

Introductie over DC

Door: Harry Stokman

The DC revolution has started

The DC revolution has started





Wie is Harry Stokman

- 25 jaar actief als gelijkspanningsondernemer:
 - Productie (Eigenaar van Hellas Rectifiers BV)
 - R&D (Eigenaar van Direct Current BV)
 - Gemeenschappelijk belang, educatie & normen (Voorzitter Stichting Gelijkspanning)
- Opleidingsachtergrond: Elektronica, Energie & IT.
- Ik ben dyslectisch (Taal is niet logisch).
- Trekker van DC visie. DC is het fundament van duurzame energie.
- Initiatiefnemer van het Nederlandse gelijkspanningsnet

The DC revolution has started

The DC revolution has started

Geschiedenis

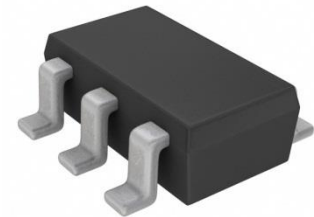


1880 Oorlog tussen **Tesla** en **Edison**

War of currents

War of currents

Dingen zijn veranderd

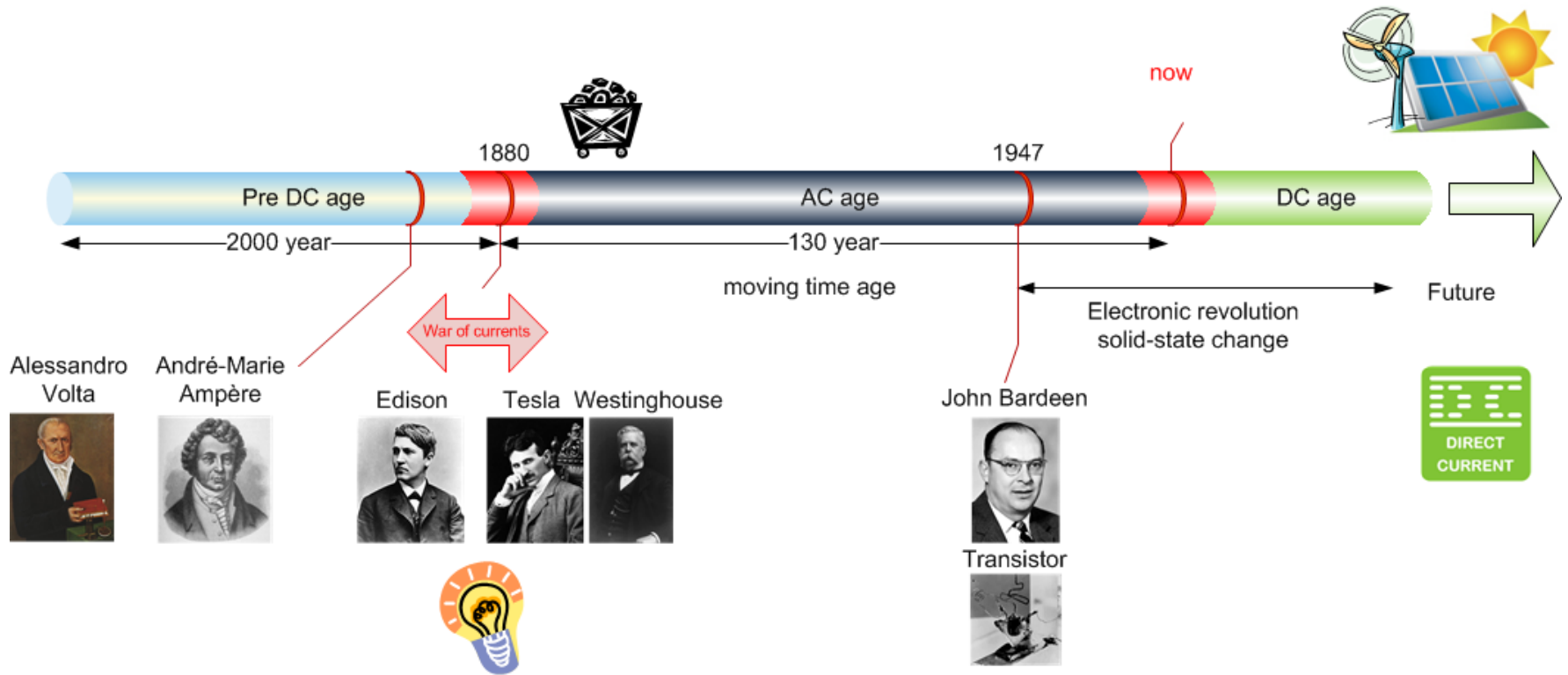


Vandaag de dag zijn de argumenten waarom Tesla won totaal anders. **We hebben nu vermogenselektronica**

