



Wrocław University of Science and Technology

Sieci NN



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Abverations of net types

XY-z-v

X: T(terra); I(isolated) - connection of neutral point of source

Y: T(terra)- every load; N(net) -connection of load

Case TN: next letters T(terra) - every load:

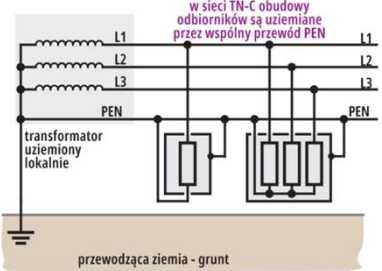
C(combined) -connection of load by PEN wire

S(separate) - cennction of load by separated PE wire



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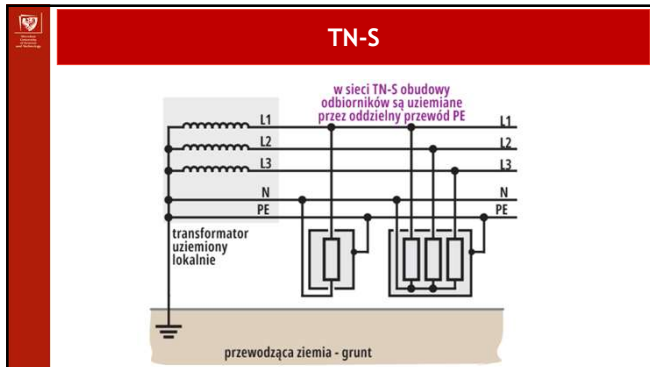
TN-C

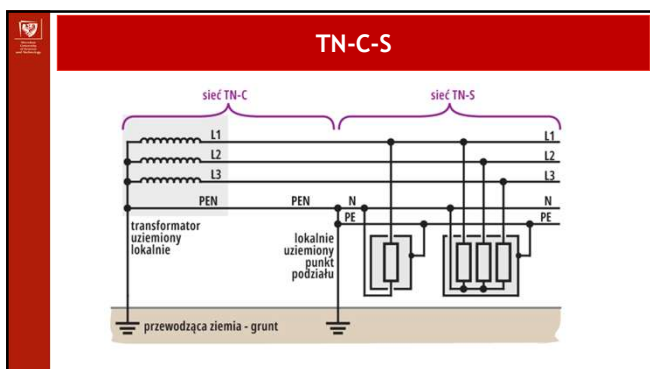


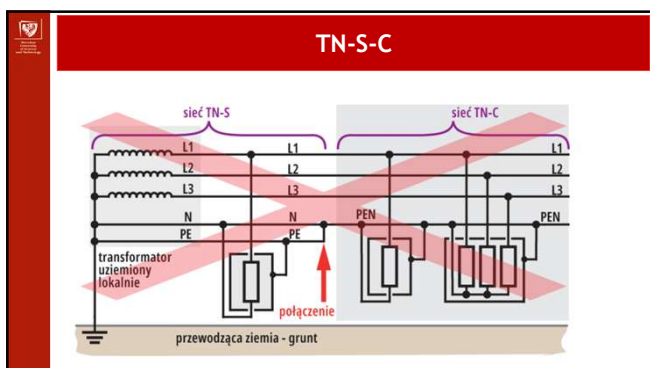
w sieci TN-C obudowy odbiorników są uziemiane przez wspólny przewód PEN

