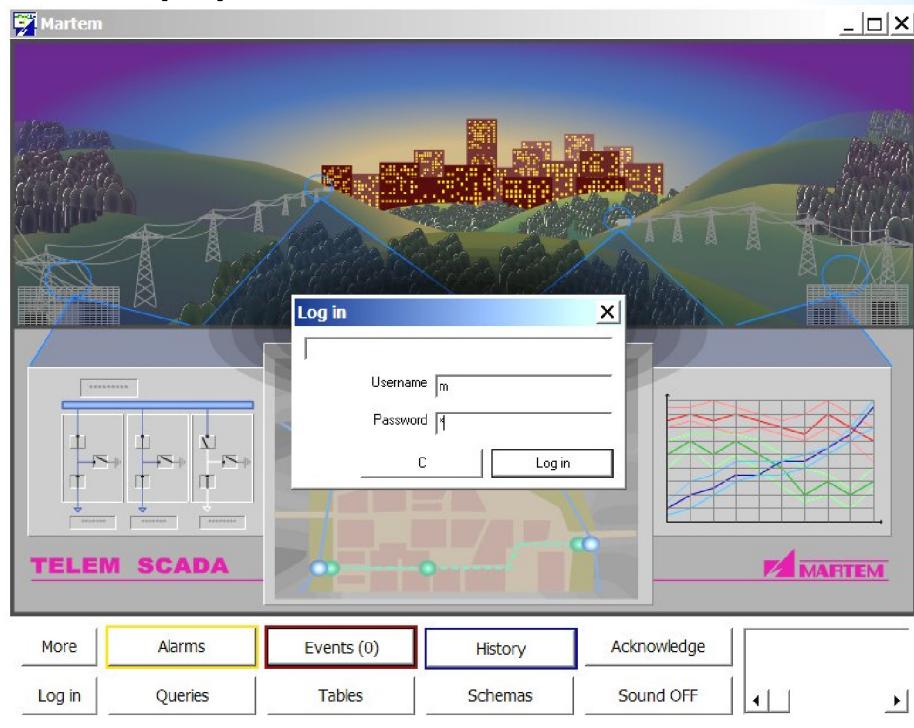


# About Telem SCADA features

**SCADA demo:**

**<http://phobos.martem.ee/shr/SCADA/>**



**Martem AS  
Tallinn 2017**



Operating under certified quality systems accordance with ISO 9001

## Content

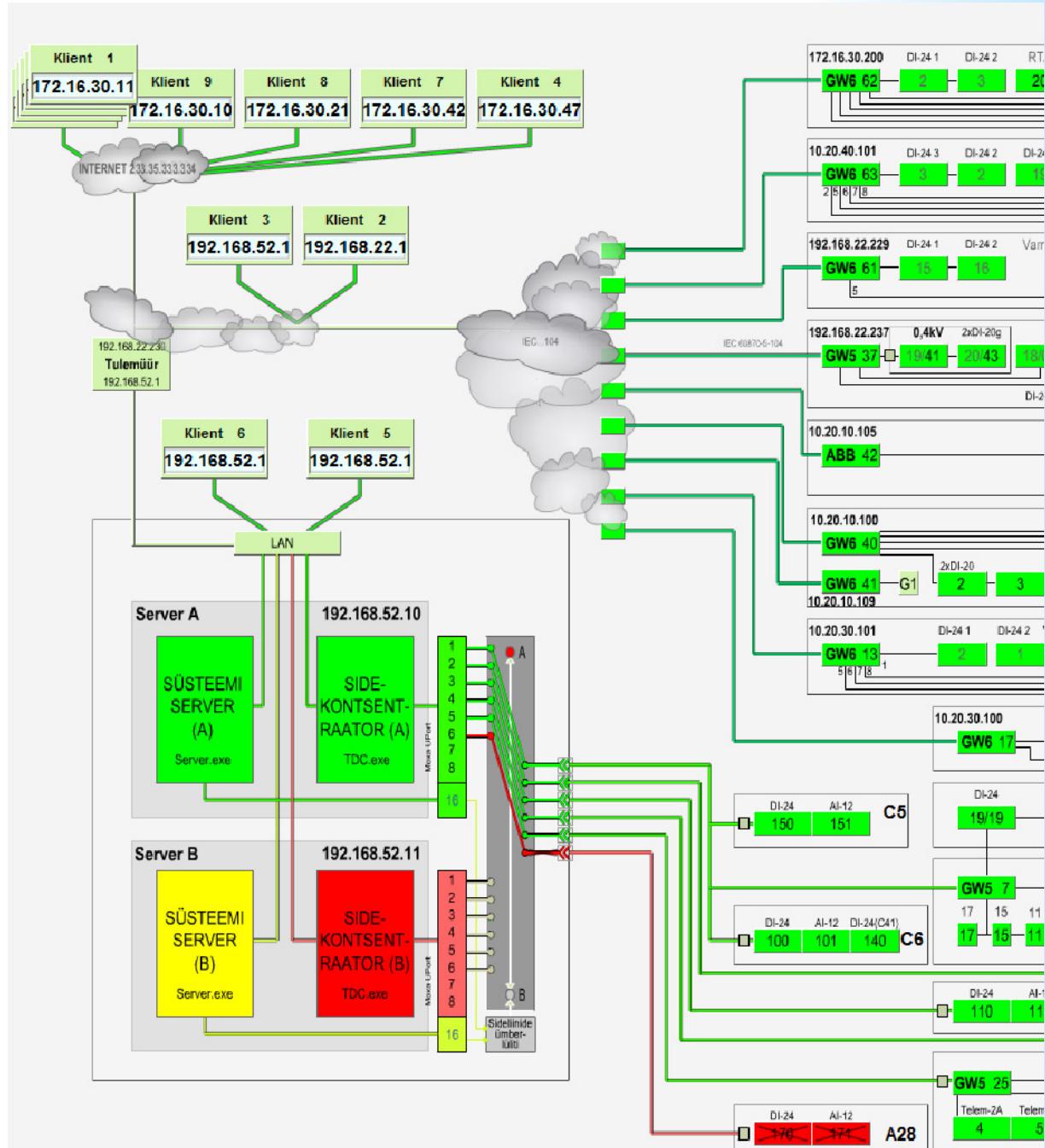
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## 1. Telem SCADA workstation

