



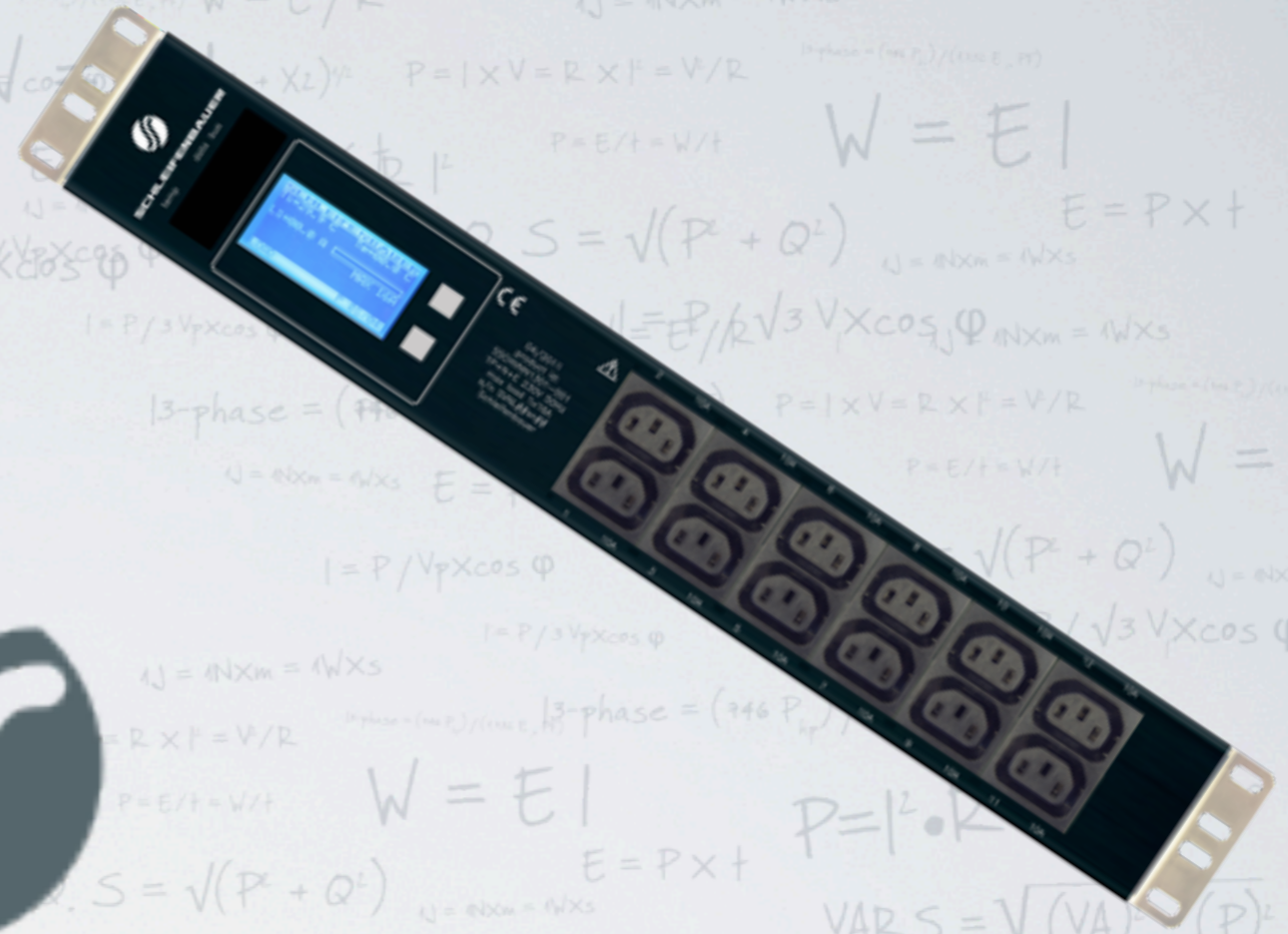
DC SPYDER



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GET TO KNOW YOUR POWER

Ronald Timmermans



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DC SPYDER



Bottom-UP approach

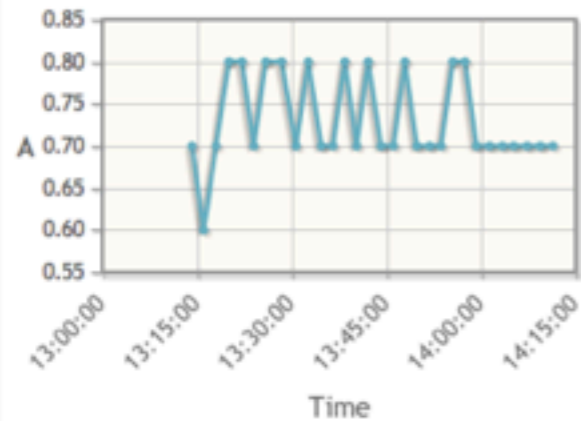


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Actual Current Gateway2

