Future plans for railway power supply

Supplier marketday 04.04.19
The planning department is one out of two departments in «Planning and Projects»

12 employees with specialization in Electric Power Engineering
Infrastructure - Energy – Planning department

• Performs studies of the future railway power supply, nationally

Simulations and load flow analysis based on:
- Traffic information (todays and future timetables)
- Infrastructure information (track gradient, tunnels, contact line data etc.)
- materiel information (train types, train composition, weight of trains etc.)
- Power converter data (types, ratings, control characteristics etc.)
- Different operating situations

Final recommendations are given based on a technical – economical analysis.

Consultants are hired via framework agreement
Infrastructure - Energy – Planning department

- Creates master plans for upcoming converter station projects

  Define location, concept and dimensioning of the converter station.

  Includes stakeholder analysis and review of environmental impact.

  Is a technical-economical pre-project with recommendations for the solutions which forms the basis for detailed plan, approval and finally the tender.

  **Consultants are hired via framework agreement**
Infrastructure - Energy – Planning department

- Technical support for the railway power supply converter projects:
  - Specify technical requirements for the technical equipment
  - Tender evaluations
  - Contract follow up on ongoing projects

*Consultants are hired via framework agreement*
Geographical divisions – studies of railway power supply

- Oslo-area (2019)
  - Eastern region
- Sørlandsbanen (2017)
- Bergensbanen (2012)
  - incl. Flåmsbana
- Dovrebanen (2012)
- Ofotbanen (2018)
Study of the railway power supply in the Oslo-area

• The following railway lines are included in the study:
  − Dovrebanen (Lillehammer)
  − Gjøvikbanen
  − Kongsvingerbanen
  − Hovedbanen og Gardermobanen
  − Østfoldbanen, Øst/Vest, Follobanen
  − Drammensbanen og Askerbanen
  − Ringeriksbanen
  − Vestfoldbanen
  − Sørlandsbanen (Nordagutu)
Study of the railway power supply in the Oslo-area

Expected growth in train traffic for the Oslo area:

• Increased traffic due to the InterCity project and other infrastructure projects
  - New double track lines to Lillehammer, Skien and Halden.
  - Ringeriksbanen and new “Oslo tunnel”

Increased frequency of departures of local trains from Asker, Lillestrøm and Ski
Study of the railway power supply in the Oslo-area

Expected changes in train material:

- Purchase of new train sets with increased power consumption and increased number of departures with double sets
  - New airport train set
  - FLIRT
  - New local train set
- Increased loading weight for freight trains
  - Freight trains run with double sets
Study of the railway power supply in the Oslo-area

Train simulations performed with load flow analysis with 3 different time tables to check the capacity of the railway power supply at different development stages.
Study of the railway power supply in the Oslo-area

The simulations revealed the need for capacity-enhancing measures:

- Two different options have been considered to increase capacity in Oslo East.
  - Build a new Oslo converter station as a replacement for Alnabru, Holmlia and Smørbekk
  - Expand Smørbekk converter stations with an extra converter
- Extension of the Jessheim converter station is considered for both options.
The simulations revealed the need for capacity-enhancing measures:

- Two different options are considered for Oslo West:
  - Further operation of Asker and Skoppum converter stations
  - Build a new Drammen converter station

- In addition, the study considers the need for a new converter station in Ringerike after the Ringeriksbanen is being built.
Study of the railway power supply in the Oslo-area

Summary of the projects that are considered in the investigation of the Oslo area:

- Expansion of Smørbekk converter station - with completion approx. 2024
- Extension Jessheim converter station - with completion approx. 2025
- New Oslo converter station - with completion approx. 2024
- New Drammen converter station - with completion about 2025
- New Ringerike converter station - with completion approx. 2029

The investigation will be completed in Q2 2019, and give a recommendation on which of these projects will provide the technically-economically best solution.
Takk for oppmerksomheten