Any windows PC could be used as Telem SCADA workstation. To this PC must be installed Martem's SCADA client.exe program and Adobe flash player. The count of client workstations is not limited and they may be placed anywhere, in the local network or wherever the Internet goes

Example :

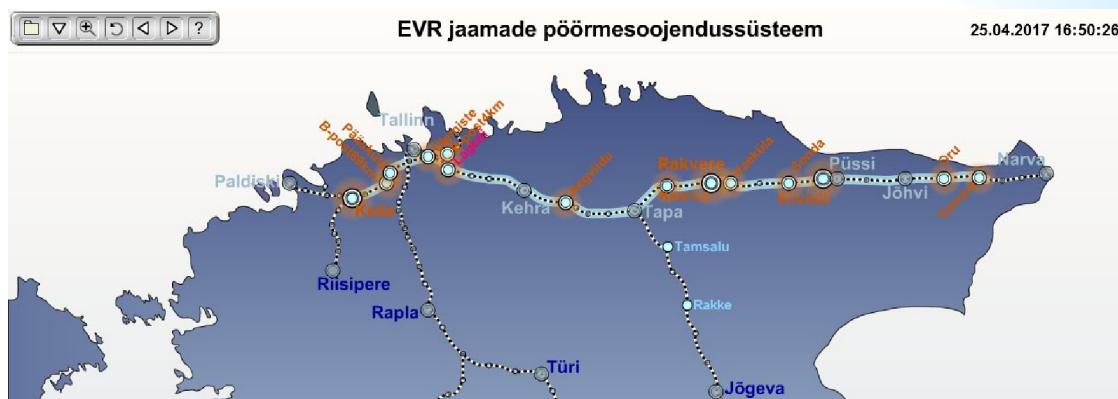
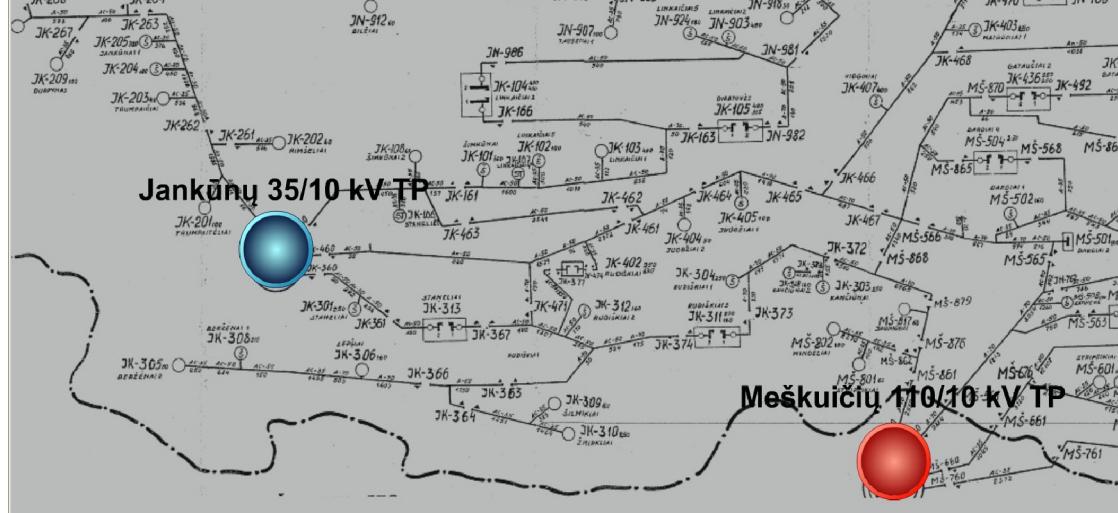
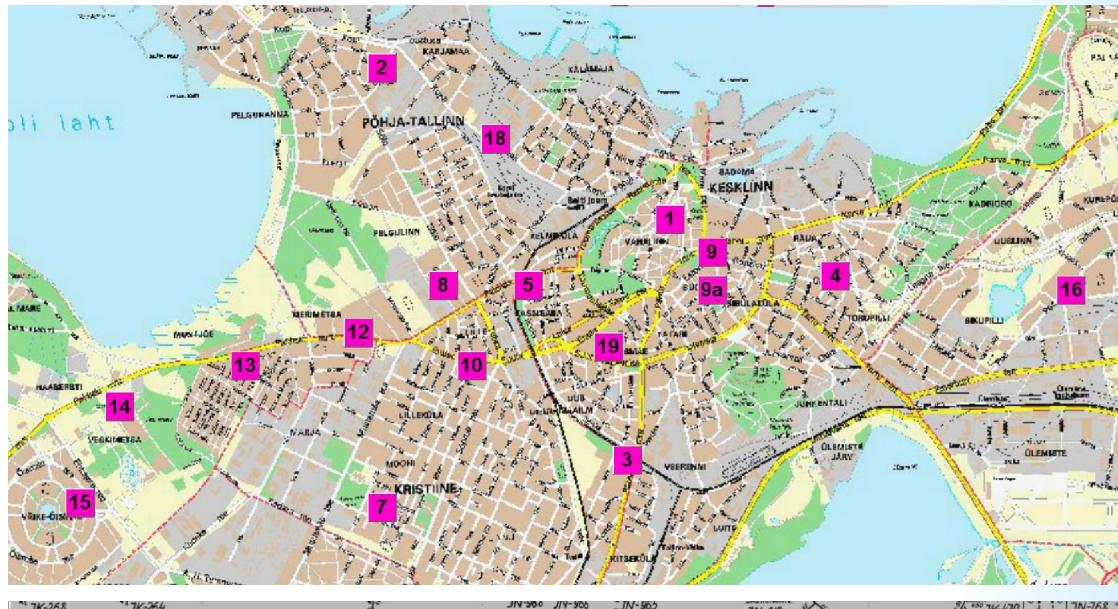
Systems status schema displaying clients (workstations), SCADA servers, communication lines and RTUs



