Performance Evaluation of Novel Injection-based ASC Control Method Using Primary Testing

Janne Leminen, Janne Altonen,
Saku Siermala, Mika Tausa
ABB Oy, Finland

Hanna-Mari Aalto
Petteri Kangasluoma
Elenia Verkko Oyj, Finland

Introduction

This poster presents primary testing results of a new arc suppression coil tuning method at a practical 110/20kV substation feeding a large cable network.

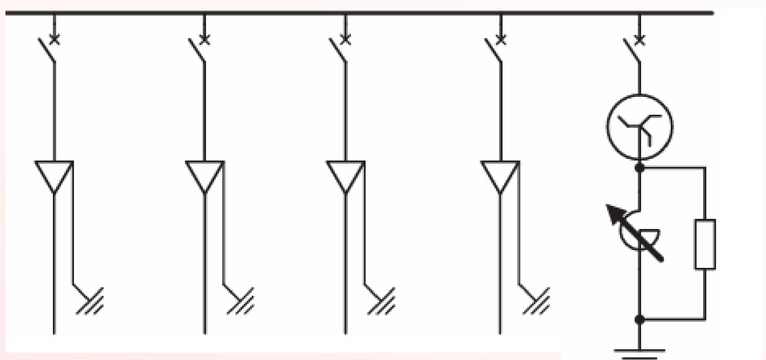

Fig 1. Simplified busbar configuration

Methods

- Primary tests in co-operation with Finnish distribution system operator Elenia
- Comprehensive test setup was assembled at the substation and feeders
    - Current injection device prototype using novel optimal frequency principle
    - Extensive measurement setup
    - Primary test trailer



Fig 2. Primary test trailer

Results

Highlights:

- Successful operation of the current injection device using optimal frequencies at a practical 110/20kV substation
- Network parameter calculation performed by the novel ASC tuning algorithm showed very promising results

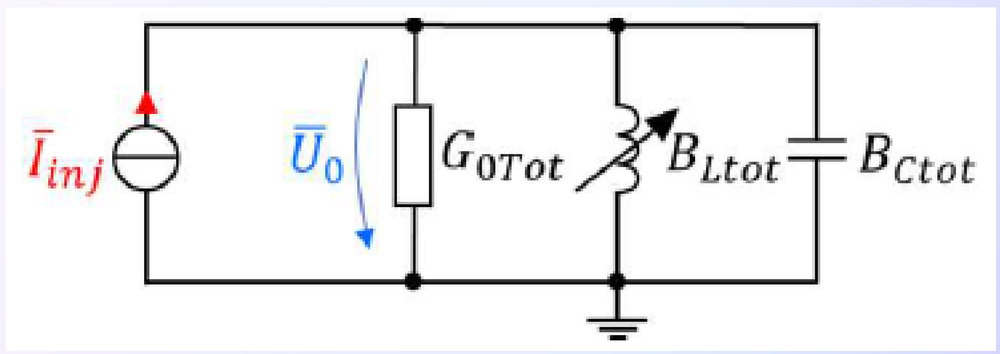

Fig 3. Primary network zero-sequence system

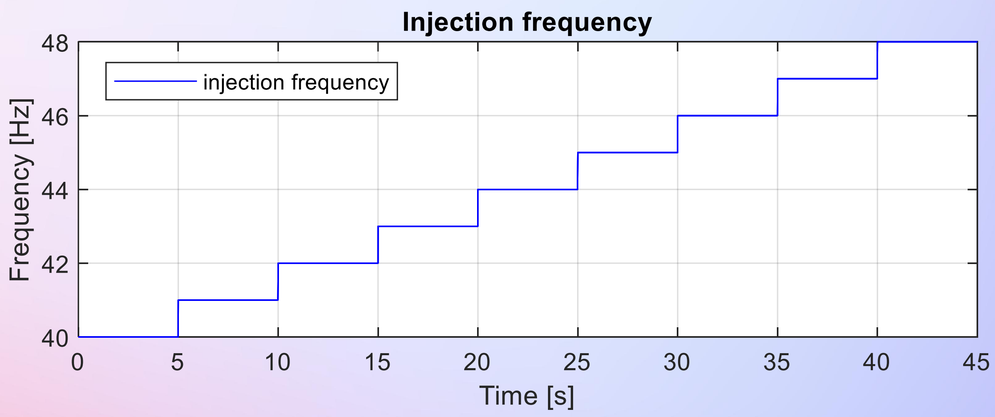

Fig 4. Example of injection frequencies and network zero-sequence voltage response

Conclusion

The field tests for the novel ASC tuning algorithm and device were successfully performed. Network parameter calculations provided promising results.