Abstract: This paper focuses on the considerations that shape Condition Based Maintenance (CBM) and the way CBM can be implemented for application in power cable networks. The application of partial discharge diagnostics as a tool for CBM is discussed. The "diagnostic dilemma" is introduced; meaning that application of diagnostic measurements will reduce the number of breakdowns during service significantly, but will not be able to prevent them all. Examples of application are given. Feedback from visual inspections is very important to tailor to the local circumstances. Conclusion is that CBM on power cables may pay off very well, but that expectations should be realistic.

Keywords: partial discharge diagnostics, CBM on power cables, MV cables

1. Introduction
Condition Based Maintenance (CBM) has gained great significance over the years replacing Periodic (or Time Based) and Corrective (or Failure Based) Maintenance, because it offers a better cost-benefit ratio in many cases. Timely tracing of failures-to-come at an attractive cost level is an important part of asset management of the electric energy infrastructure. Repair before breakdown reduces operational costs and customer claims, increases availability and reliability and postpones investments. Timely repair of existing cable circuits requires good insight in the local condition of the cable circuits. Diagnostics aim at giving this insight [1, 2, 3]. For service aged medium voltage (MV) cable circuits, various cable diagnostics are used to enable the condition assessment of the underground cable network [1, 2]. Results of the condition assessment are input for the economical and technical assessment enabling CBM. This maintenance concept for cable circuits can be part of the total maintenance policy for the network.

The results so far show a nice reduction of the costs. Large investments could be postponed to a later date.

2. CBM on power cable systems
2.1 Structure of CBM
CBM on a system starts with assessing its condition and determining what next maintenance action is required based on the assessed condition. Strategy: CBM will be applied to serve a goal and the goal will depend with the strategy of the asset manager. Consider the two cases: a utility may face the need to reduce short-term costs or may face demands to warrant the reliability of power supply at certain costs. Reduction of short-term costs will allow this situation to continue ("see how bad it really gets"), whereas the demand of high reliability will