DC can be used

DC 9U p6 n26q

Tijdlijn



<http://www.youtube.com/watch?v=J0js1nvP63g>

Waarom DC

All the things we ❤️ and
are working on **DC**



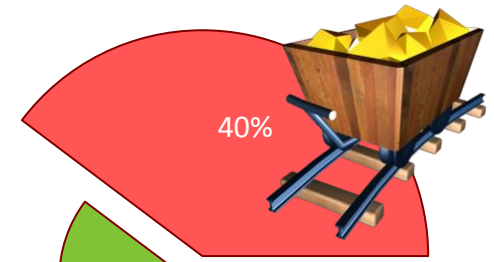
We already live in a DC world

We already live in a DC world

Waarom DC

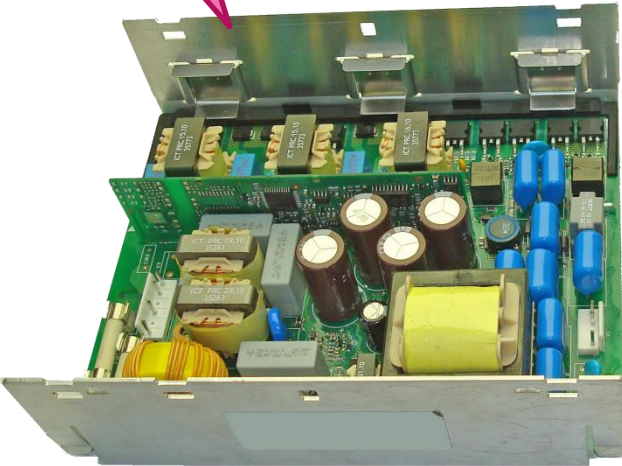


Langere levensduur



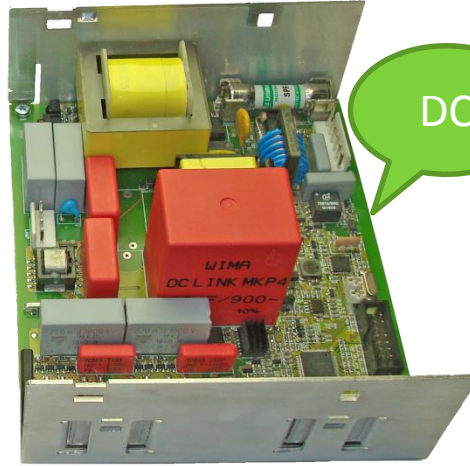
Minder grondstoffen

AC



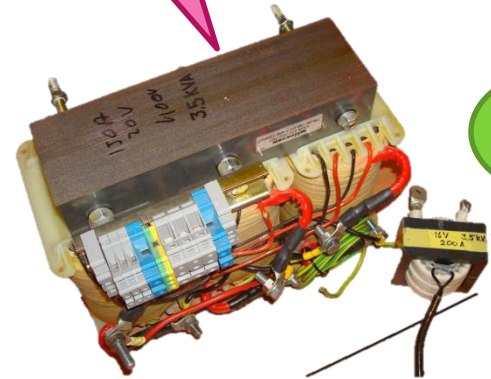
Beste **AC** HPS driver

DC



Eerste **DC** prototype HPS driver

AC

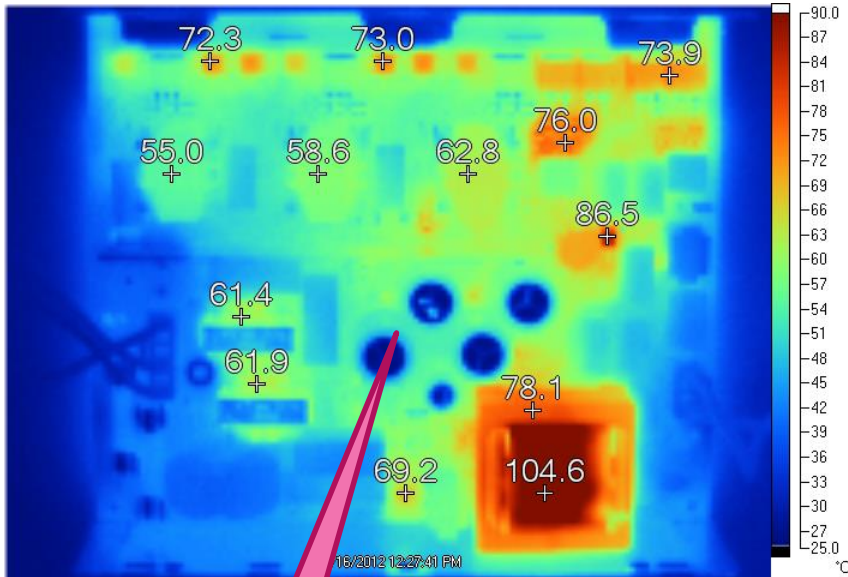


