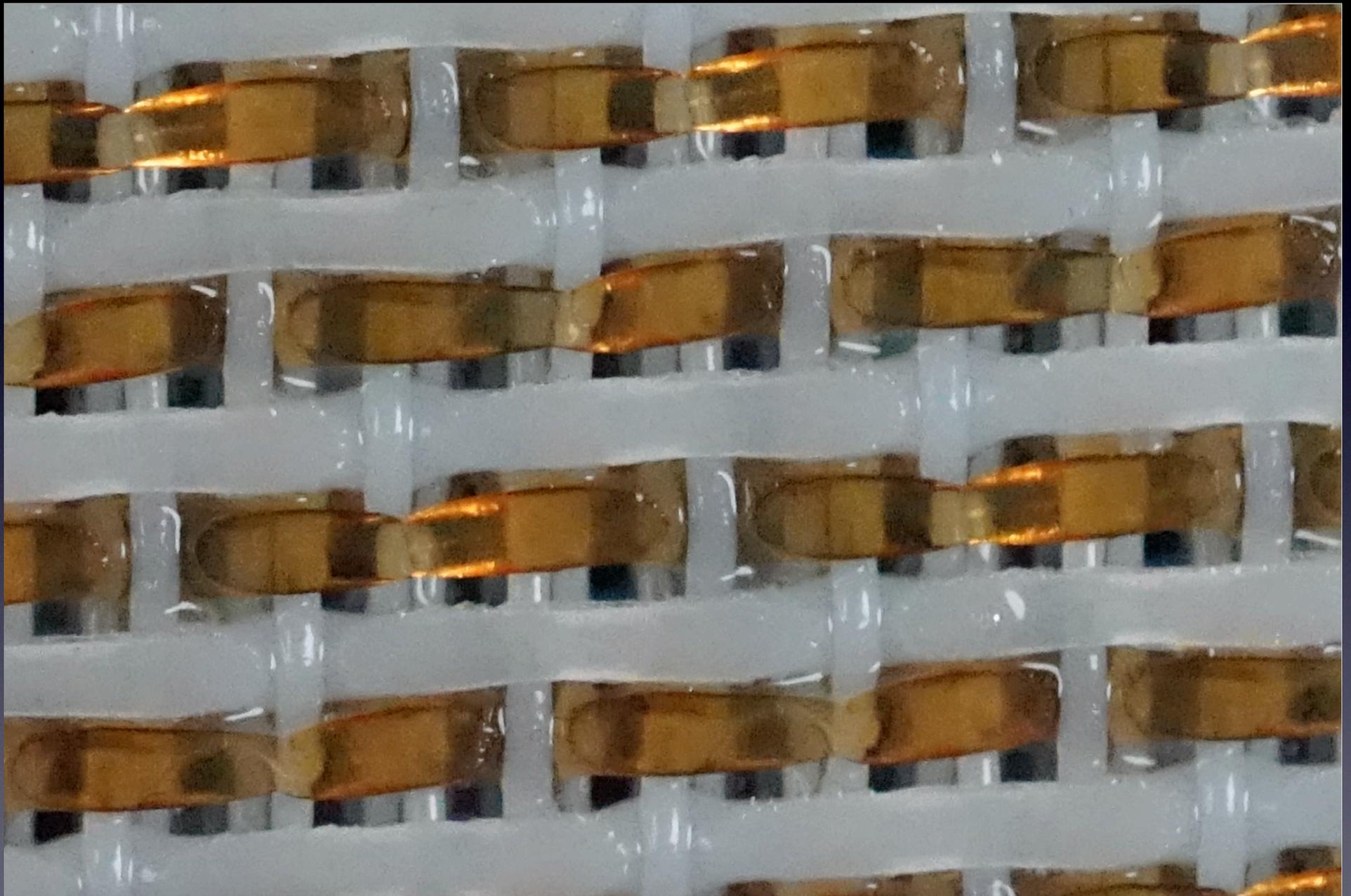
# Unfriendly environment

---



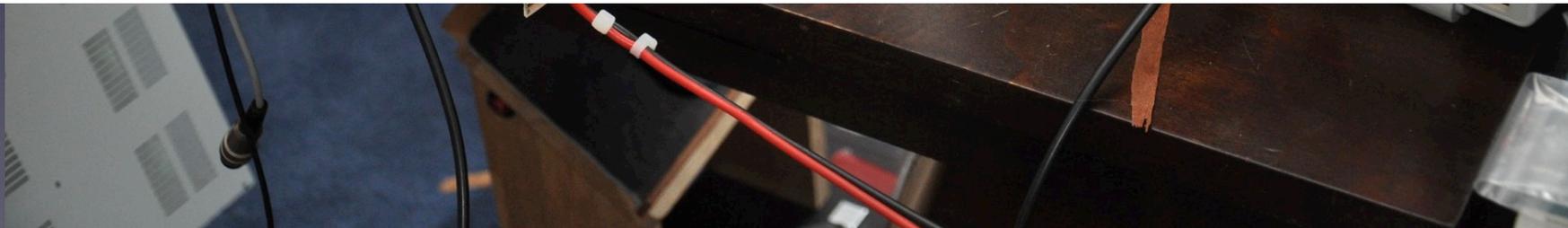
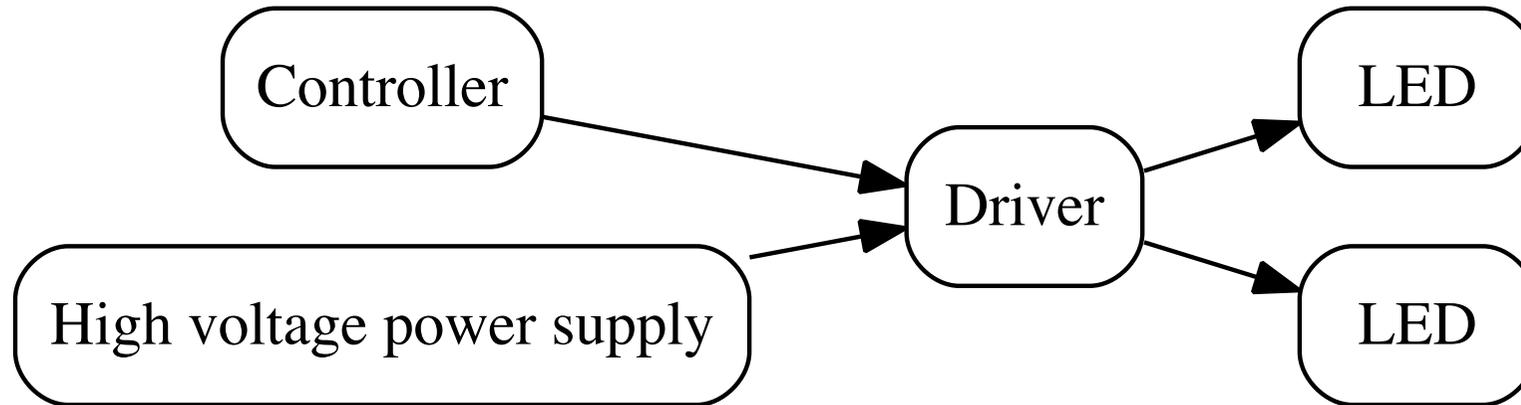
# Results

