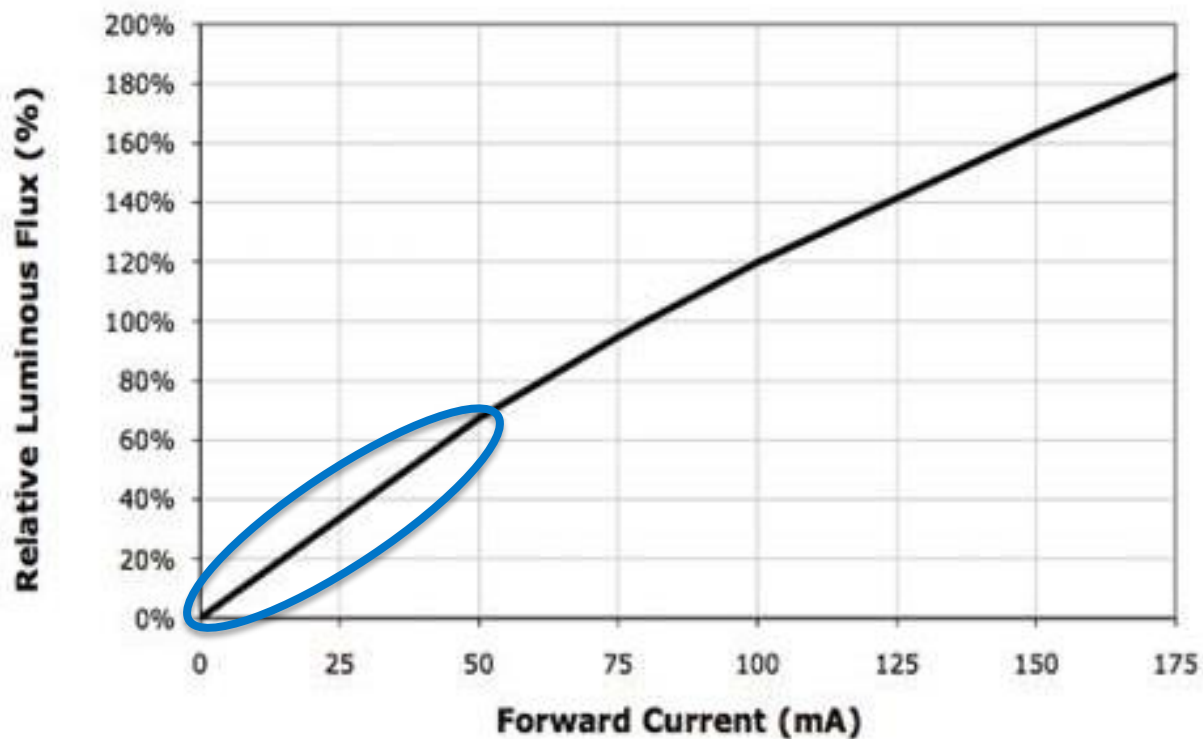


Leds vlekkeloos laten dimmen, hoe doe je dat?

