

Single Line Electricity (SLE or B-Line) versus three phase system

The three-phase system has been widely accepted mainly because it enables building efficient generators and motors. However, there are many drawbacks of the three-phase system, which are described in numerous publications.

The main drawback of three-phase system is need of expensive and excess lines, which connect source and load. If three wires are used, rather than two or one, there is mutual influence of the currents in the wires. The wires must be apart on distance in the air, in underground and in underwater. It increases a cost of the electrical system.



Left: 345 kV XLPE project – Cement vault visible with two chimneys extending up to be level with the future road surface.

Right: 138 kV XLPE project – Bottom half of pre-constructed vault positioned in trench.

The SLE system was proposed and checked. Two SLE systems (on 220 V and on 6 kV) are operating now in Israel.

SLE can operate at all frequencies, including 50 Hz, 60 Hz and DC, at all voltages and at any power of electrical energy. In this case, grounding is not a channel for the transmission of energy or information.

SLE can include:

1. Automatic Phase Tuning (APT)
2. Compensators of Cable Capacitance per unit length (CCC)

SLE (B-Line) method allows:

- Combining three phase generator and three phase motor with one wire only;
- Significantly reducing the number of wires on the globe;
- Significantly reducing the cost of construction of high-voltage electrical systems;
- Using features of underground and underwater power lines SLE for energy transmission without intermediate stations;
- producing electricity at the place of gas or other energy source and transferring it to the place of consumption using single wire under the ground, which in many cases is more profitable than transferring gas ;
- Reducing number of accidents associated with electrical systems;
- Reducing losses in transmitting by one wire instead of three phase common wires;

All information about SLE method, including articles, presentations and films in YouTube one can find in www.ofdma-manfred.com or <http://www.ofdma-manfred.com/category/one-wire-electricity>

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