DC

Low impact on raw materials

Low impact on raw materials

Waarom DC



AC

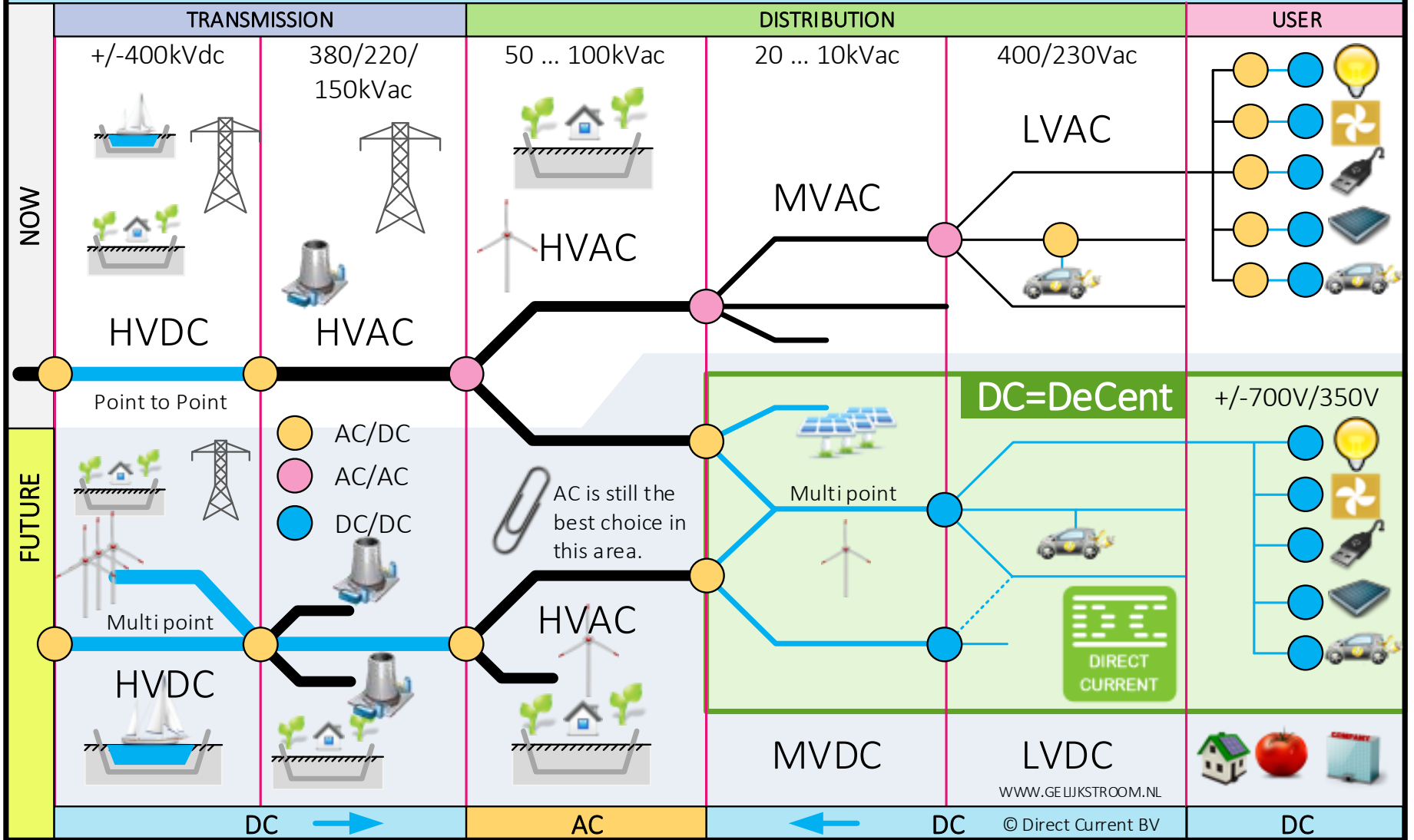


DC

DC is more efficient

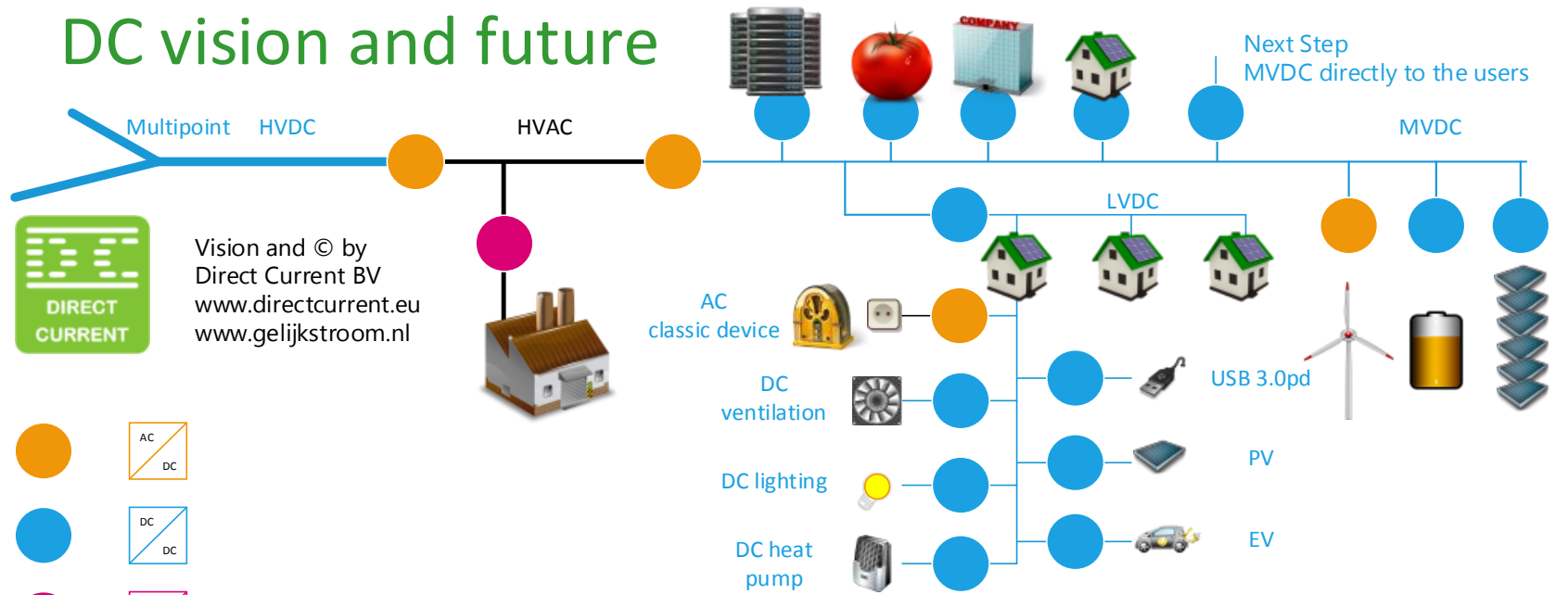
DC IS MORE EFFICIENT

Vision of our future grid layout.