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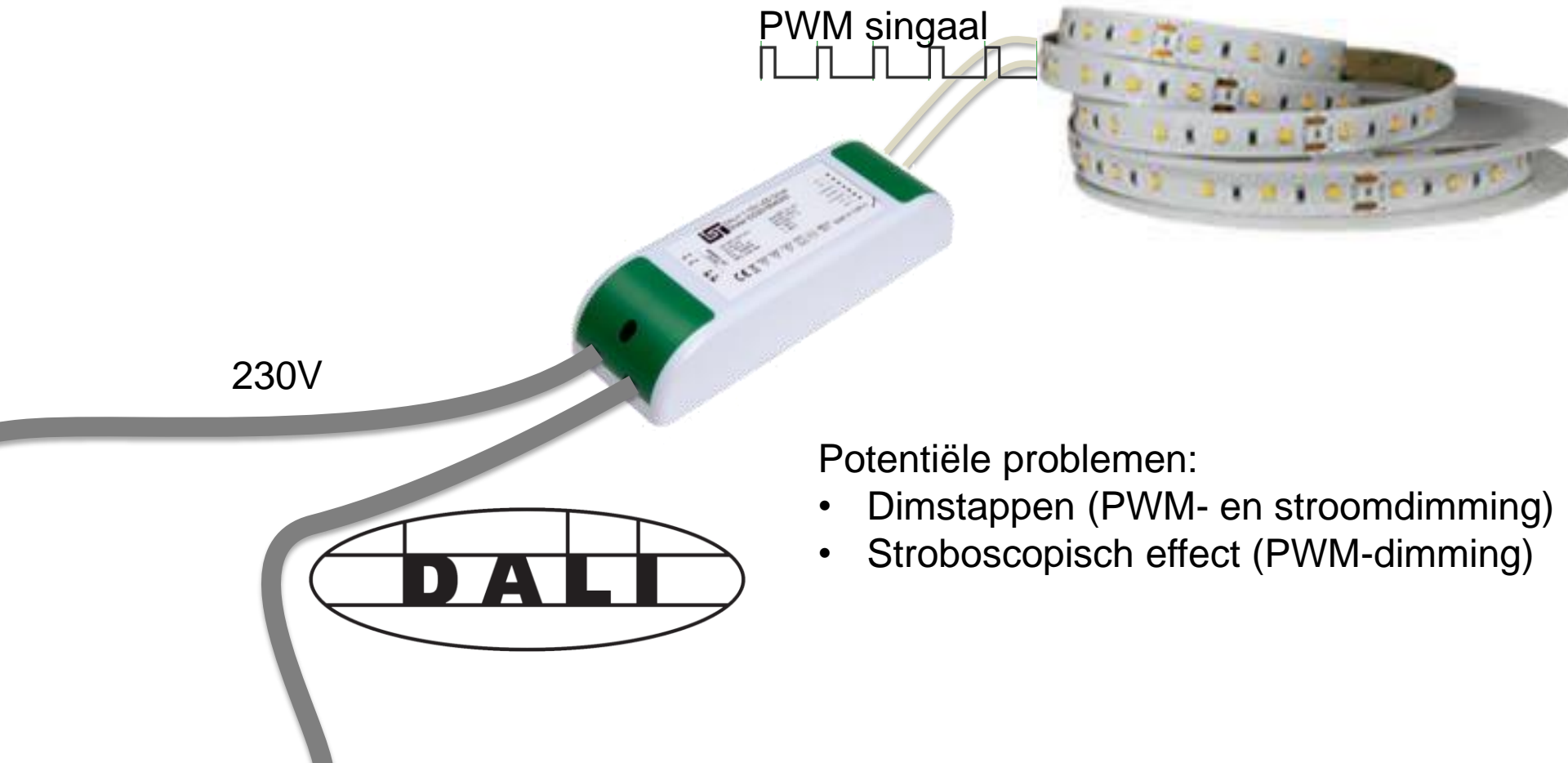
De theorie: leds zijn extreem eenvoudig te dimmen !



De theorie: lange ketens of veel drivers...



De praktijk: Rechtstreeks dimmen



Potentiële problemen:

- Dimstappen (PWM- en stroomdimming)
- Stroboscopisch effect (PWM-dimming)

