Siemens Industrial Turbomachinery, in Finspång, is now seeking for a:

**M.Sc. student to complete a Master thesis project in development of advanced visualization tools to explore complicated operation and maintenance history**

Siemens Industrial Turbomachinery AB (SIT AB) in Sweden is part of the Siemens Energy Sector. The Energy Sector is the world's leading supplier of products, services and solutions for the generation, transmission and distribution of power and for the extraction, conversion and transport of oil and gas. SIT AB delivers gas turbines, steam turbines, turn-key power plants, service and components for heat and power production. All under one roof – from research and development, manufacturing, marketing, sales and installation of turbines and complete power plants to service and refurbishing. There are today about 2 700 employees in Finspång.

In SIT AB, a large amount of field experience data is continuously generated in form of various reports from maintenance events, component repair and operation history. These reports include detailed information about the turbine operation history as well as its condition and reported damages on individual components. This field experience data, although noisy, invariably portray environmental factors, measurement errors, and loading conditions, or in short, reality. By establishment of a process to collect and maintain this information in a database format, exploration and knowledge discovery using this data became a subject of high interest. This Master thesis is a part of efforts done to develop advanced visualization tools together with the proper sequence mining algorithms to discover the hidden relationships between different events and all the other affecting variables like loading, configuration and environmental parameters.

**What does the Master thesis project entail?**

The objective of this project is to develop a tool to provide an easy-to-use interface to generate the relevant and meaningful sequences of data regarding the operation and maintenance history of each engine, a group of engines or components. In addition, the tool
will have the capability to be used for pattern mining, searching for the engines/components experienced the similar events or deviate from a defined lifetime story. Challenges to be addressed by the project are:

- The design and implementation of appropriate representations to use
- The design and implementation of appropriate sequence/pattern mining algorithms
- The selection and implementation of appropriate ontologies to be used for data transformation, mining and visualization processes.

The project involves:

- Identifying questions and hypothesis relevant to the task at hand
- Research of existing visualization methods available for addressing this type of task
- Experimentation and development of visualization approaches and sequence mining algorithms.

What do I need to qualify for this job?

- You are a M.Sc. student in Media technique or computer science or equal.
- You have good programming skills and an interest in information visualization.
- You are driven, ambitious and prepared to work hard.
- You have good skills in English language, both in speech and writing.
- Good knowledge in R programming for sequence/pattern mining and knowledge of SQL querying language is preferable.
- Familiarity with Tableau is a plus

What else do I need to know?

The project is suitable for 1-2 students and covers 30 hp. The students will work closely with domain experts in Finspång during January-July 2016.

What does Siemens offer me?

Put simply, we have something for everyone. Few other organizations can offer such a diverse mix of opportunities. Your experience is a key to our success and can be used in a variety of ways to develop your career in whatever direction you choose, from entry level through to experienced and specialist roles.

Diversity improves competitiveness by enlarging the potential for ideas and innovation, one of Siemens' key principles. It is therefore a business imperative and Siemens is fully committed to being an equal opportunities employer.

How do I apply?
You are welcome to submit your application as soon as possible, but no later than December 6, 2015, through www.siemens.se/ledigajobb, ref.: 215112. Attach your resume and cover letter with your application describing your interest in our business and why you are suitable for this master thesis project. The recruitment process is ongoing so we are looking forward to your application.

For questions or more information please feel free to contact the supervisors of the thesis Daniel Dagnelund, Ph.D. daniel.dagnelund.ext@siemens.com, 073-93 96 676 or Davood Naderi, Ph.D. davood.naderi@siemens.com or 072-57 22 507.