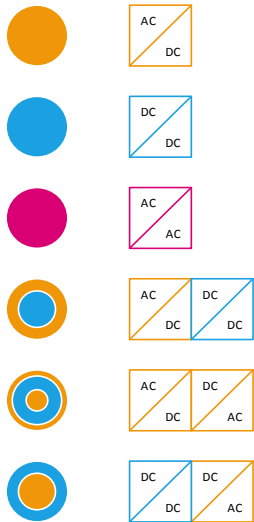


DC future grids
 DC ԷԼԵԿԿՐՈՆԻԿԱԿ ԳՐԻԴՆԵՐ

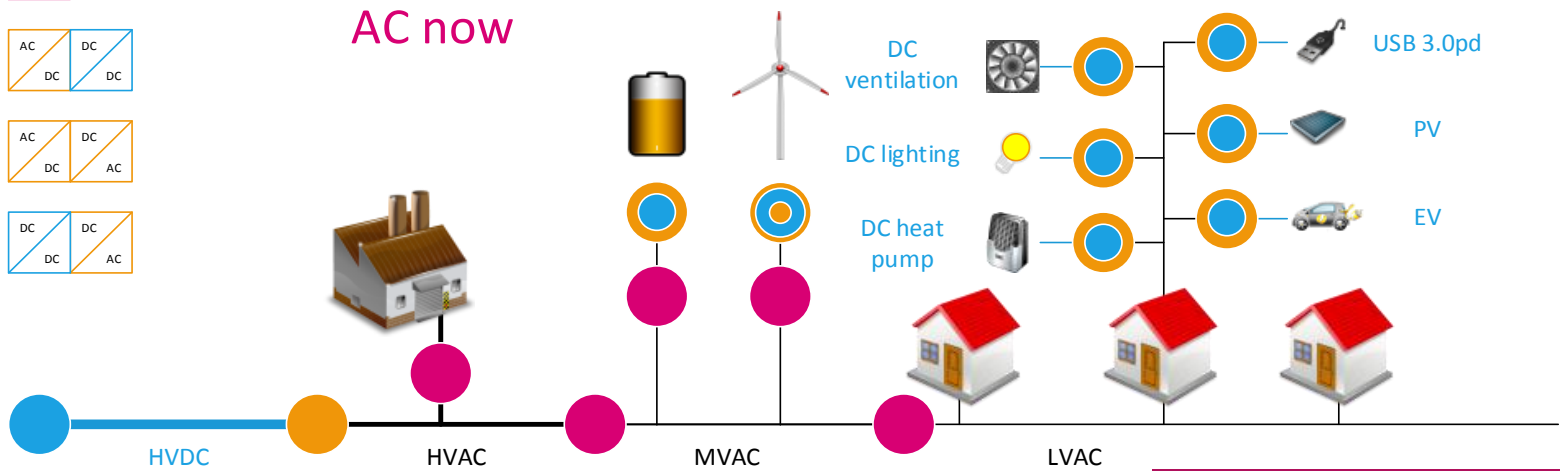
DC vision and future



Vision and © by
Direct Current BV
www.directcurrent.eu
www.gelijkstroom.nl



AC now



Future grid

Future grid

Niet eens begonnen en nu al chaos

12Vdc 24Vdc 48Vdc 60Vdc 700Vdc
400Vdc 1000Vdc 1400Vdc
110Vdc 220Vdc
600Vdc 500Vdc
1100Vdc 900Vdc

1200Vdc
350Vdc
380Vdc



Standards DC in the real world

standards DC in the real world



Waarom 12V gevaarlijk is

- Veiligheid

- Lastig onderscheid te maken tussen gebruiker en schroef
- I^2R probleem, een verdubbeling van stroom is een verviervoudiging van ellende
- Contacten de zwakke schakel
- Brandgevaarlijk