## 2. Adding substations to map

The SCADA System's usually starts with a diagram that presents substation on the map. The symbols of substation could be freely designed and are used as links to substation diagrams (schemas). The maps format could be png or jpg.

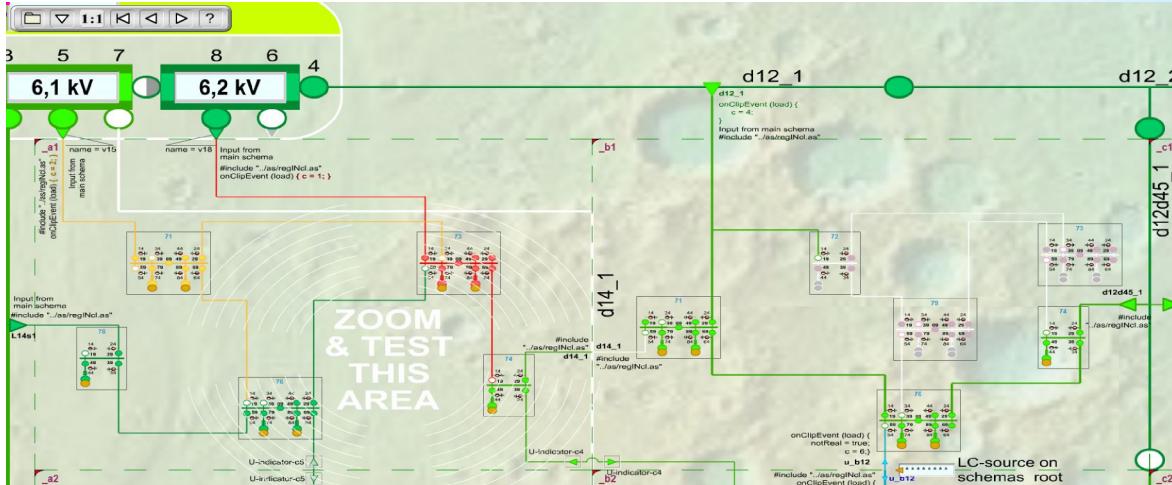
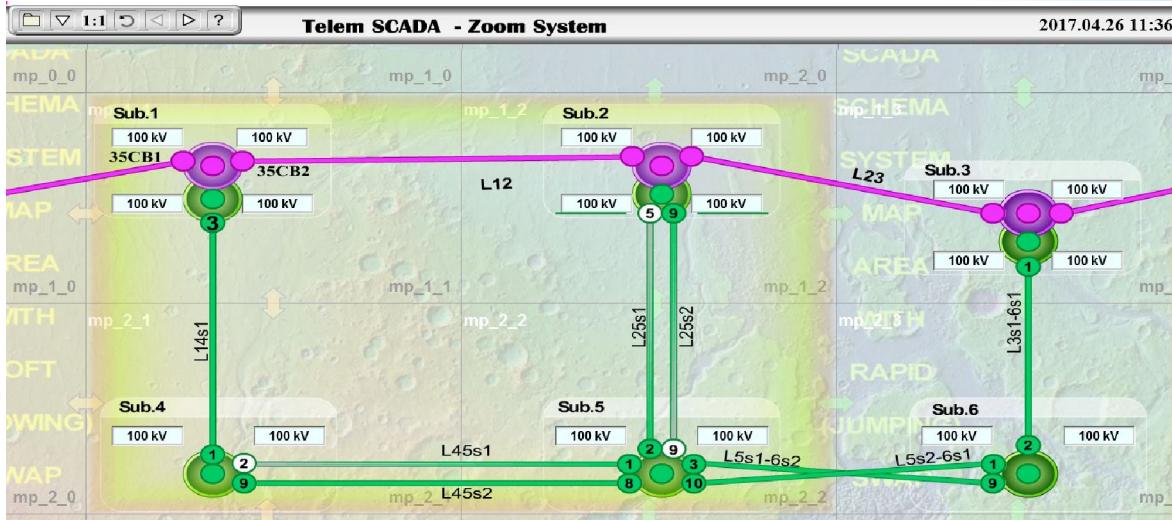
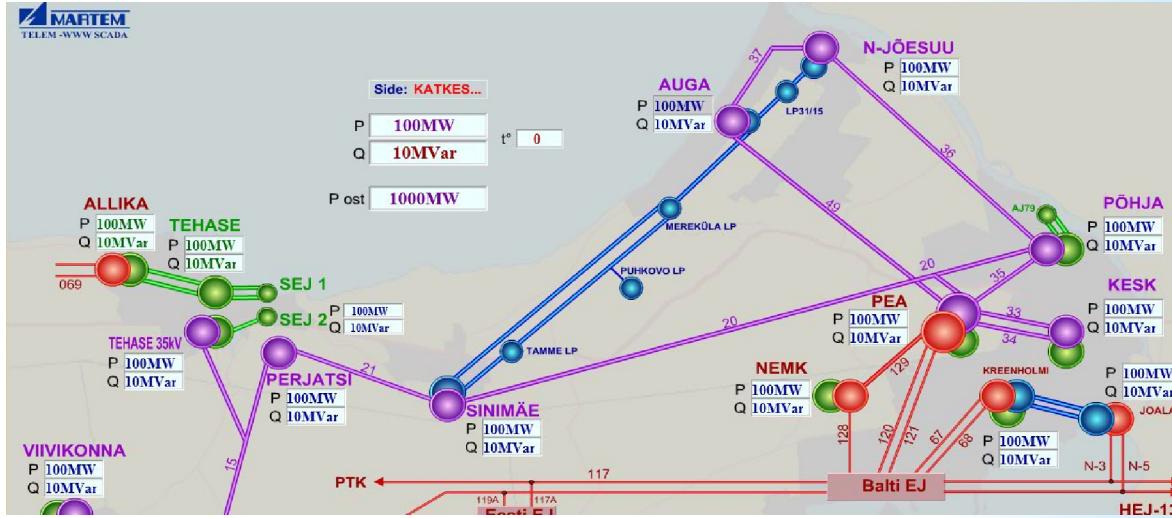
## Examples:



### 3. Power grid diagram

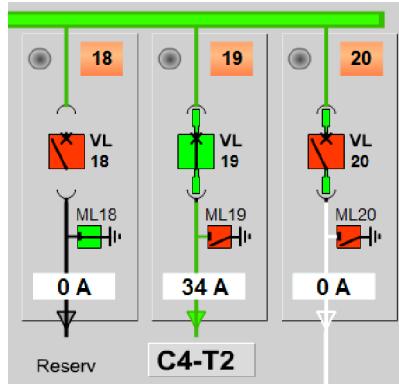
Any schema (diagram, drawing) could be designed freely, using any Adobe Flash feature. Schemas symbols can be taken from symbols library, other shemas or design by user, if needed.

Examples:



## 4. Line coloring system

**Telem SCADA Schema system** includes line coloring system for changing color of schema lines and other symbols to display voltage status of electric circuit.

