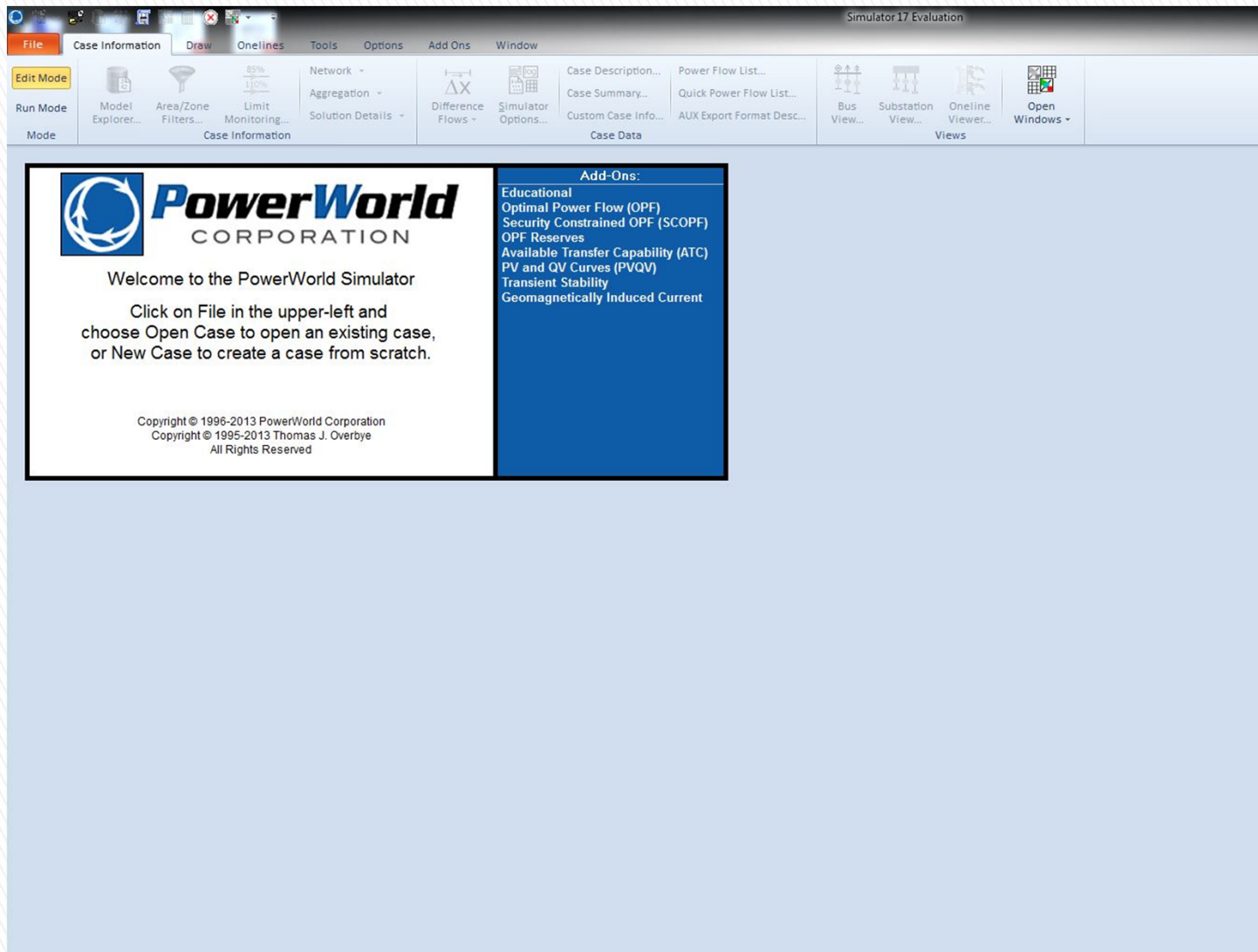




Ψηφιακό Εργαστήριο
ακαδ. Έτος: 2022-23

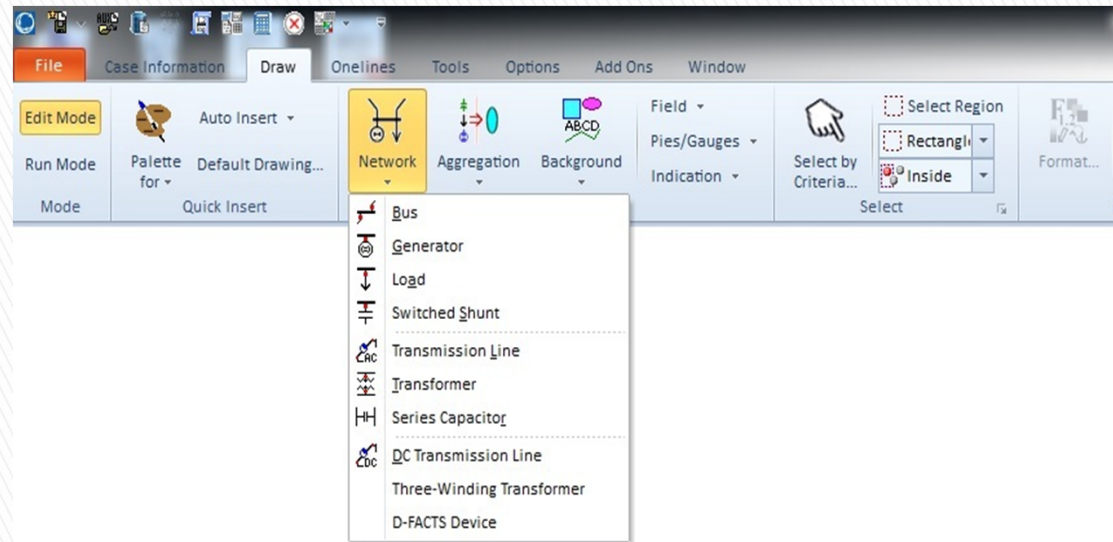
Δημιουργία νέου δικτύου



Δημιουργία νέου δικτύου

- File → New case

- Draw → Network
→ Bus



Παράμετροι Ζυγών

Ονομαστική Τάση
Δικτύου (400kV)

Bus Options

This will insert a new bus in the power system data model

Bus Number: 1

Bus Name: 1

Nominal Voltage: 400.00 kV

Labels ...

