



systems europe  
THE WORLD OF ENERGY

# REBAN

## REduction of losses by BALancing Network

Low voltage distribution networks are often subject to excessive voltage drops or losses, due in particular to phase imbalances. The Electricity Distribution Company has to distinguish between those disorders linked to imbalances and those due to insufficient network sizing. It shall also determine the cost effectiveness of planned balancing and reinforcement projects, in order to prioritise these projects and to define the optimal short- to medium term investment planning.

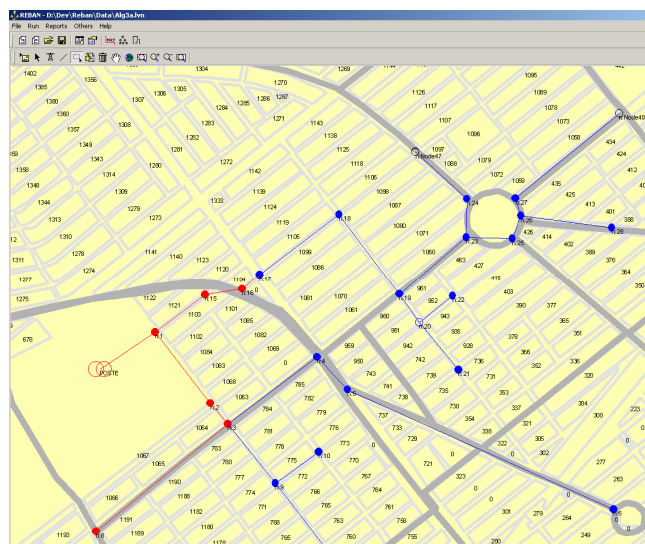
The aim of **REBAN** is to assist the Electricity Distribution Company in this procedure.

### ASSISTED OPTIMISATION OF INVESTMENT CHOICES

**REBAN** (Low voltage network) provides all the traditional functions of a low – voltage network calculation package.

Based on a more or less accurate description of the network and its different loads (which may be individualised or analysed in a linear breakdown), REBAN plots in colour graphs or in table form the **transits** and their margin, **voltage drops** and their gravity, as well as the power losses in transit lines.

In addition, **REBAN** offers the following specific features:



The screenshot shows the 'Node' configuration dialog box. It includes a 'Name' field with the value '15', a 'Units' dropdown set to 'kVA', and a table for configuring loads for different phases. The table has columns for 'Load' and 'Type'. The 'Free' checkbox is checked for Phase 2 and Phase 3.

Phase	Load	Type	Free
Three phase	0	Unknown	
Phase1	2	Type 1	<input type="checkbox"/>
Phase2	4	Unknown	<input checked="" type="checkbox"/>
Phase3	2	Type 2	<input type="checkbox"/>

- Possibility of calculation of **two or three phase networks** with a neutral distributed at an adjustable impedance,
- Handling of **imbalances** between phases,
- Adaptability of input according to the Distribution Company's available data,
- Proposed **switching of loads** from one phase to another,
- Proposition of economically justified **reinforcements**,
- **Calculation of return** expected from proposed balancing and reinforcement projects, in compliance with the Distributor's specific economic parameters
- **Summary presentation** of the results of the different network statuses: "initial", "balanced" and "reinforced".

## USER-FRIENDLYNESS AND FLEXIBILITY OF USE

**REBAN** is particularly well adapted for **quick evaluation of investment** aimed at correcting major power losses or voltage drops.

Report.txt - Notepad

Calculation results (by node)

Feeder head: LUNETDEM.NTW

Feeder situation: Disbalanced

Name Node	Connected load Phase				Uni	Voltage drop in % of Un		
	Triph	1	2	3		1	2	3
MONO A	0.0	20.0	-	-	kW	12.3	-	-
MONO B	0.0	20.0	-	-	kW	11.0	-	-
TRI A	0.0	0.0	0.0	0.0	kW	5.8	1.6	1.3
TRI B	0.0	7.0	0.0	0.0	kW	8.2	2.9	2.5

**REBAN** runs on micro-computer in a Windows environment. It therefore provides all the **user-friendliness and functionality of Windows**.

Branch

Name: 1-15 Units: kVA

Cable: 3x27.6+17.8 Length: 25 m

# phase: 3  Free

Load

Three phase:	8
Single phase:	0
Unknown phase:	0
Phase1:	0
Phase2:	0
Phase3:	0

# Customers

16 (Three ph)
0 (single ph)
2
0
2

Type

Type 1

Unknown

Unit-Load (mono)

0

OK Cancel Help

Report.txt - Notepad

ELECTRICAL REPORT

Feeder: LUNETDEM.NTW

Treatment date: 16/07/98

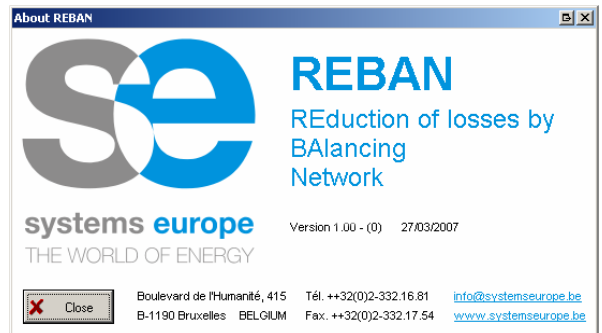
Existing network			
Total losses (kW)	7.5	Annual Cost (kF)	22.5
Maximum voltage drop (%)	12.3		
Nb of overloaded branches	2	Length of overloaded bran	200
Balanced network			
Total losses (kW)	6.3	Annual Cost (kF)	18.9
Maximum voltage drop (%)	9.5		
Nb of transfers	5	Costs of transfers (kF)	2.5
Savings on losses	3.6	TRI (%)	144.8
Backing Time (years)	0.7		
Nb of overloaded branches	1	Length of overloaded bran	100
Balanced-reinforced network			
Total losses (kW)	6.0	Annual Cost (kF)	18.0
Maximum voltage drop (%)	8.2		
Length of reinforcements	100	Cost of reinforcements (k)	10.0
Savings on losses	0.8	TRI (%)	8.2
Backing Time (years)	29.8		

**REBAN** can be used without the user needing any prior data processing knowledge.

**REBAN** is available in 3 languages:

**French,**  
**English,**  
**Spanish,**

and can be translated to any other language upon request.



**REBAN** results from a joint development by **Systems-Europe** (Belgium) and **EDF International Distribution** (France)