---

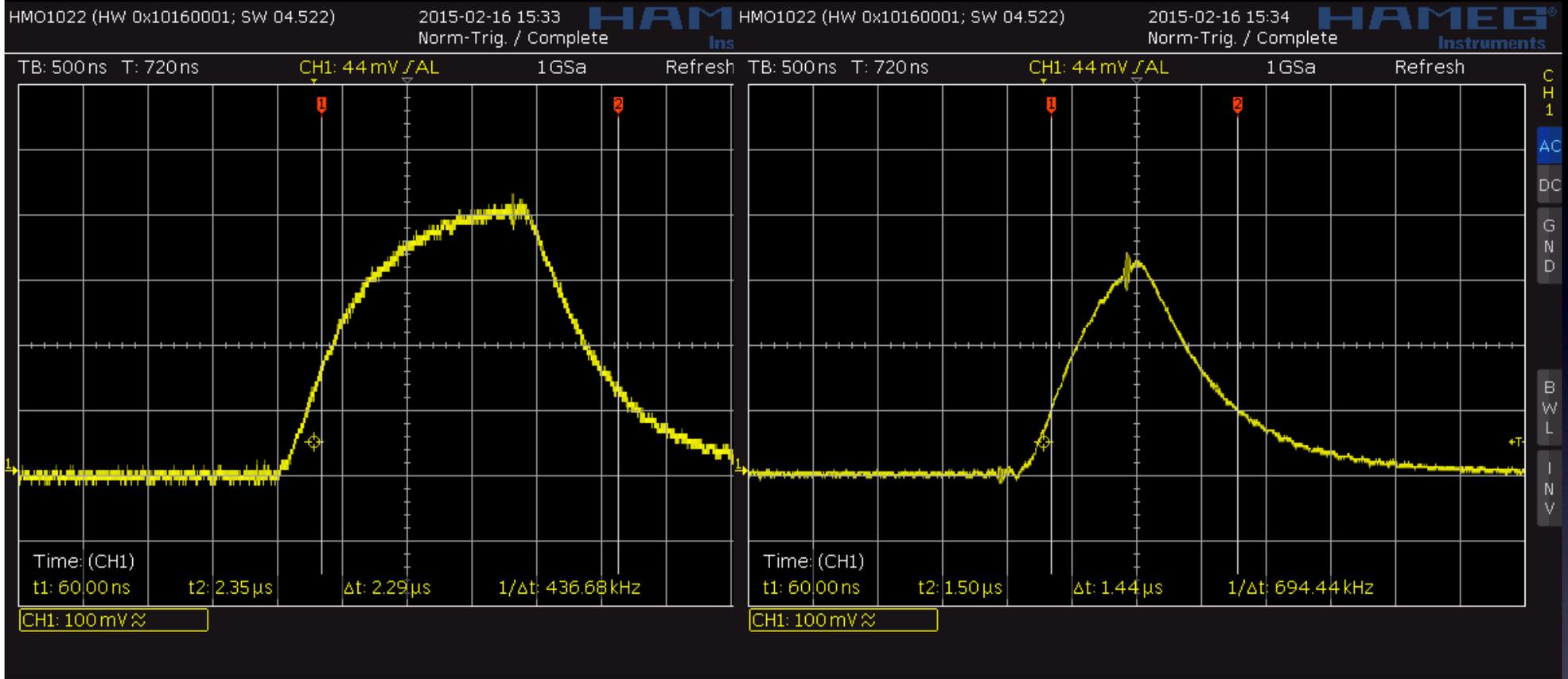


# Components

---



# Performance

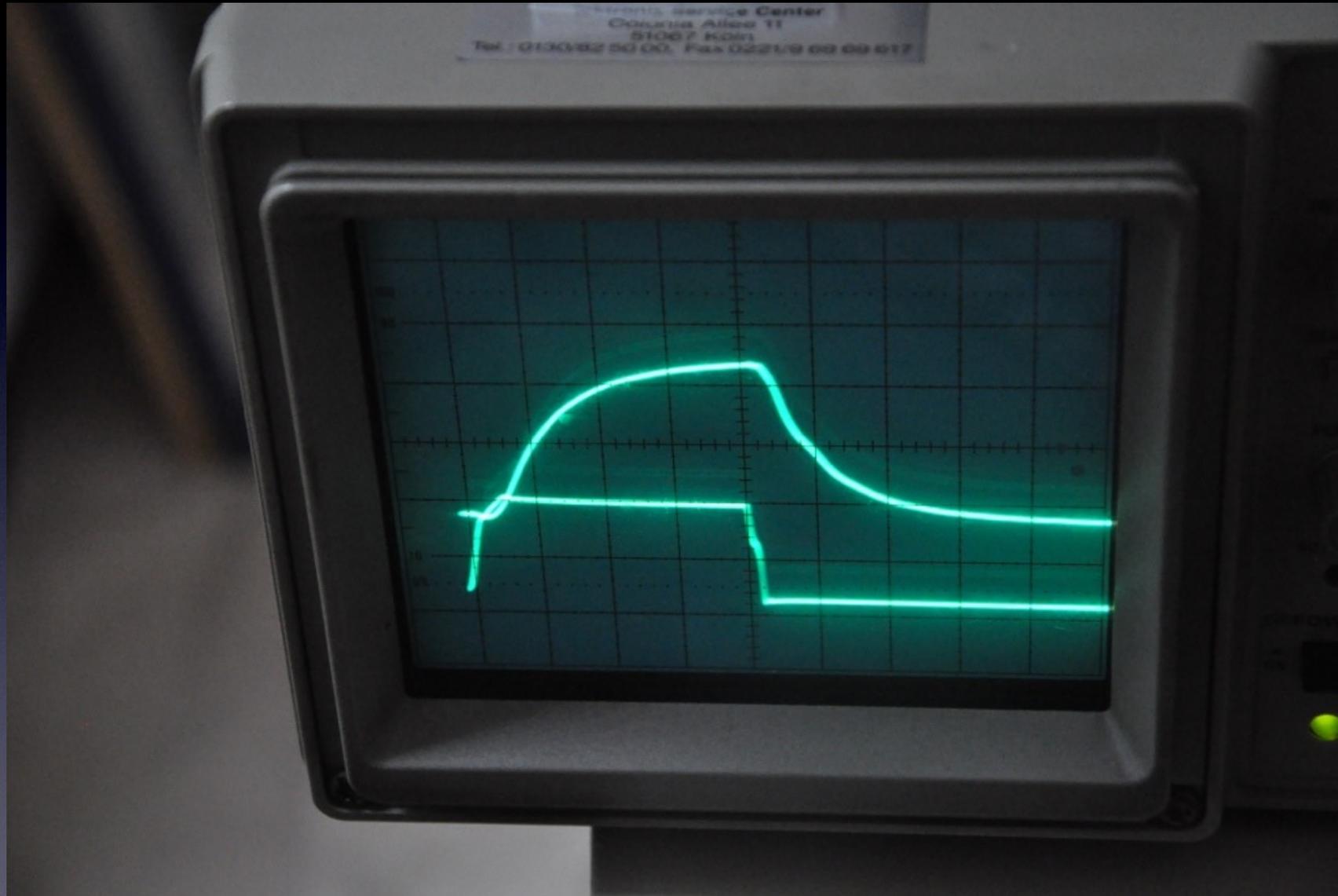


Two microsecond pulse

One microsecond

# Driver

---



## Key findings ....

---

- High power LEDs can and should be used, if
  - Short exposure time is required (1  $\mu$ sec)
  - ambient light is not too bright (1/250sec, f 5.6, ISO 800)
  - cost is important (parts are about 100€)
  - small size is important (macro photography)
  - unfriendly environment limits use of other techniques
- Additional benefits ?

# Continuous measurement

