
Epilogue



The main mistake people make is that they fear current problems more than future ones.

—Carl von Clausewitz

Some protection engineers think that their professional responsibilities are limited to the operation of relay protection (RP). They claim that they are absolutely not interested in the problem of protection of RP from intentional remote destructive impact (IRDI). They think that these issues should be a responsibility of “relevant authorities.” These specialists claim that they have enough problems with RP; that’s why they are totally against of any additional protection measures, which can make their difficult life even more difficult.

Many specialists are very excited about any innovations and new trends in the field of RP, regardless of where these innovations can take us, whether it is a “proactive relay protection” or RP based on “artificial intellect” or a “digital substation” or a “smart grid”... what’s important here is to harvest enough money for development and adoption. Why not? Why not make some extra money? Money has no scent! Moreover, since these airy-fairy schemes

are well funded and there are even governmental programs to support this trend, why not invent some other “intellectual” toys in RP? The important thing is to provide beautiful substantiation and use a lot of scientific words in descriptions.

There are specialists convinced that if processing capabilities of modern microprocessors used in digital protective relay (DPR) not only enable protection of RP but also do a lot of other things, then why not use these capabilities? Why not connect DPR to a number of different sensors and not use it for the monitoring of electrical equipment status? Why not use a DPR as an information and measurement unit or as a substation controller of automatic control system (ACS) in addition to its basic functions? In other words, based on the principle “the more the better” when “possible,” it is perceived only as “necessary.”

Some authorities responsible for making strategic decisions in the field of RP development are following the principle: if any developed country started moving in a specific direction, we should not lag behind; we need to catch up with them and outpace them! This policy reminded me of a joke, which I heard from an Englishman—a good specialist in the field of RP:

There lived a large tribe of Indians near one of American cities. They were unhappy with their weather foreteller, since he was often mistaken. The tribal leader decided to call a weather forecasting center, since weather is an important factor in the life of Indians. The center replied that there is no exact forecast yet, but they suppose that the forthcoming winter will be cold. Having received this answer the tribe started collecting firewood. Just in case. Later, the tribal leader decided to update the forecast and called the forecasting center again. The answer was immediate: “Yes, of course, this winter will be extremely cold! Now we are sure! Look how Indians are collecting firewood for the winter, they know what they are doing!”

Many specialists speculate like this: we want to move forward toward technological advances, and your job is to protect us from all those IRDI! But it is high time to understand that under existing trends of RP development toward “digital substations,” “smart grid,” and protection relays with artificial intellect, where DPR not only is used as a protection relay but also exchanges information via multiple communication channels, it is impossible to ensure reliable protection of DPR from existing dangers.

Many advocates of DPR may think that I am opposed to everything new and advanced. One of the Russian renowned authorities in the field of RP, who occupies a top management position, wrote in his review to my article, where I showed the danger of modern trends of RP development that “the author tries to freeze technical advancement in Russia.” These types of technical advancement advocates distort my attitude to technical advancement either mistakenly or on purpose. I do not call for neglecting innovations in the field of diagnostics of electrical equipment and information-computer

systems, but rather separate them from RP. *I deeply believe that in order to ensure efficient protection of DPR from IRDI and increase reliability of its operation under normal operating modes, it is necessary to use DPR to perform only tasks of relay protection.* I think that after the period of excitement related to new opportunities has emerged with using microprocessor equipment in RP, it is now time to have a sober glance at these things and reevaluate the situation.

However, it is sad to admit that the majority of specialists and authorities responsible for solutions of today's problems have little interest in the potential problems and dangers of existing trends in RP development. This is all clear because none of them will be responsible for the collapse of the power supply system in case of IRDI due to lack of instructions or standard operation procedures (SOPs) on this issue. On the other hand, there are honors and awards for the introduction of new machines and adoption of new technologies.

Probably, the developers of electromagnetic and cybernetic weapons give today's tendencies in protective relaying an ovation, like the snake that is satisfyingly watching a frog trying to jump into its mouth. We can only trust that the wisdom of experts and officials will take precedence over the short-term mercantile interests and hope that as expressed in the well-known proverb "you don't have to wait for the rain to be falling to make a raincoat."

