

Communications & Situational Awareness a DSO or TSO issue?

Lars Nordström,

Industrial Information & Control Systems School of Electrical Engineering, KTH -
Royal Institute of Technology
Stockholm, Sweden

Abstract

We all know that in our industry, there exists a strong correlation between voltage level and how worthy a problem is of our attention. Admittedly, meshed interconnected transmission systems exhibit many more challenging electro-technical problems than a collection of LV feeders supplying a rural area. It is quite natural then that much of our attention is directed towards the large-scale problems of the large grids - size then measured in GW. By many other measures, such as km of lines, number of substations, number of measurements however, – the scale of transmission systems fade in comparison with distribution systems. Again, of course, control of a distribution system is by tradition glorified bookkeeping and fault restoration, bookkeeping in the sense of managing assets optimally and keeping track of infeed, usage and losses.

However, with increasing levels of penetration of photovoltaics in LV grids, connection of wind power at MV levels, and increased variability of consumption with roll-out of heat-pumps, residential level storage and electric vehicles the static world of the DSO is changing. A key question is then, considering the scale of the distribution systems, if it is feasible to re-use solutions for measurement, communication and control from the transmission level? Perhaps the challenges for communication and situational awareness at the DSO need to be met by other means than the traditional SCADA/EMS solutions augmented with PMUs and Wide Area Monitoring Systems? The interesting question is whether a TSO maybe can even learn from a DSO when it comes to optimal use of communications and control systems to enable situational awareness?

By providing a set of examples illustrating the different aspects of the challenges faced by TSO and DSO and a specific look at the interface between the two, this presentation will be highlighting some potential areas for development of common benefit to both TSO and DSO in the area of communications and situational awareness.