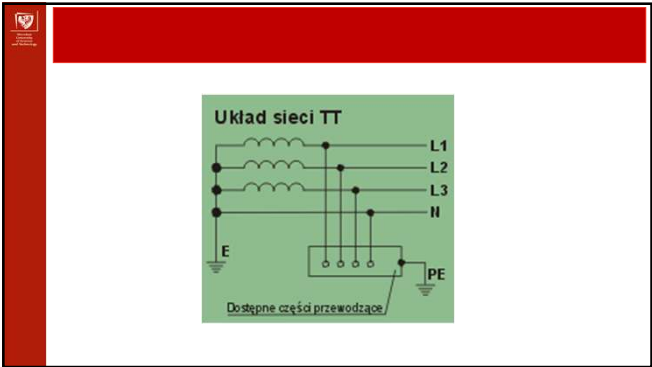
transformator uziemiony lokalnie

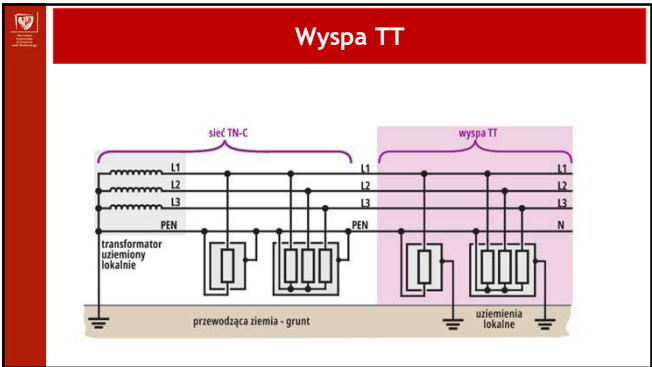
przewodząca ziemia - grunt

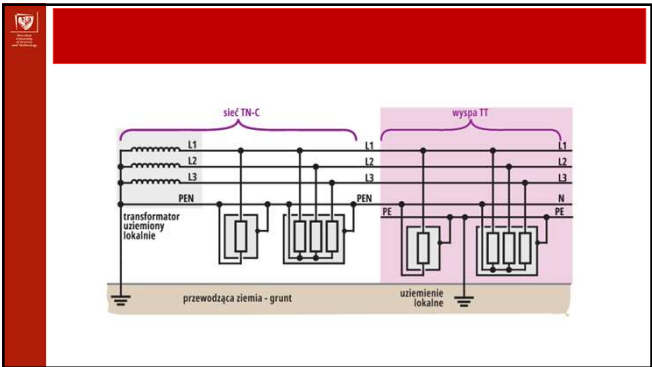


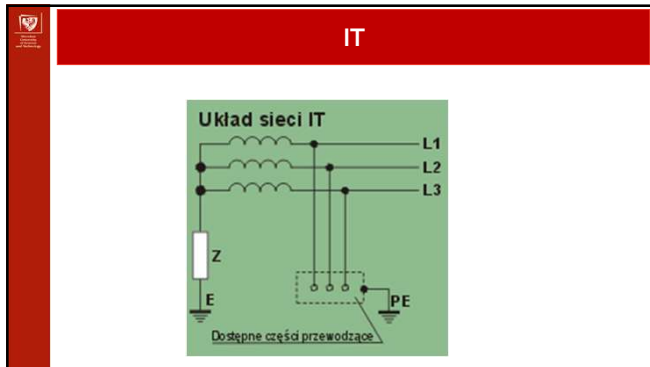


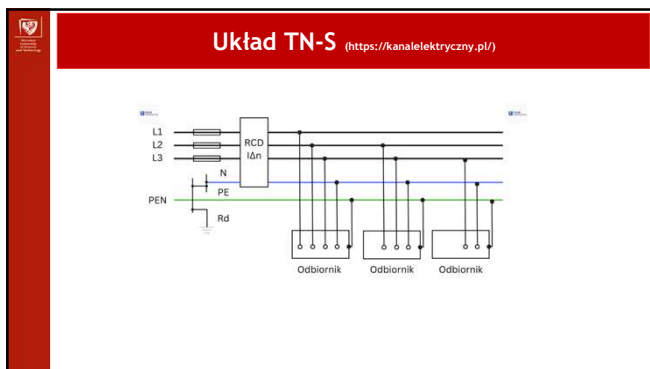


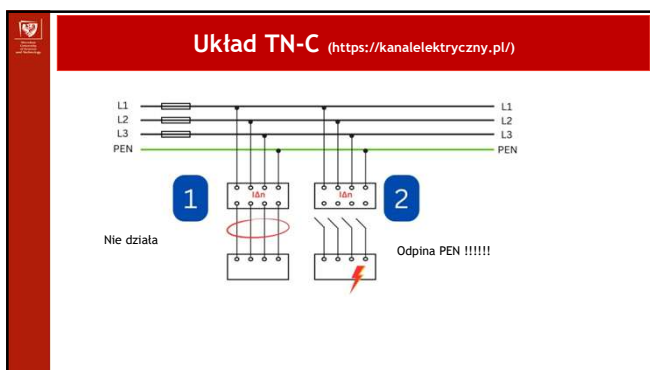


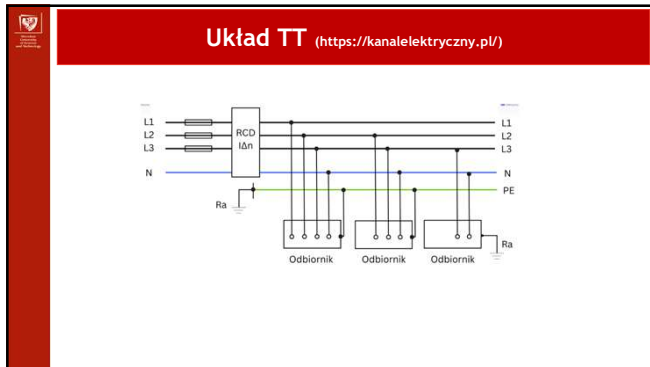


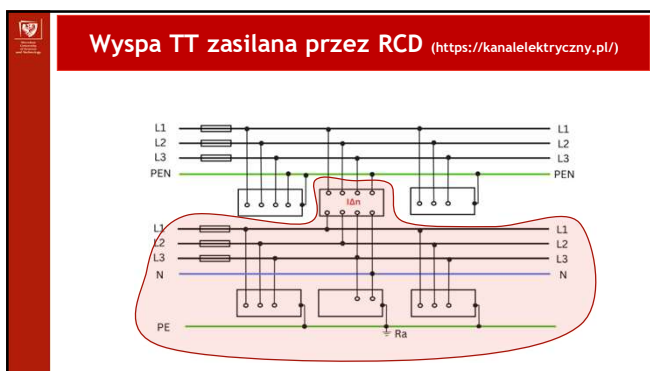