DC in the real world

DC in the real world

Resultaat spanningsonderzoek

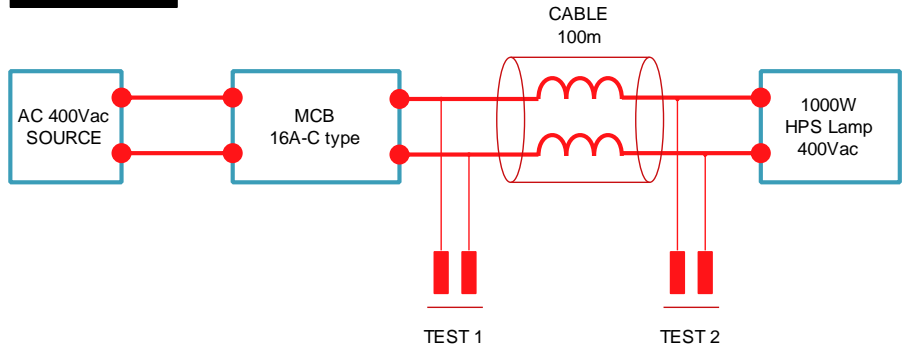
DC	House hybrid	House DC	Heat Pump	EV	Office	Data center	Factory	Ware house	Green house	Solar System	Solar park	Power	Cu mg/W 1m	Can replace	Wires	Distance 1%	600Vdc	1500Vdc
	AC/DC		2/50kW	10/20kW	100Wp on DC	>1MW	>1MW	lighting	>1 MW	10kW	2MW	Watt/mm2 @ 6A/mm2	@ 6A/mm2		no PE	drop @ 6A/mm2		
12V	X	X	X	X	X	X	X	X	X	X	X	72 W	247/+1817%	-	2	0,6 m	USA	
24V	X	X	X	X	X	X	X	X	X	X	X	144 W	124/+858%	-	2	1,2 m		
48V	✓	X	X	X	X	X	X	X	X	X	X	288 W	61,8/+379%	-	2	2,4 m		
60V	✓	X	X	X	X	X	X	X	X	X	X	360 W	49,4/+283%	-	2	2,9 m		
110V	✓	X	X	X	X	X	X	X	X	X	X	660 W	27,0/+109%	-	2	5,4 m		
220V	✓	✓	X	X	✓	X	X	X	X	X	X	1320 W	13,5/+5%	230Vac 1ph	2	10,8 m		
300V	✓	✓	X	X	✓	X	X	X	X	✓	X	1800 W	9,9/-23%	230Vac 1ph	2	14,7 m		
350V	✓	✓	X	X	✓	✓	X	✓	X	✓	X	2100 W	8,5/-34%	230Vac 1ph	2	17,2 m		
+/- 190V	✓	✓	X	X	✓	✓	X	✓	X	✓	X	2280 W	11,7/-9%	230Vac 1ph	3	18,6 m		
380V	✓	✓	X	X	✓	✓	X	✓	X	✓	X	2280 W	7,8/-39%	230Vac 1ph	2	18,6 m		
400V	✓	✓	X	X	✓	✓	X	✓	X	✓	X	2400 W	7,4/-43%	230Vac 1ph	2	19,6 m		
500V	X	X	X	X	X	✓	X	X	X	✓	X	3000 W	5,9/-54%	-	2	24,5 m		
+/-300V	✓	✓	✓	✓	✓	X	X	✓	X	✓	X	3600 W	7,4/-43%	-	3	29,4 m		
600V	X	X	✓	✓	X	X	X	X	X	✓	X	3600 W	4,9/-23%	400Vac 3ph	2	29,4 m		
+/- 350V	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X	4200 W	6,4/-51%	230Vac 1ph	3	34,3 m		
700V	X	X	✓	✓	X	✓	✓	X	X	✓	X	4200 W	4,2/-34%	400Vac 3ph	2	34,3 m		
+/- 380V	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X	4560 W	5,9/-55%	230Vac 1ph	3	37,3 m		
760V	X	X	✓	✓	X	X	✓	X	X	✓	X	4560 W	3,9/-39%	400Vac 3ph	2	37,3 m		
900V	X	X	✓	✓	X	X	✓	X	X	X	X	5400 W	3,3/-49%	-	2	44,1 m		
1000V	X	X	X	X	X	X	✓	X	X	X	X	6000 W	3,0/-54%	-	2	49,0 m		
+/- 600V	X	X	✓	X	X	✓	✓	X	✓	✓	✓	7200 W	3,7/-42%	400Vac 3ph	3	58,8 m		
1200V	X	X	X	X	X	X	✓	X	X	X	X	7200 W	2,5/-34%	690Vac 3ph	2	58,8 m		
+/- 700V	X	X	✓	X	X	✓	✓	X	✓	✓	✓	8400 W	3,2/-51%	400Vac 3ph	3	68,6 m		
1400V	X	X	X	X	X	X	✓	X	X	X	X	8400 W	2,1/-43%	690Vac 3ph	2	68,6 m		
Author Harry Stokman © 2013 by Direct Current BV internet: www.directcurrent.eu													1380 W	12,9	230Vac 1ph	2	11,3 m	Standard low voltage limits
✓	EMerge Alliance		Best range	✓	Proposed standard by Direct Current BV			AC					4157 W	6,4	400Vac 3ph	3	34,0 m	
✓	Possible extension			✓	Possible 300V/600V grids								7171 W	3,7	690Vac 3ph	3	58,6 m	