	Number	Name
Area	1	1
Zone	1	1
Owner	1	
Substation		

Bus Information | Display | Attached Devices | Geography | Custom

Orientation: ☐ Right, ☒ Up, ☐ Left, ☐ Down

Shape: ☒ Rectangle, ☐ Ellipse

Size: 24.00, Width: 0.300

Scale Width with Size

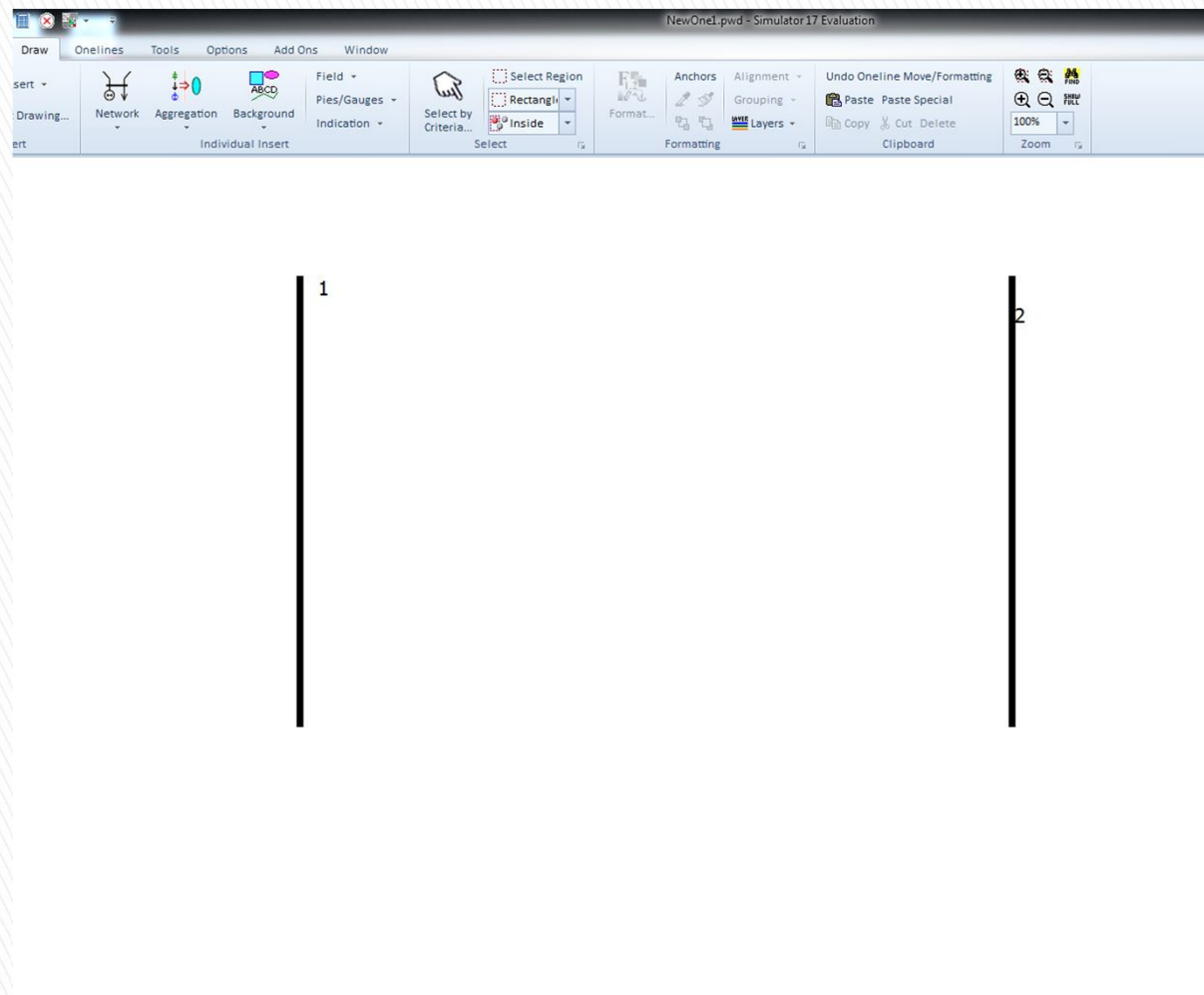
Link to New Bus

OK Save Cancel

Προσανατολισμός
στοιχείου

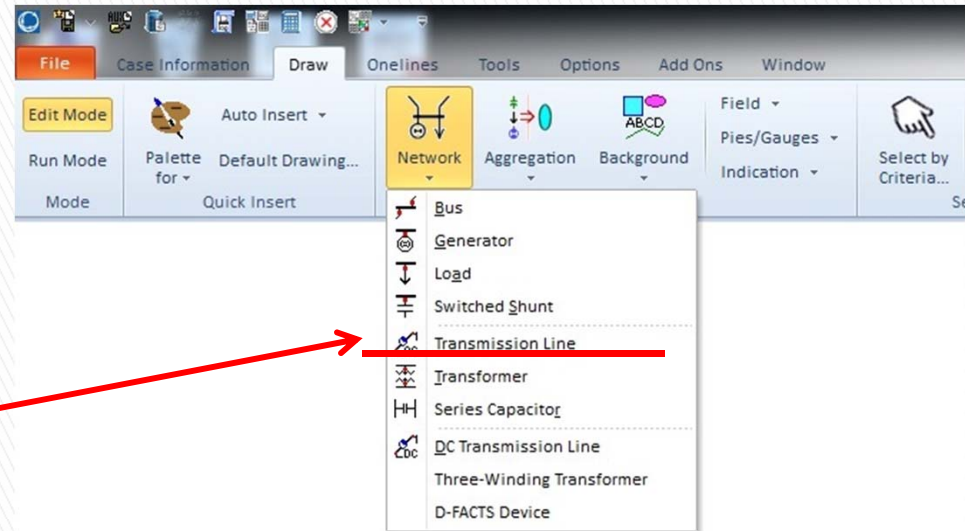
Διαστάσεις
Στοιχείου

Παράμετροι Ζυγών



Παράμετροι Γραμμής Μεταφοράς

- Draw → Network
→ Transmission Line



Παράμετροι Γραμμής Μεταφοράς

- Parameters →
Calculates Impedances
→ From Per Distance
Impedances

Branch Options

From Bus: 1, To Bus: 2, Circuit: 1

Number: 1, Name: 1, Area Name: 1 (1), Substation: 1 (1), Nominal kV: 400.0

Find By Numbers, Find By Names, Find ...

☒ From End Metered, ☒ Default Owner (Same as From Bus)

Labels ...

Display Parameters Transformer Control Series Capacitor Fault Info Owner, Area, Zone, Sub Custom

Status: ☐ Open, ☒ Closed

Branch Device Type:

Length: 0.00

Calculate Impedances >

From Per Distance Impedances

From Conductor Type and Tower Configuration

D-FACTS Devices on the Line