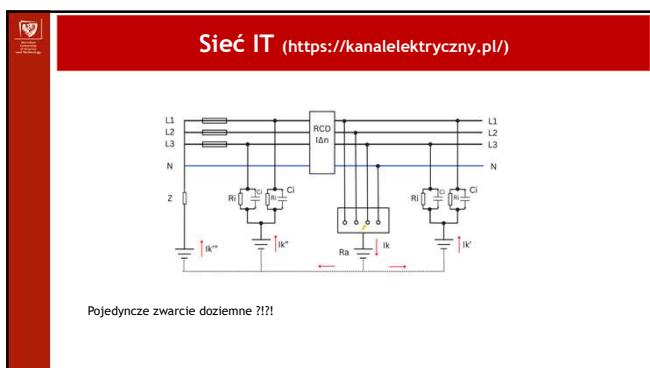










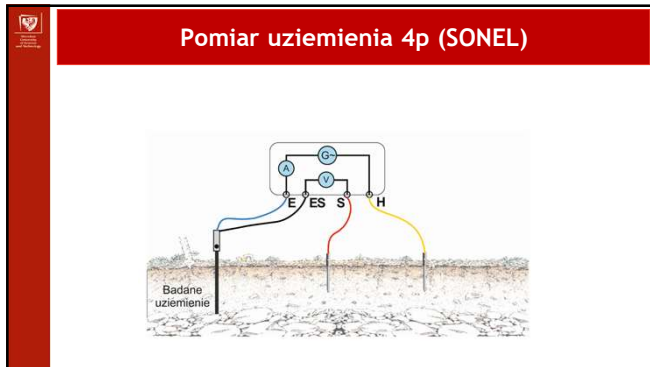


Sieć IT (<https://kanalelektryczny.pl/>)

Podwójne zwarcie doziemne !!!
RDC na obu urządzeniach ?

Pomiar uziemienia 3p (wg SONEL)

Rozpiąć !!!!



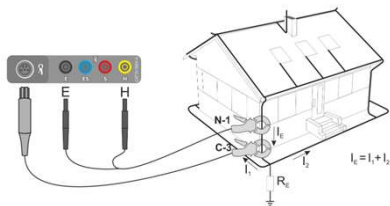




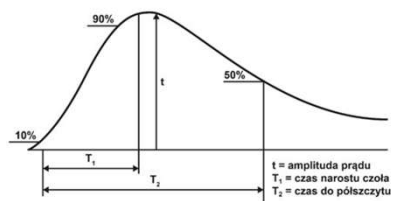
- cęgi prądowe elastyczne (SONEL)