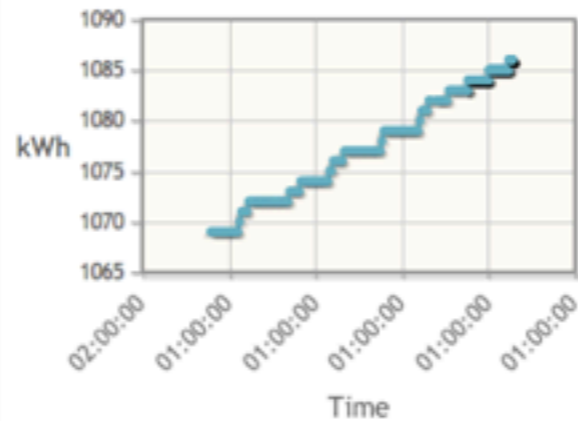
192.168.1.201
Actual current



[Mehr Informationen...](#)

This week's kWh Total GW2

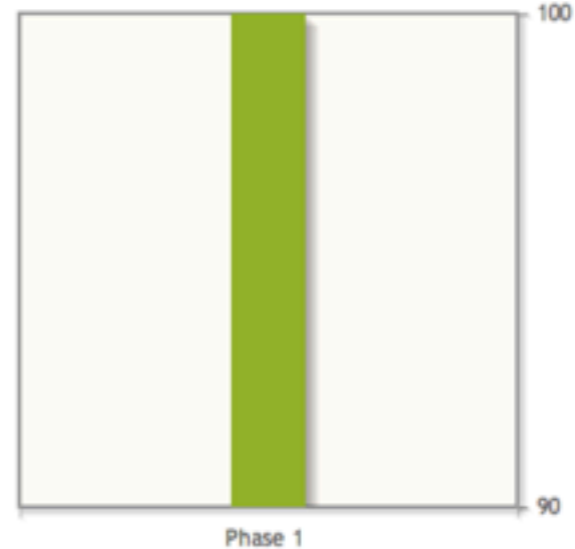
192.168.1.201
kWh Total



[Mehr Informationen...](#)

Power factor

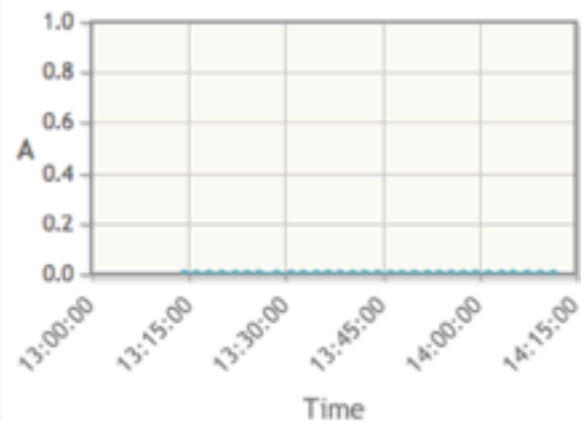
Phase 1 : 100 %



[Mehr Informationen...](#)