Per Unit Impedance Parameters

Series Resistance (R)	0.000000
Series Reactance (X)	
Shunt Charging (B)	0.000000
Shunt Conductance (G)	0.000000

Has Line Shunts: ☐ Line Shunts

MVA Limits

Limit A	0.000
Limit B	0.000
Limit C	0.000
Limit D	0.000
Limit E	0.000
Limit F	0.000
Limit G	0.000
Limit H	0.000

OK Save Cancel Help

Παράμετροι Γραμμής Μεταφοράς

Line Per Unit Impedance Calculator

Actual Impedance and Current Limits

R (Ohms/km) 0,000000

X (Ohms/km)

B (Mhos/km) 0,000000 $\times 10^{-6}$

G (Mhos/km) 0,000000 $\times 10^{-6}$

Limit A (Amps) 0,000

Limit B (Amps) 0,000

Limit C (Amps) 0,000

Limit D (Amps) 0,000

Limit E (Amps) 0,000

Limit F (Amps) 0,000

Limit G (Amps) 0,000

Limit H (Amps) 0,000

Conductor Type
None Specified

Tower Configuration
None Specified

Calculate PU Impedances From
Conductor Type and Tower
Configuration

Line Length
380,000 km

When changing convert:
☒ PU/MVA --->
☐ <--- Electrical

Length Units
☐ miles
☒ kilometers

System Base Values
Power Base (MVA)
100,0000
Voltage Base (kV)
400,000
Impedance Base (Ohms)
1600,00
Admittance Base (Mhos)
0,000625000