De praktijk

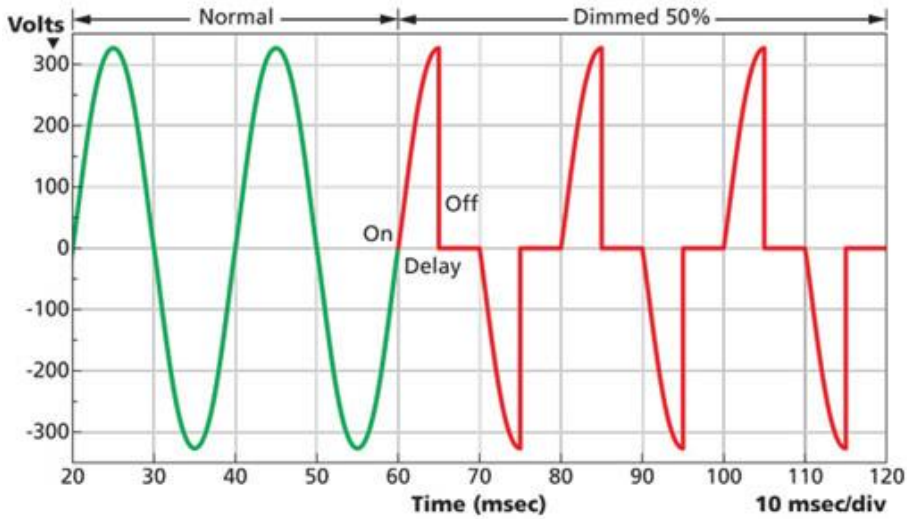


Vervanging armatuur niet mogelijk



Extra DALI bekabeling niet mogelijk of te duur
(zeker in residentieel)