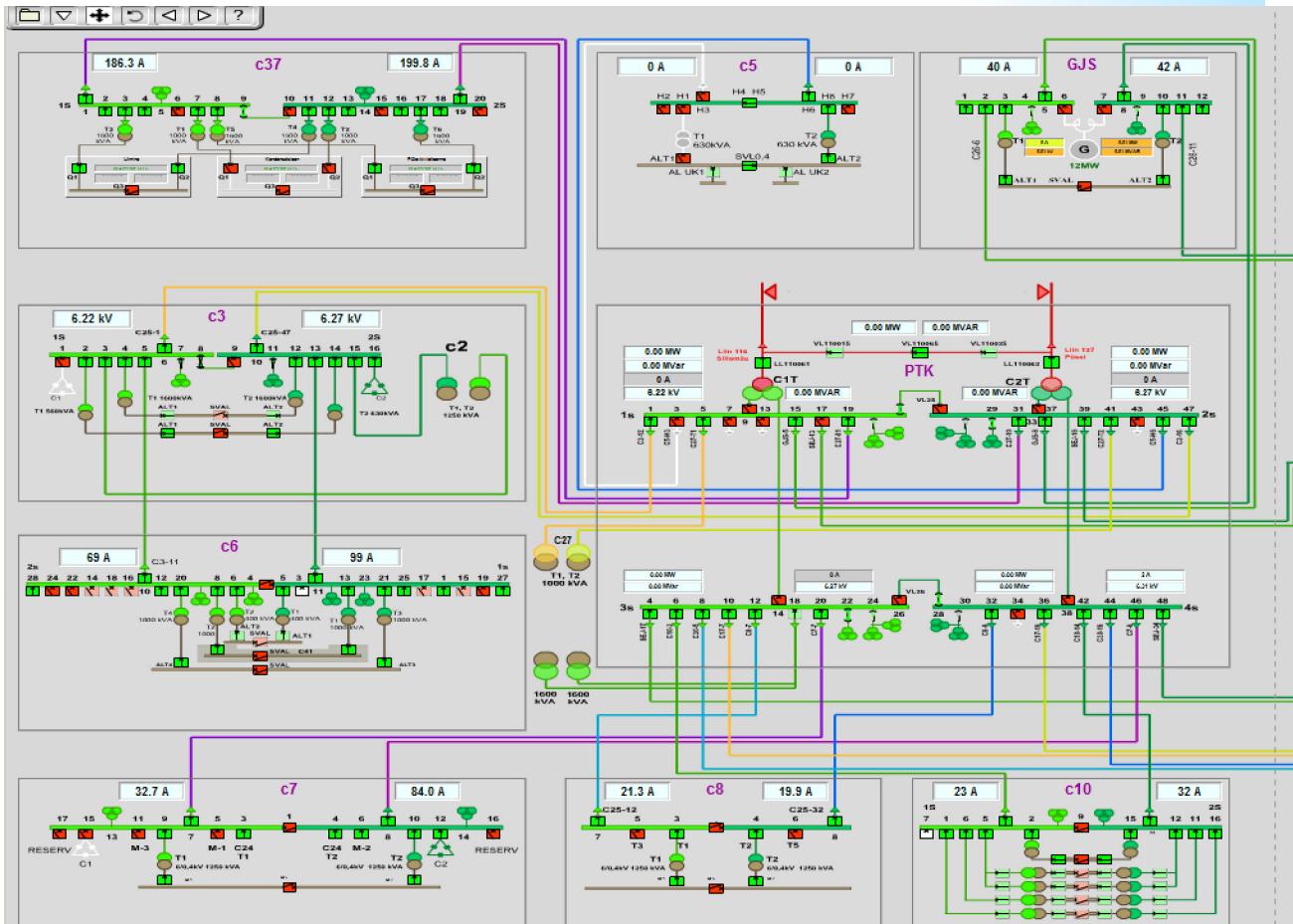


### Example 1:

1. Feeder 18 status - GROUNDED
2. Feeder 19 status - NORMAL VOLTAGE
3. Feeder 20 status - UNDEFINED (DISCONNECTED)

### Example 2:

Using line coloring for lines between substations. Permit an overview of the whole system's situation

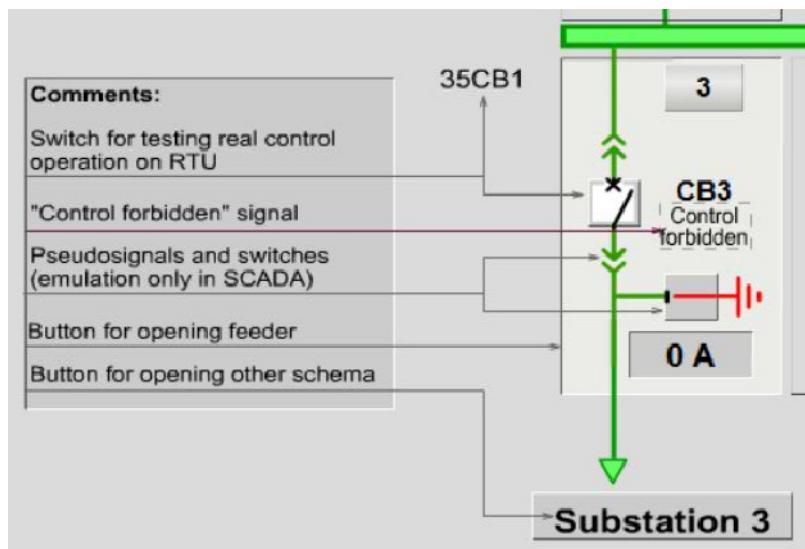


## 5. Blocking of control operations

Telem SCADA allows to set up rules (formulas) for blocking of control operations. For blocking control operation user can create logical formula from any signals of system