Per Unit Impedance and MVA Limits

R (pu) 0,000000

X (pu) 2,361211

B (pu) 0,000000

G (pu) 0,000000

Limit A (MVA) 0,000

Limit B (MVA) 0,000

Limit C (MVA) 0,000

Limit D (MVA) 0,000

Limit E (MVA) 0,000

Limit F (MVA) 0,000

Limit G (MVA) 0,000

Limit H (MVA) 0,000

OK Help Cancel

Παράμετροι Γραμμής Μεταφοράς

Branch Options

From Bus To Bus Circuit

Number 1 2 1

Name 1 2

Area Name Substation 1 (1) 1 (1)

Nominal kV 400.0 400.0

Find By Numbers

Find By Names

Find ...

☒ From End Metered

☒ Default Owner (Same as From Bus)

Labels ...

Display Parameters Transformer Control Series Capacitor Fault Info Owner, Area, Zone, Sub Custom

Status

☐ Open

☒ Closed

Branch Device Type

☒ Allow Consolidation

Length 236.12

Calculate Impedances >

Convert Line to Transformer

D-FACTS Devices on the Line

Per Unit Impedance Parameters

Series Resistance (R) 0.007391

Series Reactance (X) 0.073590

Shunt Charging (B) 2.200739

Shunt Conductance (G) 0.000000

☐ Has Line Shunts

Line Shunts

MVA Limits

Limit A 0.000

Limit B 0.000

Limit C 0.000

Limit D 0.000

Limit E 0.000

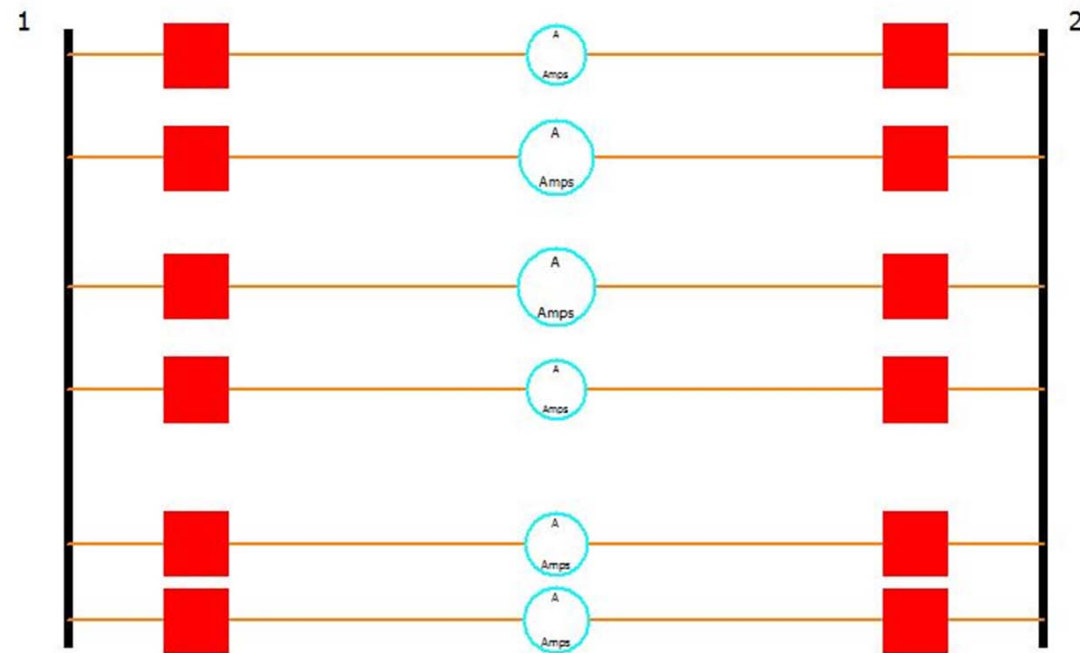
Limit F 0.000

Limit G 0.000

Limit H 0.000

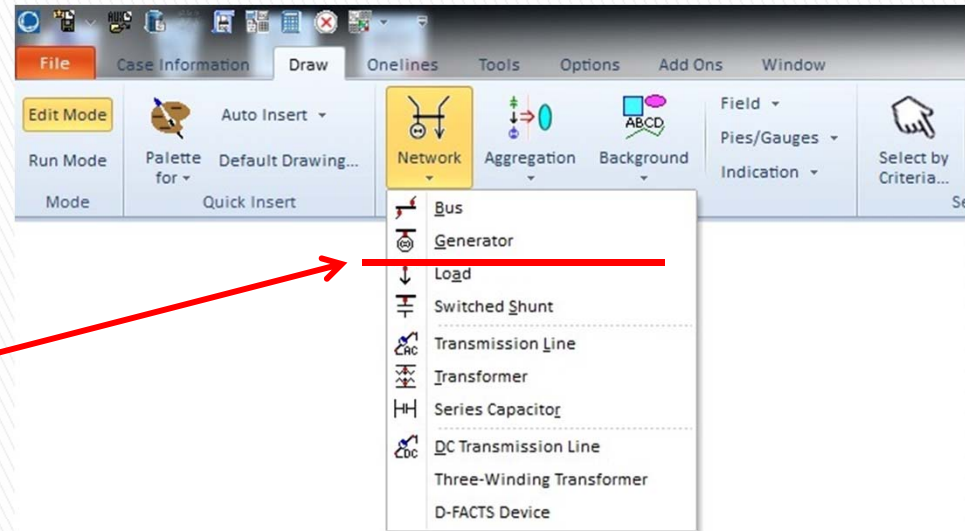
OK Save Cancel Help

Παράμετροι Γραμμής Μεταφοράς



Παράμετροι Γεννητριών

- Draw → Network
→ Generator



Παράμετροι Γεννητριών

Ζυγός σύνδεσης

Ενεργός Ισχύς
Εξόδου

Άεργος Ισχύς
Εξόδου

Ρύθμιση τάσης
σε α.μ.

The screenshot shows the 'Generator Options' dialog box with several fields and tabs. Red arrows and boxes highlight specific parameters:

- Bus Number:** 1 (highlighted by a red arrow from 'Ζυγός σύνδεσης')
- Bus Name:** 1
- ID:** 1
- Area Name:** 1
- Status:** Closed (radio button selected)
- Generator MVA Base:** 100.00
- Fuel Type:** Unknown
- Unit Type:** UN (Unknown)
- Power Control:** MW Output 0, Min. MW Output 0.000, Max. MW Output 1000.000 (highlighted by a red box and arrow from 'Ενεργός Ισχύς Εξόδου')
- Voltage Control:** Mvar Output 0.000, Min Mvars -9900.000, Max Mvars 9900.000 (highlighted by a red box and arrow from 'Άεργος Ισχύς Εξόδου')
- Regulated Bus Number:** 1 (highlighted by a red box and arrow from 'Ρύθμιση τάσης σε α.μ.')
- SetPoint Voltage:** 1.0000
- Remote Reg %:** 100.0
- Power Factor:** 1.0000
- Wind Control Mode:** Mode None
- Available for AGC:** ☒ Available for AGC
- Enforce MW Limits:** ☒ Enforce MW Limits
- Available for AVR:** ☒ Available for AVR
- Use Capability Curve:** ☐ Use Capability Curve

At the bottom, there are buttons for OK, Save, Cancel, and Help.

Παράμετροι Γεννητριών

Generator Options

Bus Number: 1
Bus Name: 1
ID: 1
Area Name: 1
Labels ...: no labels

Find By Number
Find By Name
Find ...

Status:
☐ Open
☒ Closed
Generator MVA Base: 100.00

Fuel Type: Unknown
Unit Type: UN (Unknown)

Display Information | Power and Voltage Control | Costs | Fault Parameters | Owner, Area, Zone, Sub | Custom

Display Size: 19.0
☒ Scale Width with Size
Display Width: 10.69
Pixel Thickness: 5
☒ Anchored

Orientation:
☐ Right
☐ Up
☒ Left
☐ Down

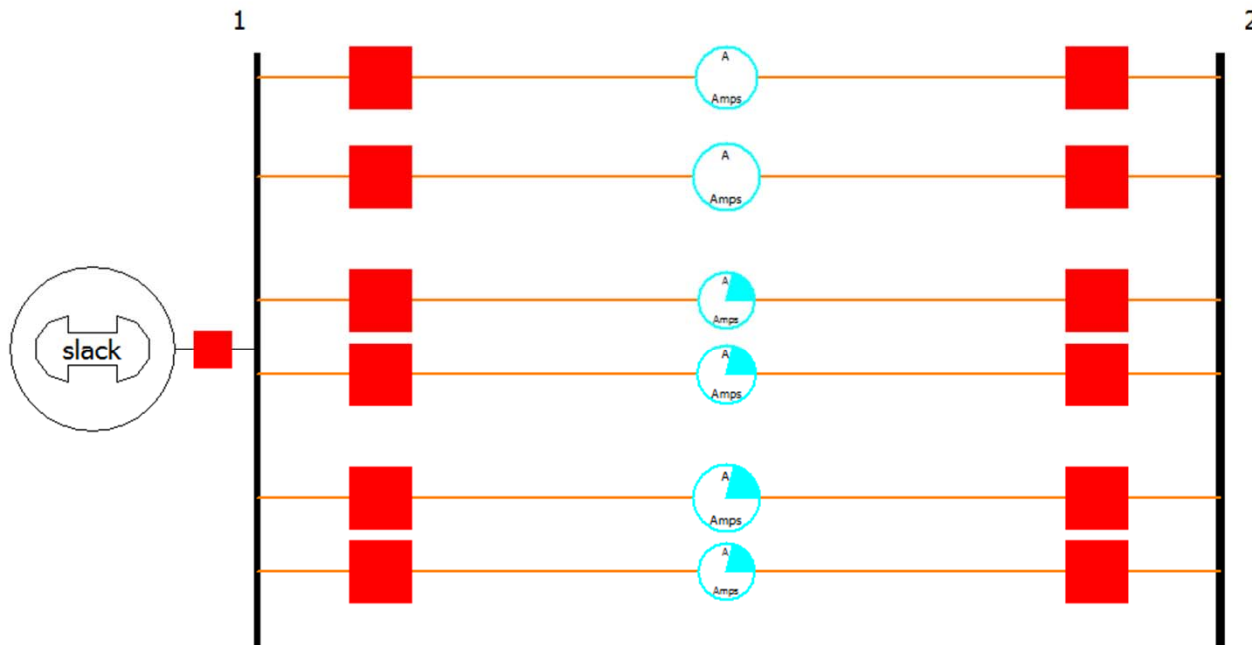
Motor Shape: Dog Bone
☐ Fill Rotor Symbol with Color 2
Fill with Color 2:

Link To New Generator

OK Save Cancel Help

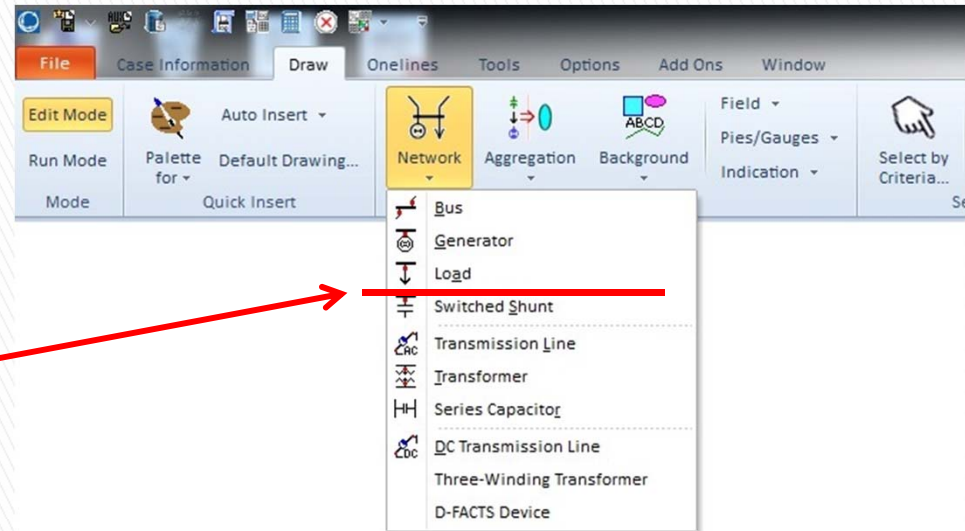
Προσανατολισμός
στοιχείου

Παράμετροι Γεννητριών



Παράμετροι Φορτίων

- Draw → Network
→ Load



Παράμετροι Φορτίων

Ζυγός Σύνδεσης
Φορτίου

Ισχύς φορτίου

Προσανατολισμός
Στοιχείου

Load Options

Bus Number 2 Find By Number Status
Bus Name 2 Find By Name Open
ID 1 Find ... Closed

Labels ...