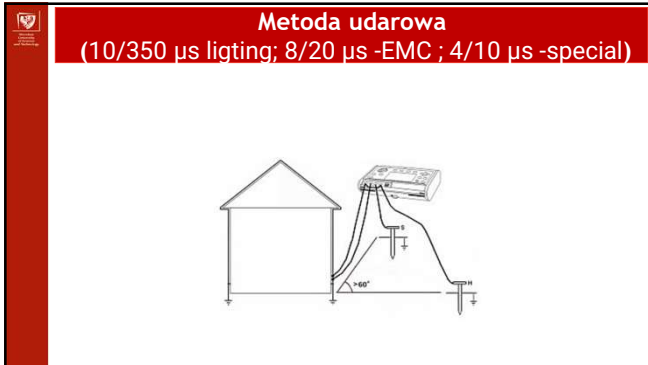


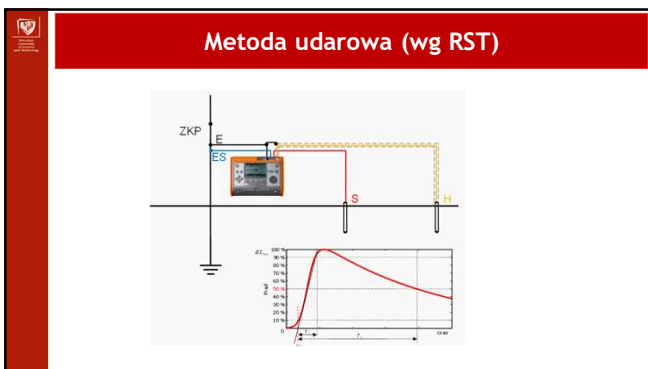
Pomiar uziemienia - 2 cęgowa (SONEL) (bez rozpinania ????)

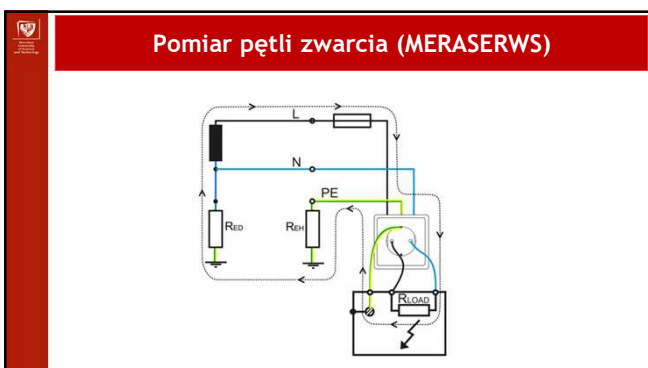


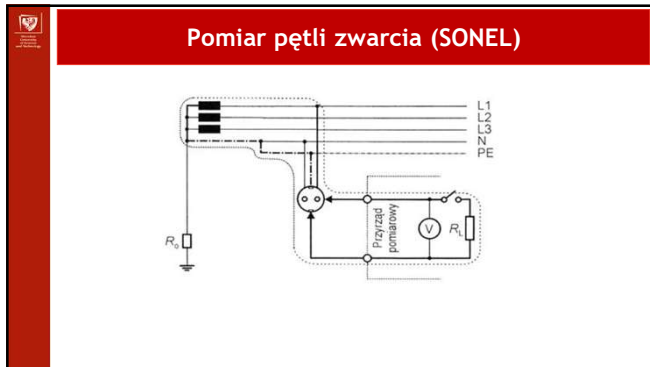
Metoda uderowa (10/350 μ s lightning; 8/20 μ s -EMC ; 4/10 μ s -special)