Example:

if the earth switch is on (on this schema or in the other end of line) the control operations of any switches could be blocked.



## 6. Alarms

The screenshot shows the 'Alarms' window of the Telem SCADA software. The window has a toolbar with buttons for Priority, Group, Unit, Type, Delete, Detail normal, Export, and Show obj. history. Below the toolbar is a table with columns: Priority, Spring up, Substation, Voltage C, Bay, Name, Value, and Disappear. The table lists several alarms, mostly in red, indicating critical events. Some entries include timestamps like '28.04.17 10:34:15.872' and '28.04.17 \*10:20:52.430'.

Priority	Spring up	Substation	Voltage C	Bay	Name	Value	Disappear
****	28.04.17 10:34:15.872	substation35kV		35Uab II	33.2 kV	28.04.17 *10:36:57	
*****	28.04.17 10:20:52.430	powerPla6kV	36		CB 36 (G-4)	OFF	
*****	28.04.17 09:48:06.525	powerPla6kV	6		CB 6	OFF	
*****	27.04.17 *14:06:59	powerPla6kV	27		CB 27 (T1T)	OFF	
*****	27.04.17 *14:06:59	powerPla6kV	33		CB 33	OFF	
*****	27.04.17 *14:06:59	powerPla6kV	12		CB 12	OFF	
*****	27.04.17 *14:06:59	powerPla6kV	35		CB 35 (G-3)	OFF	
*****	27.04.17 *14:06:59	powerPla6kV	11		CB 11	OFF	
*****		powerPla6kV	27		KLL-L14	ON	
*****		powerPla6kV	26		KLL-L15	ON	
***		substation10kV	U-Tr. 1		Uab 1	8.6 kV	

## 7. Events

The screenshot shows a software window titled "Events". At the top, there are filters for "Priority" (dropdown), "Events" (text input "157"), "Substation" (dropdown "Sub2"), "Group" (dropdown "Disp"), "Ackn. priority" (checkbox), and "Acknowledge" (button). There are also "Sound OFF" and "Export" buttons. Below the filters is a table with columns: Prior, time, Substation, Name, Status, Value, and Ackn. time. The table contains the following data:

Prior	time	Substation	Name	Status	Value	Ackn. time
xxxxx	14:10:09.171	01.04.04	Sub2	CB 3	OFF	
xxxxx	14:06:29.884	01.04.04	Sub2	CB 2	ON	
xxxxx	*14:06:09	01.04.04	Sub2	35Uab ls	<- Hi	36.83
xxxxx	*14:06:01	01.04.04	Sub2	35Uab ls	<- HiHi	39.04
xxxxx	13:22:28.699	01.04.04	Sub2	CB 2	OFF	
-	13:08:15.609	01.04.04	Sub2	P-total	<- Lo	1419.33

## 8. History

The screenshot shows a software window titled "History". At the top, there are filters for "Priority" (checkbox), "Events" (text input "99"), "Substation" (dropdown "All"), "Group" (dropdown "All"), "Ackn. priority" (checkbox), "otse ajaluk" (checkbox), and "Acknowledge" (button). There are also "Send query" and "Pause" buttons. Below the filters is a table with columns: Prior, time, Substation, Name, Status, Value, and Ackn. time. The table contains the following data:

Prior	time	Substation	Name	Status	Value	Ackn. time
-	*14:09:51	01.04.04	Sub2	Earth 2	ON	14:09:51 01.04.04
-	*14:09:51	01.04.04	Sub2	Earth 2	CE ON	14:09:51 01.04.04
xxxxx	14:06:29.884	01.04.04	Sub2	CB 2	ON	
xxxxx	*14:06:29	01.04.04	Sub2	CB 2	CE ON	14:06:29 01.04.04
xxxxx	*14:06:09	01.04.04	Sub2	35Uab ls	<- Hi	36.83
xxxxx	*14:06:01	01.04.04	Sub2	35Uab ls	<- HiHi	39.04
xxxxx	*13:22:59	01.04.04	Sub2	CB 4	CE OFF	13:22:59 01.04.04
xxxxx	13:22:28.699	01.04.04	Sub2	CB 2	OFF	
xxxxx	*13:22:28	01.04.04	Sub2	CB 2	CE OFF	13:22:28 01.04.04
-	13:08:15.609	01.04.04	Sub2	P-total	<- Lo	1419.33