Actual Current Gateway1

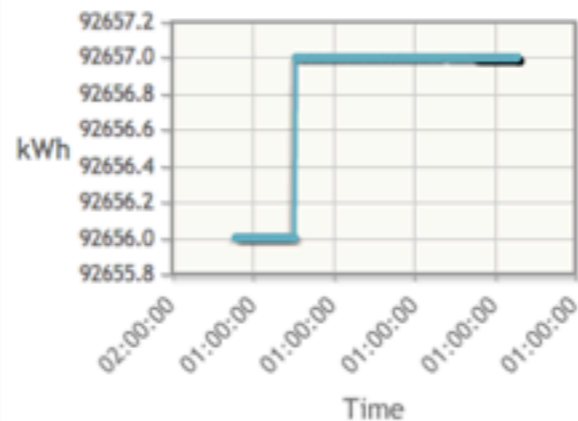
192.168.1.200
Actual current



[Mehr Informationen...](#)

This week's kWh Total GW1

192.168.1.200
kWh Total



[Mehr Informationen...](#)



Monitoring for ISP/SME



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$$R = \frac{P}{A}$$

$$W = E \cdot I$$

Handwritten mathematical notes in the background include:
 $W = E/R$
 $U = \sqrt{3} V_p \cos \phi$
 $P = I \times V = R \times I^2 = V/R$
 $Q, S = \sqrt{(P^2 + Q^2)}$
 $I = P / \sqrt{3} V_p \cos \phi$
 $W = E \cdot I$
 $E = P \times t$
 $P = E/t = W/t$
 $W = R \cdot I^2$
 $13\text{-phase} = (746 P_{hp}) / (1.932 E, PF)$
 $R = \frac{P}{A}$
 $W = E/R$
 $U = \sqrt{3} V_p \cos \phi$
 $13\text{-phase} = (746 P_{hp}) / (1.932 E, PF)$
 $W = E \cdot I$



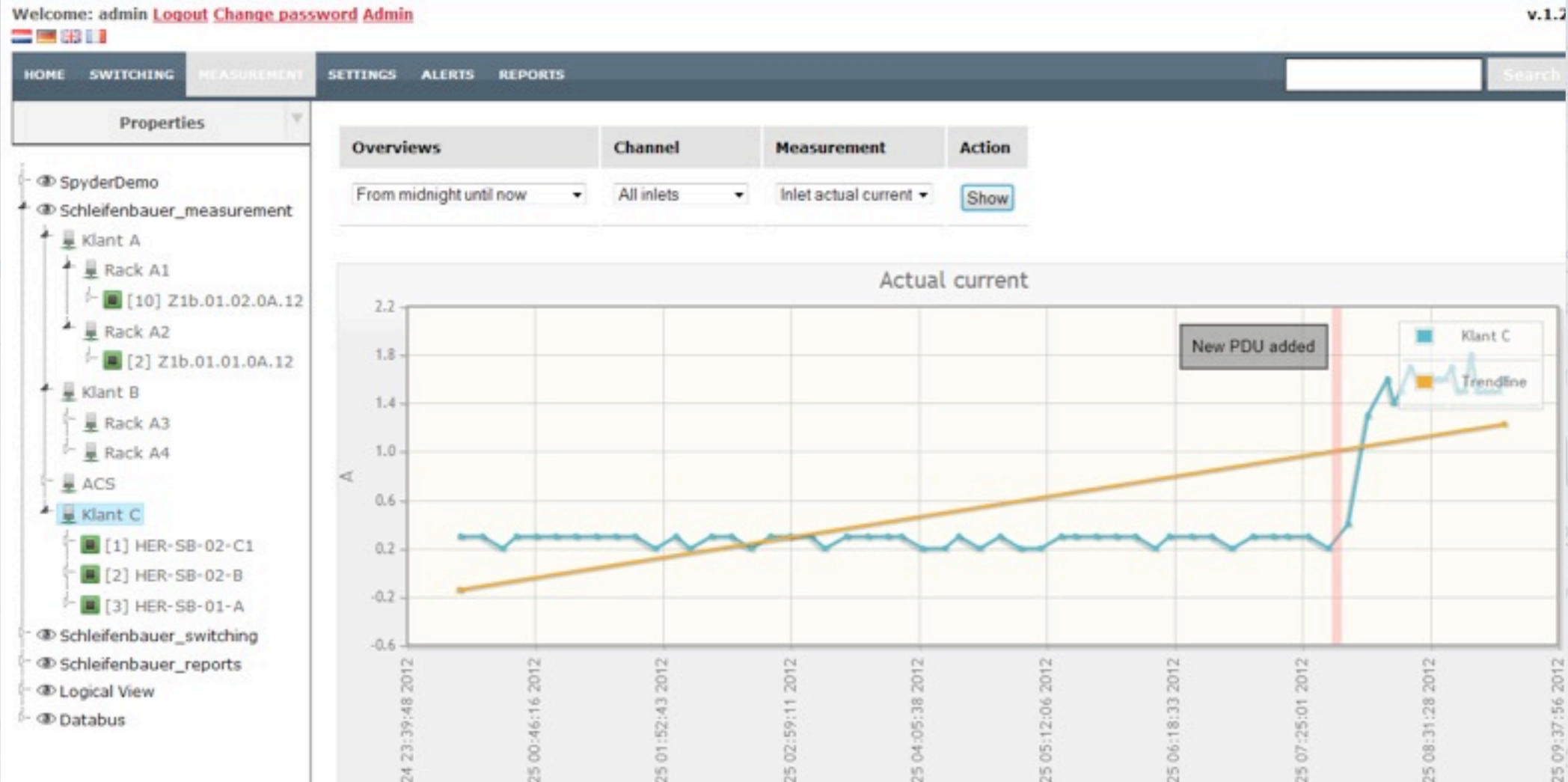
- SpyderDemo
- Schleifenbauer_measurement
 - Klant A
 - Rack A1
 - [10] Z1b.01.02.0A.12
 - Rack A2
 - [2] Z1b.01.01.0A.12
 - Klant B
 - Rack A3
 - Rack A4
 - ACS
 - Klant C**
 - [1] HER-SB-02-C1
 - [2] HER-SB-02-B
 - [3] HER-SB-01-A
- Schleifenbauer_switching
- Schleifenbauer_reports

