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Enel Distribuzione remarks about

ERGEG publication "Towards Voltage Quality Regulation in Europe"

Enel Distribuzione will give only some general remarks about the ERGEG publication "Towards Voltage Quality Regulation in Europe". More specific considerations have been carried out within Eurelectric comments on the same topic.

EN 50160 represent a "picture" of the voltage characteristics all over Europe as a result of application of existing EMC standards (emission limits) and different operating criteria on different distribution networks. As regards power quality parameters, it should be taken into account that:

- improvement of definitions is welcome and should be carried out within Cenelec TC8X/WG1 by all the stakeholders involved and agreed with EMC standard community (IEC SC 77A) since many standards could be affected by them;
- tighter ranges of variation of voltage characteristics imply stricter connection rules for customers and, lower emission limits for electrical appliances and stronger networks characteristics.

In Italy there is no evidence that customers claim for a better voltage quality.

Actually:

- the voltage quality complaints we receive are negligible with respect to the number of our customers;
- the MV customers who applied for the power quality survey, promoted by Italian Electrical Energy Regulator, were only less than 0.1 % (67 over about 100.000);
- up to now, no MV customer requested quality contracts introduced by Italian Electrical Energy Regulator since beginning of 2004.

Therefore, power quality seems to be a problem only in particular networks for very few customers. Moreover complaints are often focussed on interruptions and deep voltage dips. With reference to the amount of voltage dips, the preliminary results of the Italian power quality survey seem in line with the Unipede table.

Some voltage dips are due to load variation while the majority of them is a consequence of faults and of the selection method adopted. Anyway, as a thumb rule the number of voltage dips suffered by one customer is one magnitude order greater than his overall interruptions due to multiphase faults (transient + short + long, due to reclosing cycles of MV feeder circuit breakers) which are around 60% of the total amount. This is due to the significant reduction of phase to earth faults and their evolution to multi phase obtained with the general installation of Petersen coils (about 60% of MV network at the moment).

Therefore, the regulation of the number of interruption would imply a regulation of the number of voltage dips.

The reduction of the number of interruption is obtained by reducing the fault probability i.e. burying distribution lines and reducing the length of the feeders. Both these solutions imply a reduction of the number of voltage dips but their depth slightly increases.

Obviously the envisaged investments on the distribution networks are huge and would impact on the cost of electrical energy of all the customers, whereas only a few of them could have relative benefits on their production processes.

By the way the total fault "elimination" is impossible and some interruptions and one more magnitude order of voltage dips will be always present (at least those coming from HV network which represent around 12% of the total). So the few customers who suffer voltage dips should anyway take countermeasures while those who are already satisfied with present voltage quality would pay more without reason. To give an idea, to reduce by 50% the number of interruptions and voltage dips, coming from MV network, ENEL should duplicate its HV/MV substations (about 2.000) with an indicative cost not lower than 3.500 M€. In terms of global improvement, taking into account the voltage dips coming from HV network, the total number of dips would be reduced to a value not lower than 56%. Concerning this, taking care that the HV network is meshed, even a strict regulation of the number of interruption on those networks is not sufficient to avoid dips transferred on the MV level.

In any case a deep cost/benefit analysis should be carried out taking care of exigencies of majority the customers.

For the time being it seems more effective to address specific problems with specific countermeasures that could be also be supplied, as an additional service, by DNO's.