## 9. Tables

TotalPower > NordicPP; common;

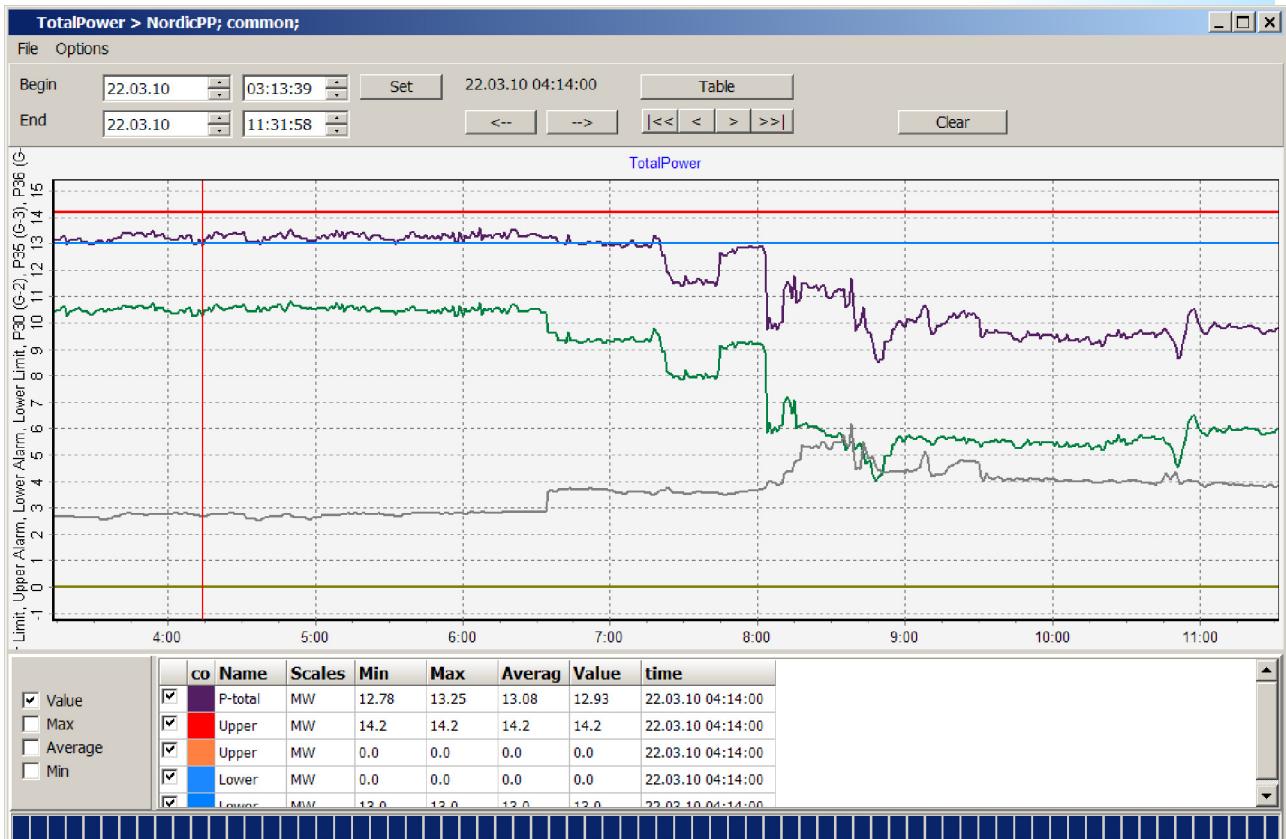
File View

Begin 21.03.10 11:49:46 Update table  Min  Average  
End 22.03.10 11:49:46 graph  Max  Value