Area Change Number 1 Name 1
Zone Change 1 1
Substation
Owner Change 1 1

☒ Same Owner as Terminal Bus

Load Information OPF Load Dispatch Custom

Constant Power Constant Current Constant Impedance

MW Value 2500 0.000 0.000
Mvar Value 650 0.000 0.000

Display Information

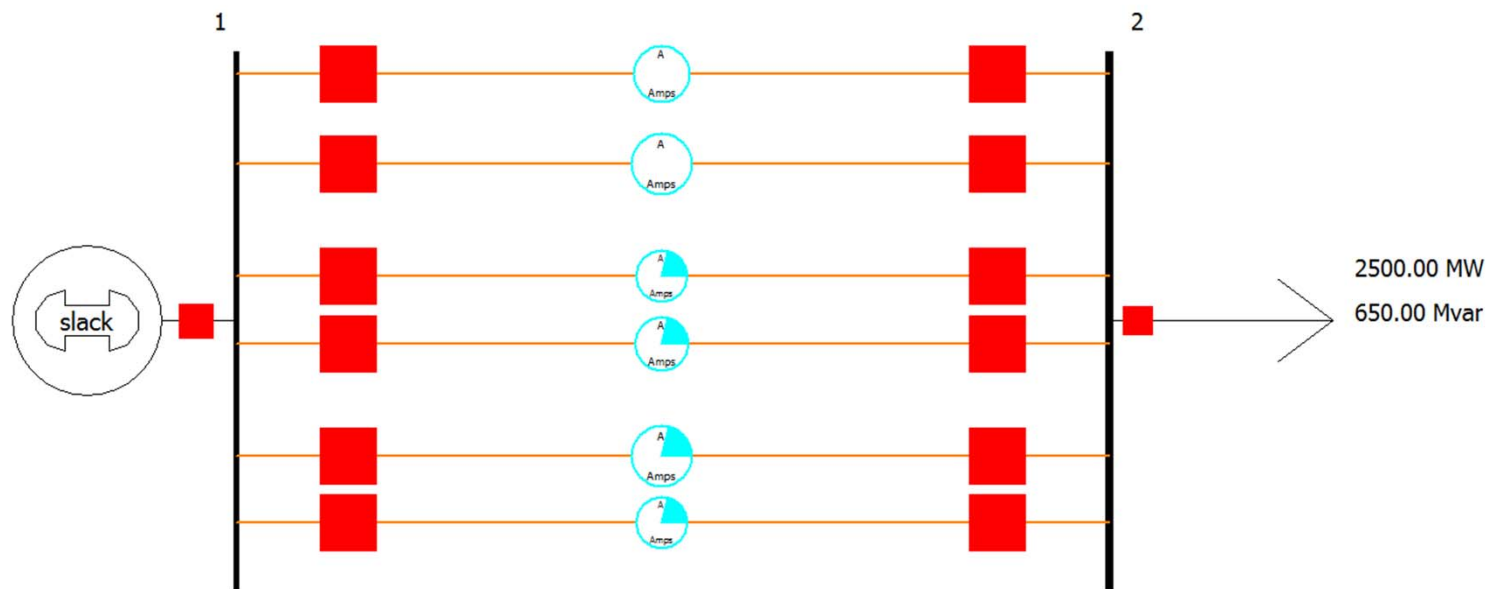
Display Size 10.00
☒ Scale Width with Size
Display Width 3.75
Pixel Thickness 1