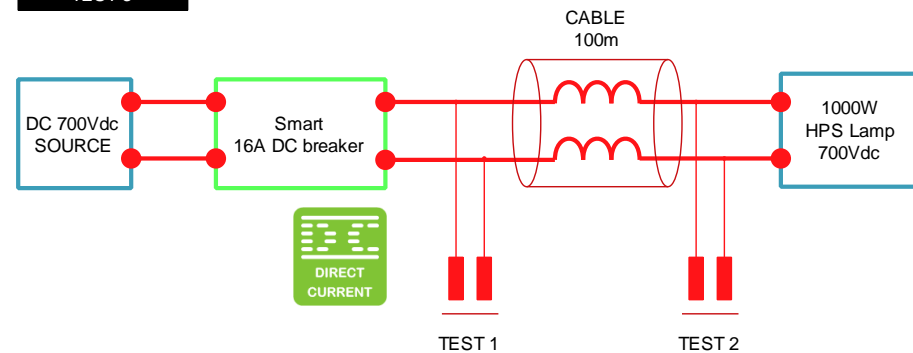
DC in the real world
 DC IN THE REAL WORLD

Verschillende beveiligingsmethodes

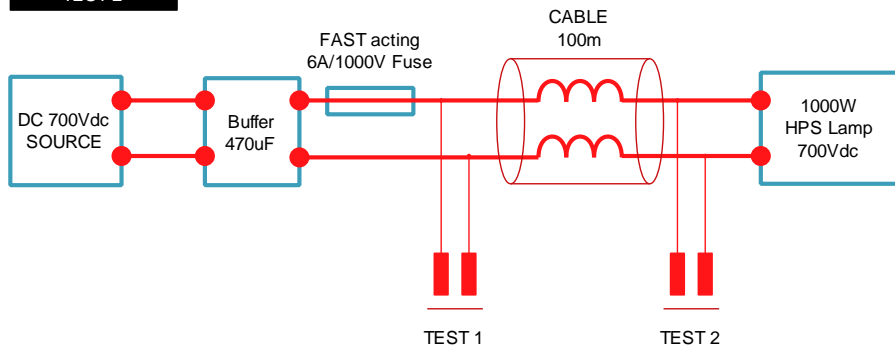
TEST 1



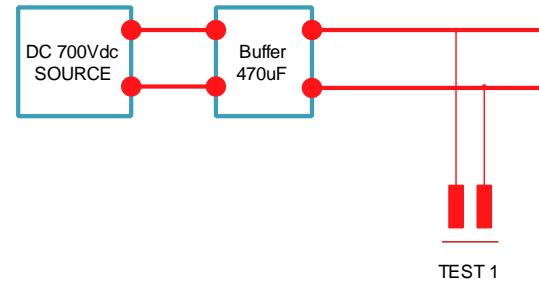
TEST 3



TEST 2



TEST 4



<http://www.youtube.com/user/DirectCurrentBV>

Ons youtube kanaal waar we verschillende testen laten zien



DC in the real world

DC in the real world

Discussie

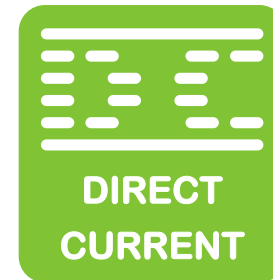
Wilt u deelnemen in een van onze projecten?

Mail naar: harry@dcbv.eu



STICHTING
GELIJKSPANNING

Stichting gelijkspanning
www.gelijkspanning.org



Direct Current BV
www.directcurrent.eu
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