De praktijk

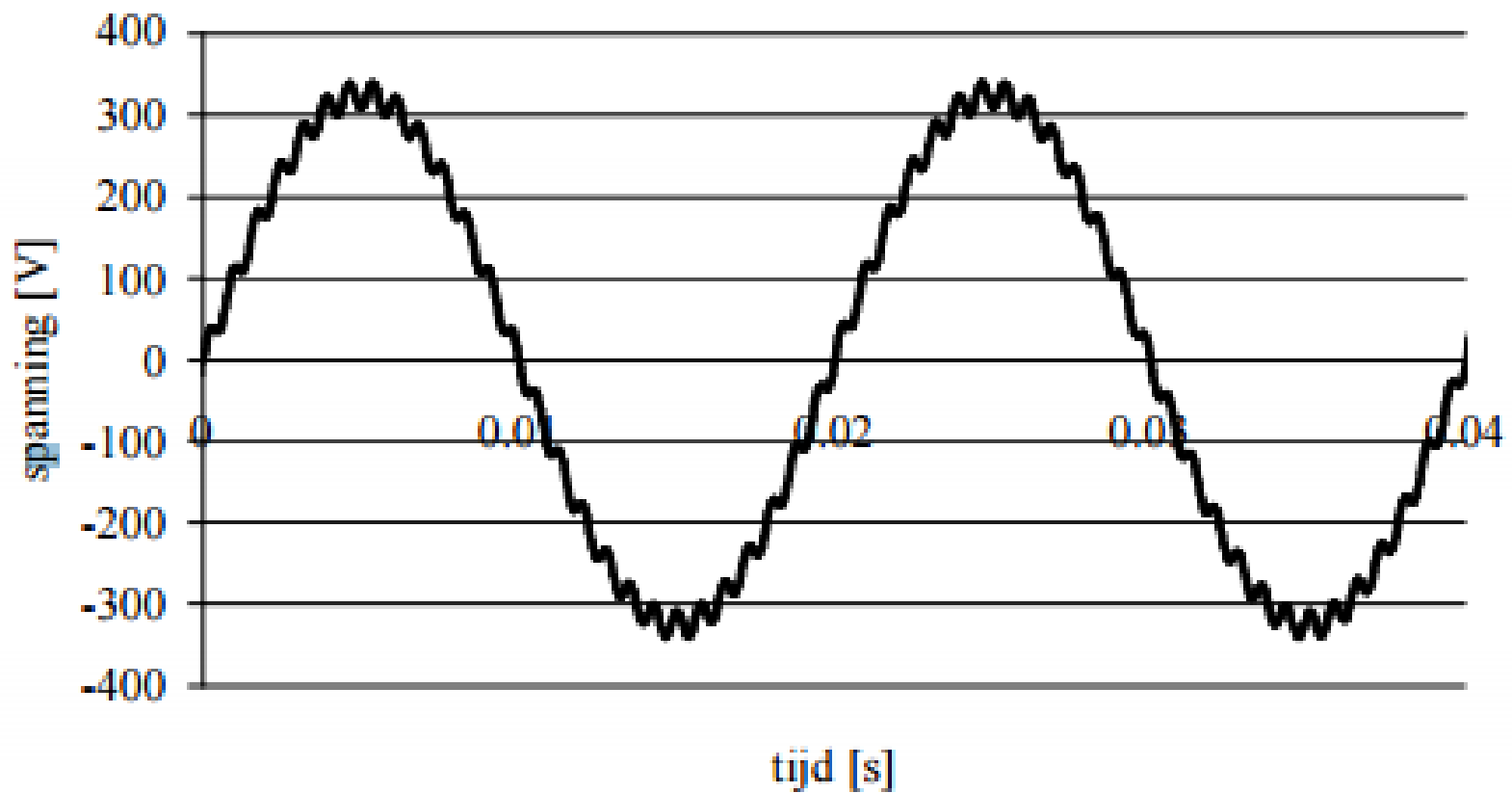


De praktijk: fase dimming

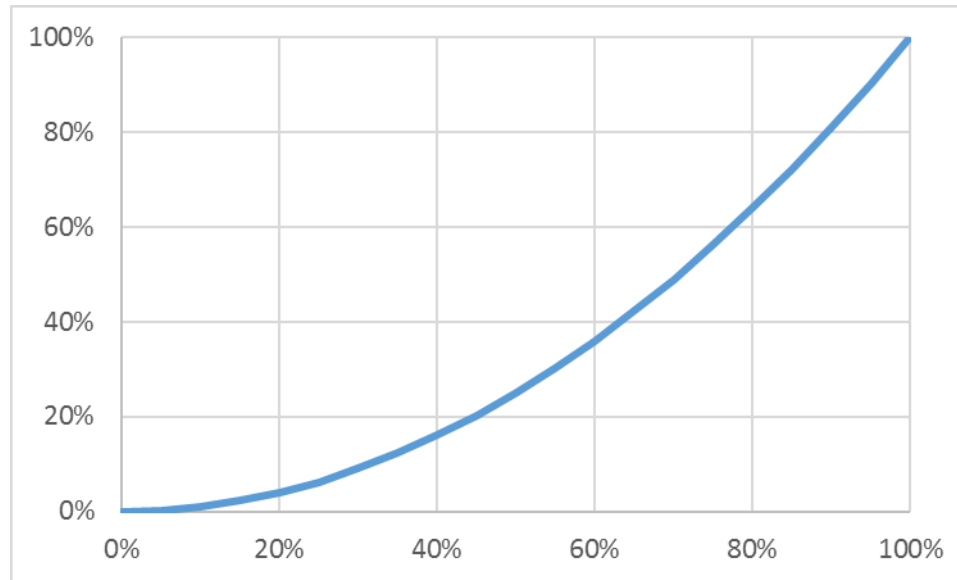
	Excellent dimming performance and steeples range (dimming) change from 100% to < 5%. Replicates halogen dimming performance.		Performance as per green HOWEVER audible hum from transformer. Subsequent ray trace analysis of the wave form would indicate transient spikes and suspect likely component failure as an outcome
	Pass - Acceptable dimming range (to 30% of full lumen output) and continuous (step-less) operation when dimming with near zero perception of lamp flicker or shimmer		Fail - Perceptible (i.e. unacceptable degree of lamp flicker, shimmer or strobe effect demonstrated during operation or when dimming the lamp)
	Interim Pass - Acceptable dimming range (to 50% of full lumen output) and continuous (step-less) operation when dimming with near zero perception of lamp flicker or shimmer		Component failure or extremely high likelihood of failure of either lamp, dimmer or transformer.