Orientation
☒ Right ☐ Left
☐ Up ☐ Down

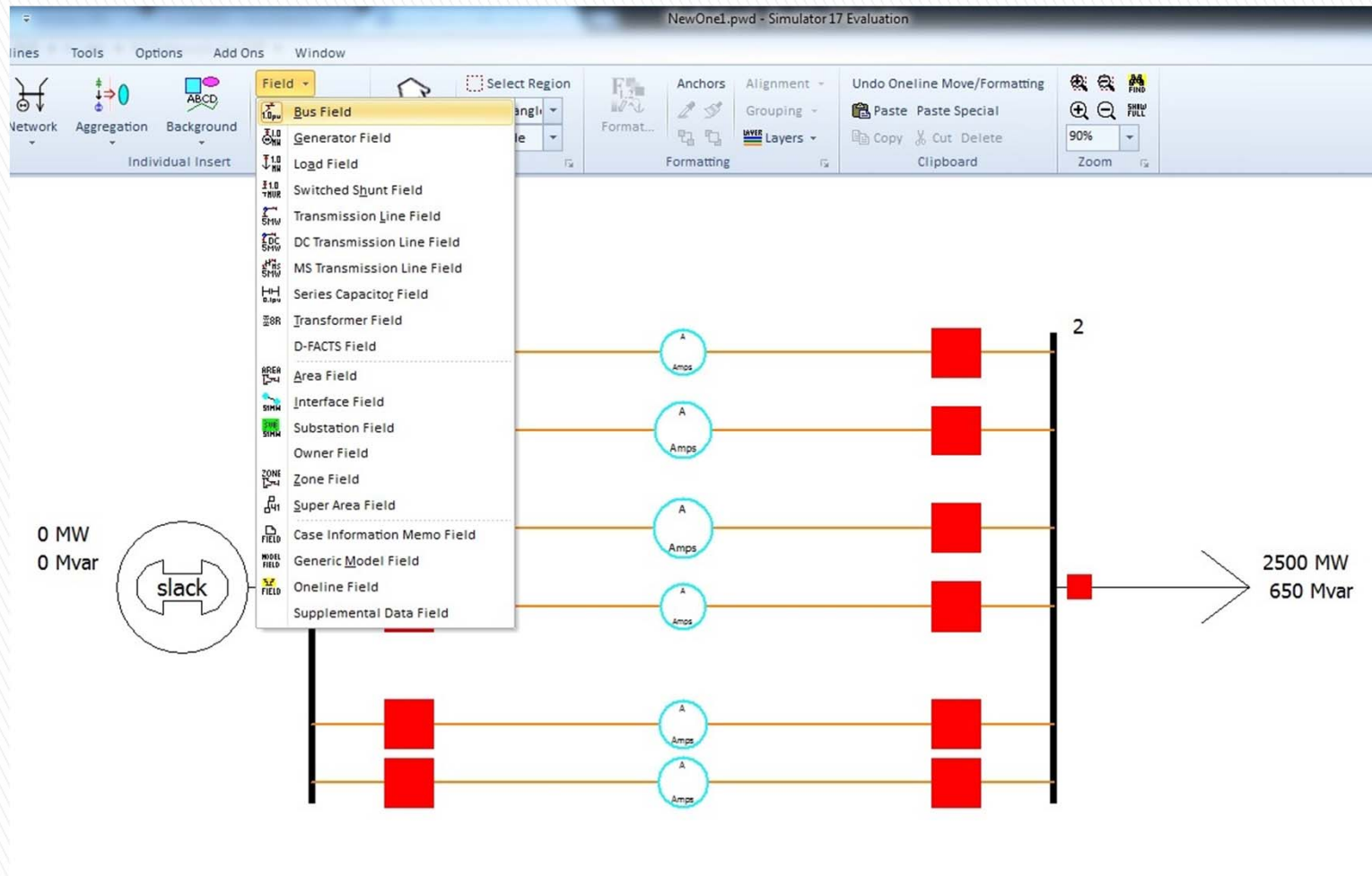
☒ Anchored
Link To New Load

OK Save Cancel Help

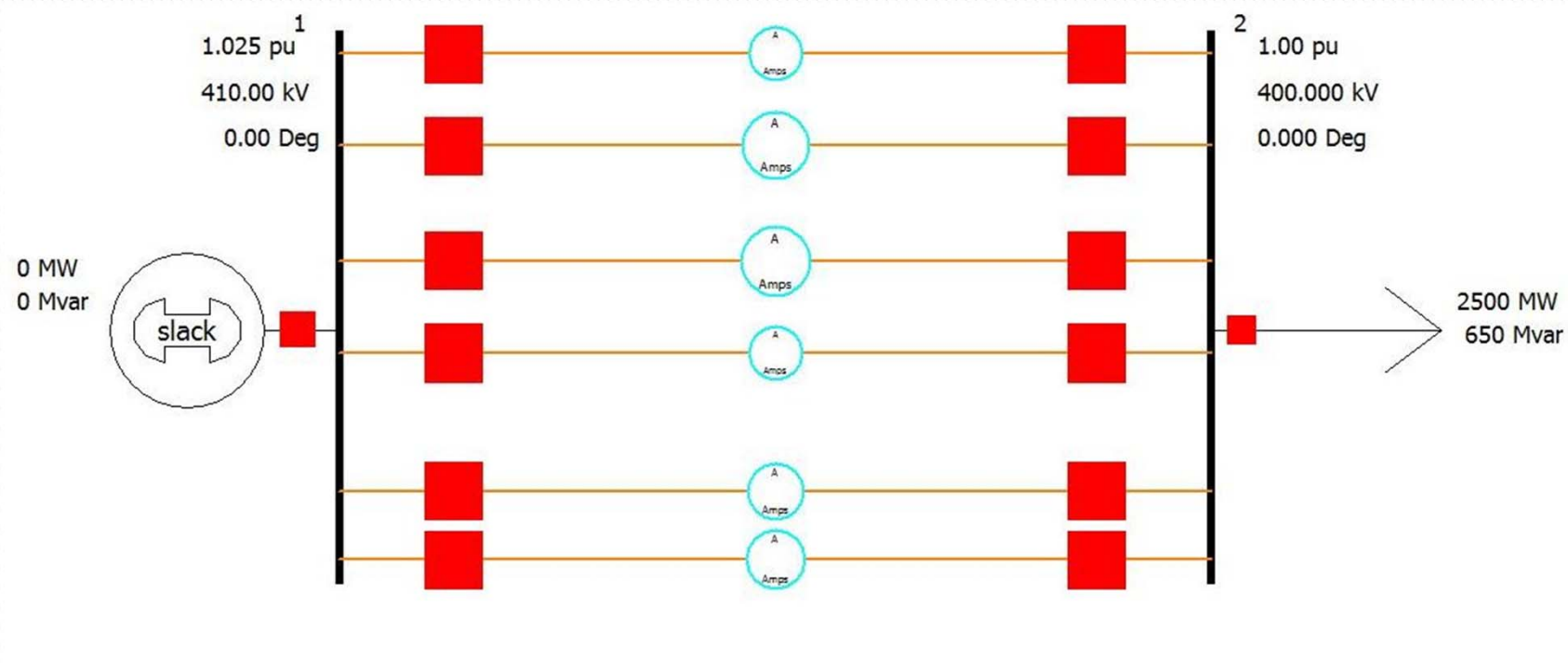
Παράμετροι Φορτίων



Πληροφορίες των μεγεθών που εμφανίζονται στο δίκτυο



Τελική μορφή δικτύου



Επίλυση Ροής Φορτίου

- Tools →
Single Solution -
Full Newton

