

The HKIE Electrical Division
Call for Papers for 40th Anniversary Special Publication
Rule and Regulation

1. Introduction

To celebrate its forty years of establishment, the HKIE Electrical Division will organise a series of activities with a theme: “Nurturing Our Young for Electrical Engineering” (程心E重薪火相傳). In this regard, one of the activities is to collect around 40 short real stories about the technique and application related to electrical engineering with lessons learned as the conclusion. The HKIE Electrical Division cordially invites you to submit an article of 500 to 800 words in English for the “**40th Anniversary Special Publication**”. We do believe your article can share your wealth of valuable experience to our young engineers, as an initiative of knowledge management.

The objectives of the Call for Paper for the 40th Anniversary Special Publications are:

- (a) to share experience and skills in the electrical engineering profession;
- (b) to appreciate and understand the right approach as well as management perspective in electrical engineering activities at workplaces;
- (c) to highlight the electrical engineering profession's values and contributions to the community; and
- (d) to allow our good work (possibly a valuable wealth of engineering profession) to pass on from one generation to another.

2. Entrants

The HKIE Electrical Division members are welcome to submit article(s) related to electrical engineering so as to understand how the problems and issues they have encountered and then to demonstrate how they are solved with the approach and knowhow adopted. It is envisaged that these incidents can be organised into applicable knowledge for the coming generations of electrical engineers to share in their profession. The maximum number of entries to be submitted by each individual is four (4) articles. The length of the article is from 500 to 800 words. The article is to be prepared in accordance with the following suggested sections:

Introduction/Background (100-150 words)

Description of Event/Issue/Problem encountered (150 – 250 words)

Approach(es) in handling and solving the issue/problem (150 – 250 words)

Lesson learned (100 – 150 words)

(A sample of article is attached for your information)

The article is to be submitted in MS word format, by filling in the attached submission form. For the consent form portion, please sign and scan the hard copy for emailing. Only one figure or diagram or picture is allowed in each entry. Such submission of figure or diagram or picture is to be made in separate file in jpg, tiff or png format. Please send the following information to the email address: hkie.electrical.paper@gmail.com

1. The copyright consent form with signature
2. The article
3. One graphic file (if you have an illustration)

The entry closing date will be **5pm, 15 March 2018**.

For non-HKIE members but working in the electrical engineering field, they can make submission and in the submission form, please mention that the article is supported by one HKIE member.

3. Selection of Articles

The selection of submitted articles will be carried out by the a Paper Selection Committee formed by the past Chairmen and Chairman of Electrical Division, HKIE: namely, Ir PK Chan, Ir Siu Kwong Ho, Ir Simon Chung, Ir TH Tai, Ir FC Chan, Ir CL Leung and Ir Edward Lo. The selection of articles is based on the contents, relevancy and readability.

Please note that after the author signing the copyright consent form to the Hong Kong Institution of Engineers Electrical Division, the Paper Selection Committee has granted the right to use and edit the article or any part thereof, and any illustrations, figures, data or other information contained in the article.

A certificate of appreciation and a copy of the special publication will be made available to the individual making the submission. Individual will be informed about the outcome of selection of their submitted article on or before 20 April 2018.

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Sample Article

Title of Article	Protection Mal-operation in Electrical Power System
Name of Author	Ir Dr FC CHAN
Keywords	Power System, Protection System, Relays

Please send the article to hkie.electrical.paper@gmail.com

Introduction/ Background (100 - 150 words)	Protection system is a key component for the required reliability and security in a high voltage power transmission and distribution supply network. It is called upon to operate to protect the equipment from further damage rapidly and accurately when there is a system fault within its designed operating criterion. It should be remained stable when there is no system fault or during a through fault condition with fault outside its protecting zone. These challenges faced by protection engineers are essential in the design, installation and maintenance of a protection system. Protection relays have been evolved from bulky mechanical, electronic solid state to microprocessor types over the past 80 years. Each type of protection relays has its own characteristics as well as its inherent reliability and security.
Description of Event/Issue/Problem encountered (150 - 250 words)	There was a busbar zone protection operation in Hok Un 33kV system in the afternoon on 1 July 1983 resulting in loss of electricity supply to Hunghom area. That busbar zone system was of a mechanical type, called mono-bias protection and was manufactured by A. Reyrolle in mid 1950. By the time I arrived at the protection relay room about an hour later, the 33kV supply system has been restored. Based on the fact that there was no voltage dip being sensed and that the busbars could be reenergized, busbar protection system mal-operation was inferred. All busbar zone relays were thus taken out from the case to prevent its possible repeated mal-operation. My immediate plan was to formulate an investigation process. Every relay was inspected to see if there was any flag dropped or loosing part internally in the relay. The wirings inside every panel were also inspected to see if there was any externally distributed wiring. After this checking, the K11 and K13 trip wires were isolated and these relays were put back for on-load test. This action prevented any tripping due to repeated mal-operation during the test for fault identification process. Spill currents were measured to ensure the relay system was stable. After putting on soak for a few days and no further abnormality was detected on the system, the final decision is whether or not to put the busbar protection with tripping (i.e. to reconnect the K11 and K13 trip wires) back to service?

Way(s) in handling and solving (150 - 250 words)	In protection system, whenever there is a mal-operation, it is the responsibility of protection engineer to find out the cause and develop a solution to prevent its recurrence. If no root cause is identified, there is always a possibility to have another mal-operation if putting it back to the service. Such risk of mal-operation or unstable operation can be made alert to the system operation staff who operates and maintains the power supply network so that contingency measures can be formulated and adverse consequence can be minimized. However, such risk has to be removed over a period of time, as short as possible. When a problem is to be tackled by an engineer with logical thinking, one could ask himself or herself: if an engineer with similar knowledge and skill sets, would the similar decision be made. If the answer is yes, such decision can be made as all decisions are made based on available but limited information. It rules out personal subjective preference in the decision. With the above reasoning, the busbar zone protection was restored to service. It functioned healthily before the retirement of the 33kV network in mid 1990.
Lesson learned (100 -150 words)	As engineers, we need to be confident on what we have decided based on our logical reasoning and technical knowledge on the subject matters. It is essential to address the risk and its mitigation measures. With the introduction of modern relays to fade out the old types of relays, it is essential to carry out new relay acceptance from laboratory testing to know the detail characteristics, trial installation to know its adaption to site environment. Training of operation staff to ensure its full understanding of the new relay information and operation. Such precaution approach is now the practice for new relay introduction to ensure the protection system is reliable and secure.

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