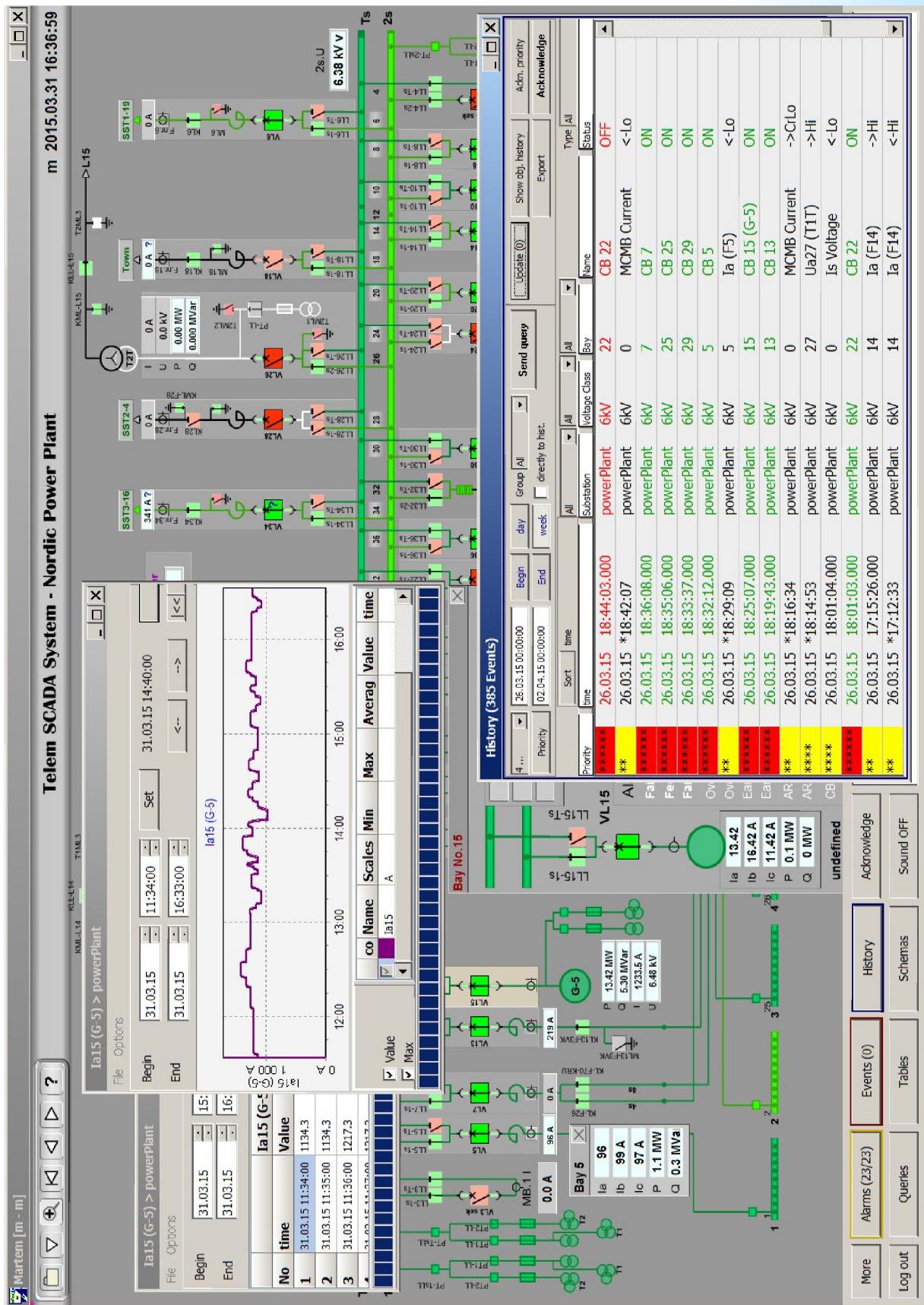
Nr	time	P-total				Upper Limit				Upper Alarm	
		Min	Max	Average	Value	Min	Max	Average	Value	Min	Max
1	21.03.10 11:50:00	13.14	13.65	13.39	13.34	14.2	14.2	14.2	14.2	0.0	0.0
2	21.03.10 11:51:00	13.10	13.62	13.33	13.22	14.2	14.2	14.2	14.2	0.0	0.0
3	21.03.10 11:52:00	13.20	13.55	13.37	13.31	14.2	14.2	14.2	14.2	0.0	0.0
4	21.03.10 11:53:00	12.97	13.54	13.31	13.15	14.2	14.2	14.2	14.2	0.0	0.0
5	21.03.10 11:54:00	13.04	13.43	13.24	13.24	14.2	14.2	14.2	14.2	0.0	0.0
6	21.03.10 11:55:00	13.12	13.38	13.29	13.38	14.2	14.2	14.2	14.2	0.0	0.0
7	21.03.10 11:56:00	13.38	13.38	13.38	13.38	14.2	14.2	14.2	14.2	0.0	0.0
8	21.03.10 11:57:00	13.19	13.56	13.39	13.28	14.2	14.2	14.2	14.2	0.0	0.0

OK

## 10. Trends



## 11. Screen example



## 12. Reference

### TELEM-SCADA CENTER

- Port of Tallinn
- Iru Powerstation
- Estonian Railway substations
- Estonian Railway Switchboard Heating
- Tallinna tramm-troll
- Fortum (Läänemaa & Viimsi)
- VKG (K.-Järve)
- VKG (Narva Electricity Network)
- Veskimetsa Substation (Tallinn)
- Papiniidu Substation (Pärnu)
- Limestone careers
- Ziemelmu Elektriskie Tikli LatvEnergo (ZET)
- Valmieras ETR
- Cesu ETR
- Limbaži ETR
- Smiltene ETR
- Piebalga ETR
- Siauliai Electricity Network
- Mazeliakai Electricity Network
- Joniskis Electricity Network
- Klaipeda Heating Station

### LOCATION OF TELE SCADA SYSTEMS