	Fail / Dimming Range 100% - 10% Minor Strobe through range	Fail / Dimming Range 100% - 10% Minor Strobe @ 10%	Fail / Dimming Range 100 - 40% Minor Strobe through range + Audible transformer hum	Pass / Dimming Range 100% - 50% No Strobe		Pass / Dimming Range 100% - 30% No Strobe	Pass / Dimming Range 100% - 50% No Strobe / Audible Transformer hum	Pass / Dimming Range 100% - 10% No Strobe	Fail / Dimming Range 100% - 10% Minor Strobe through range + audible transformer hum	Fail / Dimming Range 100% - 10% Minor Strobe between 10 - 50% dim setting + Audible transformer hum	Fail / Dimming Range 100% - 10% Minor Strobe / Audible Transformer hum through range	Pass / Dimming Range 100% - 30% No Strobe
Fail / No Function / No Operation	Fail / Dimming Range 100% - 50% Minor Strobe @ 25% dim stage	Pass / Dimming Range 100% - 10% No Strobe	Fail / Dimming Range 100% - 40% Severe Strobe through range + audible hum			Fail / Dimming Range 100% - 10% Minor Strobe between 10% - 50%			Pass / Dimming Range 100% - 10% No Strobe / Audible Transformer hum	Fail / Dimming Range 100% - 0% Minor Strobe at 15% setting + Audible transformer hum	Pass / Dimming Range 100% - 10% No Strobe / Audible Transformer hum	Pass / Dimming Range 100% - 0% Stepless dim range No Strobe
	Fail / Dimming Range 100% - 50% Minor Strobe through range + Audible hum	Pass / Dimming Range 100% - 50% No Strobe / Audible Transformer Hum		Fail / Dimming Range 100% - 50% Severe Strobe through 75% - 100% + audible hum		Pass / Dimming Range 100% - 50% No Strobe + Audible hum	Fail / Dimming Range 100% - 90% Medium Strobe + Audible transformer hum	Fail / Dimming Range 100% - 50% Severe Strobe through range + Severe transformer hum	Fail / Dimming Range 100% - 10% Minor Strobe @ 90% + Audible transformer hum	Fail / Dimming Range 100% - 50% Minor Strobe @ 50% 80% + Audible transformer hum	Fail / Dimming Range 100% - 50% Severe Strobe @ 100% + Audible transformer hum	Fail / Dimming Range 100% - 50% Severe Strobe @ 100% + Audible transformer hum
	Fail / Dimming Range 100% - 50% Minor Strobe through range	Fail / Dimming Range 100% - 20% Minor Strobe @ 20% - 50%	Fail / Dimming Range 100 - 20% Minor Strobe through range	Fail / Dimming Range 100% - 50% Severe Strobe @ 50%		Pass / Dimming Range 100% - 10% No Strobe	Pass / Dimming Range 100% - 75% No Strobe	Fail / Dimming Range 100% - 50% Severe Strobe @ 50% - 100%	Fail / Dimming Range 100% - 50% Minor Strobe @ 50%	Fail / Dimming Range 100% - 50% Severe Strobe through	Fail / Dimming Range 100% - 40% Severe Strobe lower	Fail / Dimming Range 100% - 10% Minor Strobe lower range