groups & aggregation



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Measurements



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Welcome: admin [Logout](#) [Change password](#) [Admin](#)

HOME SWITCHING MEASUREMENT SETTINGS ALERTS REPORTS

Properties

- SpyderDemo
- Schleifenbauer_mesurer
- Schleifenbauer_switching
 - Klant A
 - Server 1
 - [10:1] Outlet 1
 - [10:2] Outlet 2
 - Server 2
 - Klant B
 - Server 3
 - [10:5] Outlet 5
 - [10:6] Outlet 6
- Schleifenbauer_reports
- Logical View
- Databus

Outlet switching

Enable switching

All outlets switching

Action

Switch off Reboot

Outlet switching

Outlet address	Outlet name	Status	Action	Last update	Action time	Action user
1	Outlet 1	On	Get live state Switch off Reboot	2012-10-25 09:05:56	2012-10-25 09:05:52	admin
2	Outlet 2	On	Get live state	2012-10-25 09:05:56	2012-10-25 09:05:54	admin

remote switching



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Welcome: admin [Logout](#) [Change password](#) Admin



HOME SWITCHING MEASUREMENT SETTINGS **ALERTS** REPORTS

Alert Overview

[Current alerts 0](#)

Number	Time	Description	Source	Seen?	Level
513	2012-10-01 09:45:51	An alert has been raised due to the current of a measured outlet	PDU: 10 Phase 1	OK	Warning
509	2012-09-24 03:13:16	An alert has been raised due to current exceeding threshold of an input phase	PDU: 3 Phase 1	OK	Warning
508	2012-09-24 03:13:15	An alert has been raised due to current exceeding threshold of an input phase	PDU: 2 Phase 1	OK	Warning
507	2012-09-24 03:13:14	An alert has been raised due to current exceeding threshold of an input phase	PDU: 10 Phase 1	OK	Warning
506	2012-09-24 03:12:54	An alert has been raised due to current exceeding threshold of an input phase	PDU: 3 Phase 1	OK	Warning
504	2012-09-24 03:12:53	An alert has been raised due to current exceeding threshold of an input phase	PDU: 1 Phase 1	OK	Warning
505	2012-09-24 03:12:53	An alert has been raised due to current exceeding threshold of an input phase	PDU: 2 Phase 1	OK	Warning
503	2012-09-17 13:06:56	An alert has been raised due to the current of a measured outlet	PDU: 3 Phase 1	OK	Warning