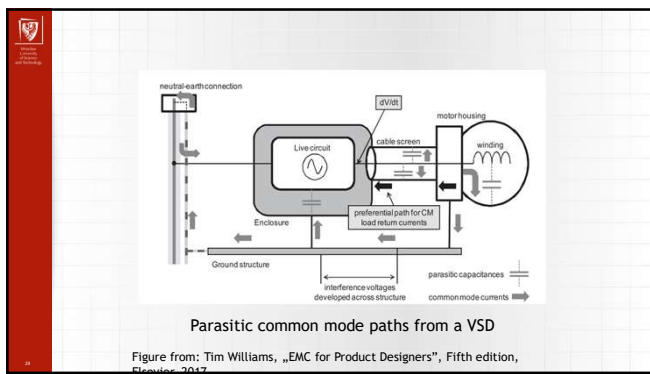


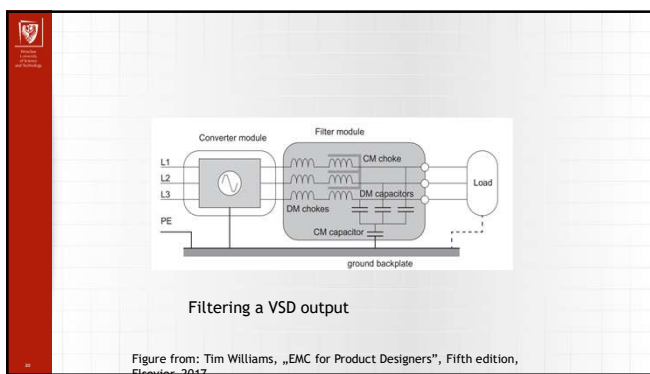


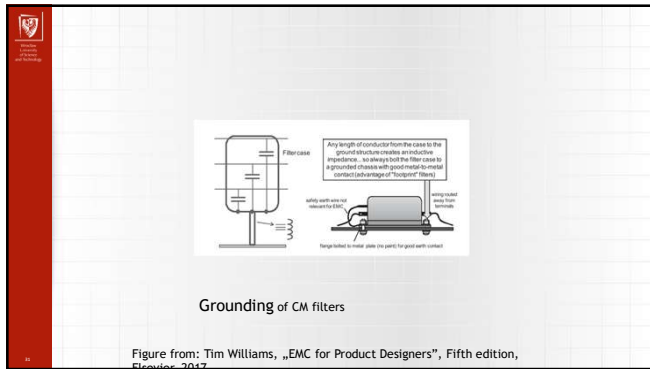


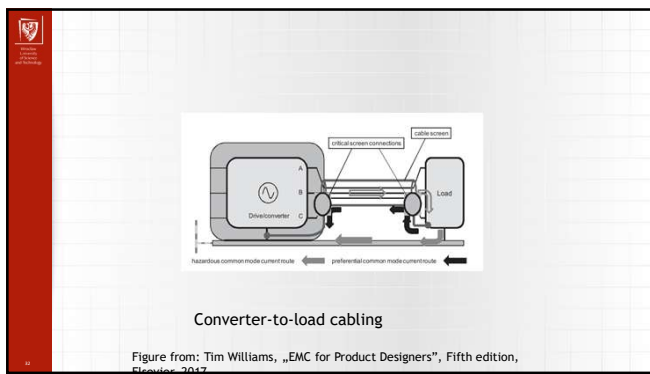


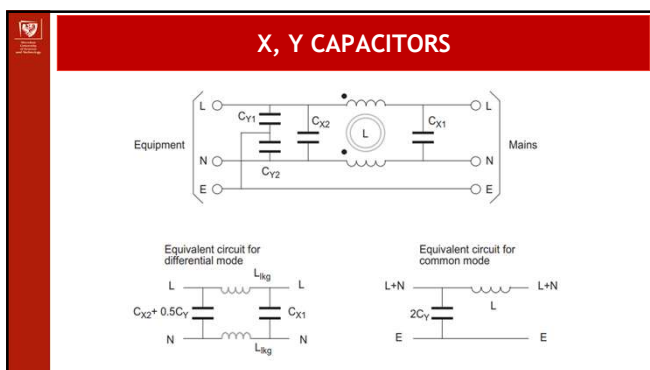












X, Y CAPACITORS

Class	Application	Peak impulse 1.2/50µs before endurance	Endurance, 1000 hr	
X1	High pulse, 2.5kV < V _P ≤ 4kV	C ≤ 1µF: 4kV; C > 1µF: (4/√C)kV	1.25 x rated voltage with 1kV AC for 0.1 seconds each hour	
X2	General purpose, V _P ≤ 2.5kV	C ≤ 1µF: 2.5kV; C > 1µF: (2.5/√C)kV		
X3	General purpose, V _P ≤ 1.2kV	None		
	Insulation bridged	Rated voltage		
Y1	Double or reinforced	≤ 500V	8kV	1.7 x rated voltage with 1kV AC for 0.1 seconds each hour
Y2	Basic or supplementary	≥ 150V ≤ 250V	5kV	
Y3		≥ 150V ≤ 250V	None	
Y4		< 150V	2.5kV	

Earth leakage			
Standard	Class I portable	Class I stationary	Class II
EN 60335-1, EN 60950-1	0.75mA	3.5mA	0.25mA
EN 61010-1	Sinusoidal	Non-sinusoidal	DC
	0.5mA	0.7mA	2mA
EN 60601-1-1 (medical)	Type B	Type BF	Type CF
	0.5mA (whole equipment)		
Patient leakage	0.1mA	0.1mA	0.01mA

W tabeli poniżej zostały zebrane trzy najczęściej spotykane typy RCD:		
Oznaczenie graficzne	Oznaczenie tekstowe	Rodzaj prądu na jaki dany wyłącznik reaguje
	AC	Prąd przemienny.
	A	Jak powyżej oraz prąd wyprostowany jednopółkowo (pulsujący).
 lub: 	B	Jak powyżej oraz prąd stały.



Test questions example

- Sketch a network diagram: TT, TN-C, TN-S, IT, TN-C-S
- What is a 3-point earth resistance measurement?
- What is the general principle of operation of a residual current device (RCD)?
- How to use an RCD in a TN-C or TN-S network?