Powerquality

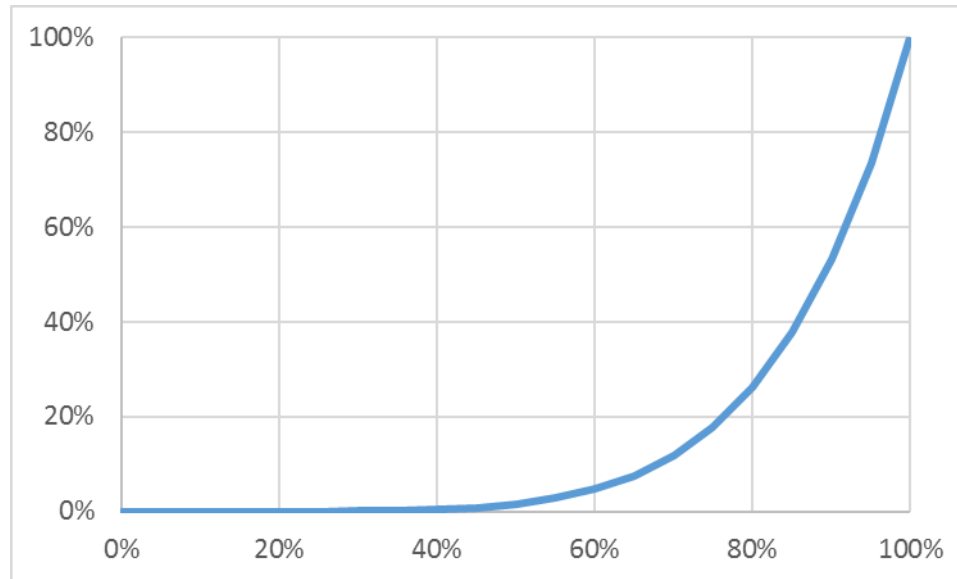


Fase-dimming



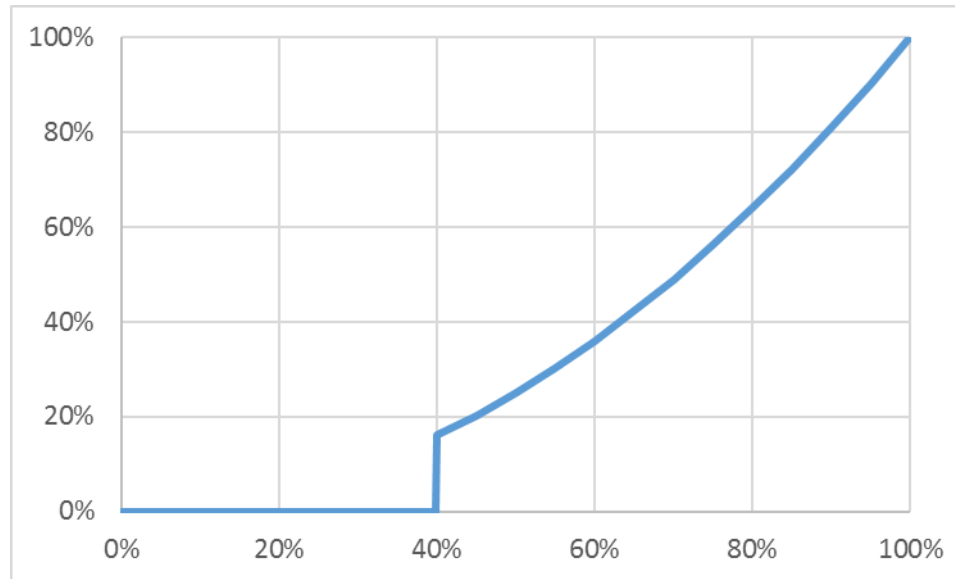
Gewenst dimgedrag

Fase-dimming



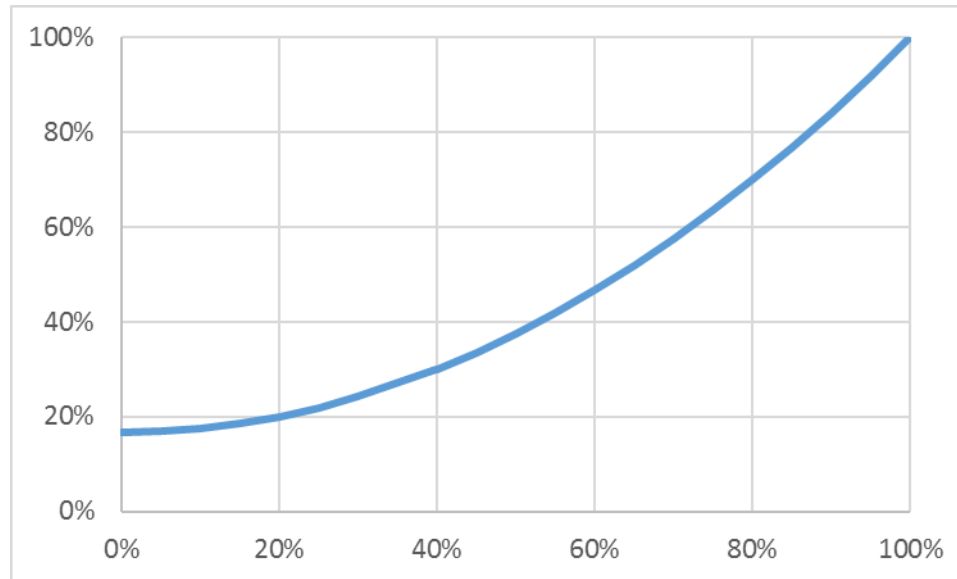
Steile dimcurve

Fase-dimming



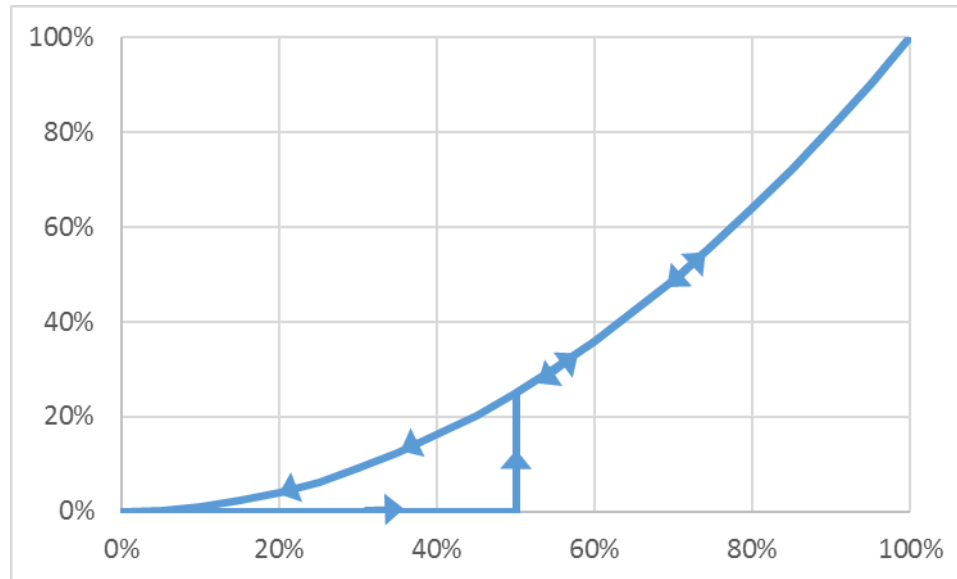
Geen licht bij lage dimpositie

Fase-dimming



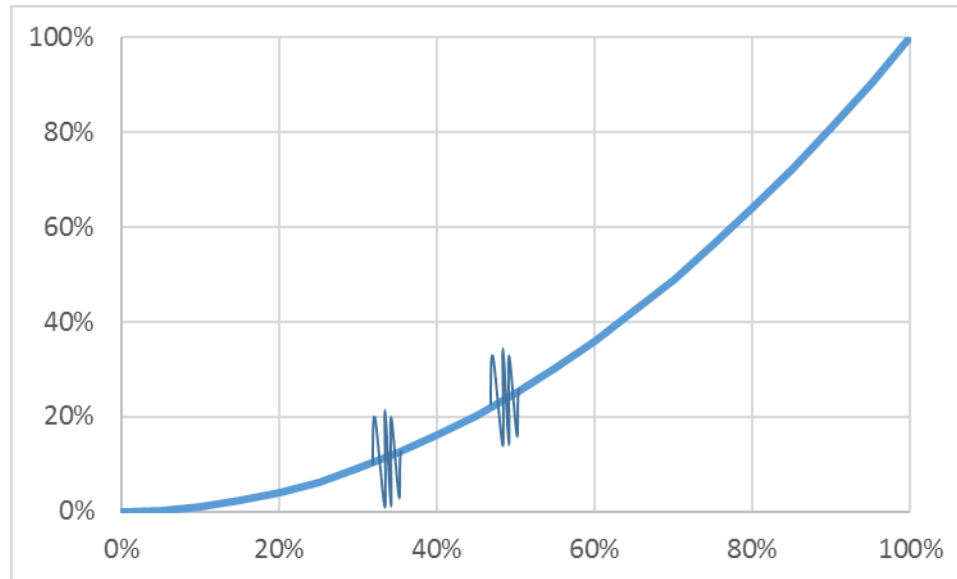
Lamp gaat niet uit

Fase-dimming



Lamp gaat niet aan bij lage dimpositie

Fase-dimming



Instabiel gedrag bij bepaalde dimposities

Fase-dimming

Andere risico's:

- Hoorbare trillingen van componenten (zoemen)
- Risico op defecten van lamp en dimmer
- ...



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Fase-dimming

- Is de lamp wel dimbaar?
- Koop lampen en dimmers van gekende merken !
- Vermijd fase-aansnijdingsdimmers
- Meng geen verschillende types lampen op 1 dimmer
- Let tijdens installatie op 'verborgen' problemen
- Test **grondig** alvorens te installeren !!!

Meer info...



Gratis download via
<http://www.wtcbe.be/>

Rechtstreeks dimmen

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