Alerts



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HOME SWITCHING MEASUREMENT SETTINGS ALERTS **REPORTS**

Properties

Databus

- 192.168.1.200
 - [10] Z1b.01.02.0A
 - [2] Z1b.01.01.0A
 - [3] Z1b.01.01.0A
 - [4] Z1b.01.01.0B
 - [11] DP-Meter
- 192.168.1.201
 - [1] HER-SB-02-C1
 - [2] HER-SB-02-B
 - [3] HER-SB-01-A

Logical Viewsfdf

Reports: 192.168.1.200

2012

Inlet

Month number	kWh	First value	Last value	€	\$	£	Kg CO2
10	8	92638.00	92646.00	1.20	1.20	0.96	4.00

Download CSV file

Outlet

Month number
10

Download CS

reports



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Views

Controllers

Database Models

Data Collection

Hardware Interfaces

Hardware

technology & architecture



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$W = E^2/R$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $P = I \times V = R \times I^2 = V^2/R$ $PF = \cos \phi = R / \sqrt{R^2 + X_L^2}$ $Q = \sqrt{P^2 + Q^2}$ $W = E I$ $U = \sqrt{3} V_p = \sqrt{3} V_s$

$E = P \times t$ $W = R I^2$ $P = E/t = W/t$ $PF = \cos \phi = R / \sqrt{R^2 + X_L^2}$ $P = I \times V = R \times I^2 = V^2/R$ $W = E I$

$I = P / V_p \times \cos \phi$ $V = E/R$ $Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$ $P = E/t = W/t$ $W = E I$

$I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $Q \cdot S = \sqrt{P^2 + Q^2}$

$P = I^2 \cdot R$ 3-phase = $(746 P_{hp}) / (1.732 E_p PF)$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $W = E I$

$VAR S = \sqrt{(VA)^2 - (P)^2}$ 3-phase = $(746 P_{hp}) / (1.732 E_p PF)$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $W = E I$

$P = I \times V = R \times I^2 = V^2/R$ $PF = \cos \phi = R / \sqrt{R^2 + X_L^2}$ $P = I \times V = R \times I^2 = V^2/R$ $W = E I$

$W = R I^2$ $P = E/t = W/t$ $W = E I$ $Q \cdot S = \sqrt{P^2 + Q^2}$

$Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$ $P = E/t = W/t$ $W = E I$

$I = P / V_p \times \cos \phi$ $V = E/R$ $Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$

$I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $Q \cdot S = \sqrt{P^2 + Q^2}$

$(746 P_{hp}) / (1.732 E_p PF)$ $P = I^2 Z \cos \phi$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $W = E I$

$W = E^2/R$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $P = I^2 Z \cos \phi$ $VAR S = \sqrt{(VA)^2 - (P)^2}$

$PF = \cos \phi = R / \sqrt{R^2 + X_L^2}$ $P = I \times V = R \times I^2 = V^2/R$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $W = E I$

$U = \sqrt{3} V_p = \sqrt{3} V_s$ $E = P \times t$ $W = R I^2$ $P = E/t = W/t$ $W = E I$

$I = P / V_p \times \cos \phi$ $V = E/R$ $Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$

$I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $Q \cdot S = \sqrt{P^2 + Q^2}$

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$I = P / V_p \times \cos \phi$ $V = E/R$ $Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$

$I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $Q \cdot S = \sqrt{P^2 + Q^2}$

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$U = \sqrt{3} V_p = \sqrt{3} V_s$ $E = P \times t$ $W = R I^2$ $P = E/t = W/t$ $W = E I$

$I = P / V_p \times \cos \phi$ $V = E/R$ $Q \cdot S = \sqrt{P^2 + Q^2}$ $E = P \times t$ $W = R I^2$

$I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $I = P / \sqrt{3} V_p \times \cos \phi$ $Q \cdot S = \sqrt{P^2 + Q^2}$

$3\text{-phase} = (746 P_{hp}) / (1.732 E_p PF)$ $P = I^2 \cdot R$ $U = \sqrt{3} V_p = \sqrt{3} V_s$ $W = E I$



thank you



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$V = R \times I$ $P = V/R$

$W = E I$

$Q \cdot S = \sqrt{P^2 + Q^2}$