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GoalArt Monitors Electric Power Grid of Sweden

The Swedish company GoalArt has developed a system that identifies the root causes of small and large blackouts in sub-second time. In a project with the Swedish National Grid, the system is now being installed in the control room in Stockholm, from which the Swedish power grid is monitored and controlled.

The project is a test of GoalArt's alarm management and fault diagnosis software. In an earlier pilot, the system analyzed the blackout of September 23rd, 2003, where southern Sweden and eastern Denmark lost power for up to five hours.

"The fault search took around four hours, because there was so much information. Our system identifies the two faults on the east coast and on the west coast at the moment the alarms arrive," says Jan Eric Larsson, President and CEO of GoalArt.

GoalArt's development of new methods in artificial intelligence means that it is possible to build diagnostic systems automatically from databases of power grid topology, and to analyze large fault situations in real time, in spite if the enormous information flow, (sometimes hundreds of alarms per minute). The result is a system that works in all kinds of control centers.

"During large disturbances, our operators are under severe pressure," says Klas Roudén, project manager at the Swedish National Grid. "The information environment can sometimes be chaotic – a large number of alarms and lots of phone calls. First, we try to save the remaining parts of the operating grid. Then the task is to restore as quickly as possible. Knowing where the real problems are is often a deciding factor for the speed of restoration."

Alarm problems cause large costs in several industrial branches. They may cause productions stops, inefficient operation, environmental releases, and accidents. There are estimates of billions of dollars lost every year because of alarm-related problems. GoalArt's vision is to solve all types of alarm problems completely.

"Our system removes all unnecessary alarms. During the 2003 Swedish blackout, there were over 400 alarms. Our system identifies two – the two real faults," says Jan Eric Larsson.

In a current project, GoalArt's system is installed in the Swedish control center in Stockholm, and is connected to real-time data from the entire Swedish grid.

"The event of 2003 was the largest in more than 20 years. Next time we may be able to stop a similar incident before it turns into a national blackout," says Klas Roudén.

For further information, please contact

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GoalArt
GoalArt develops software that helps operators and maintenance personnel of industrial systems and complex technical products to understand and manage fault situations in a safe and efficient way. GoalArt's technology works in several areas:

- Alarm management and fault diagnosis as a help for operators and maintenance personnel of large industrial plants, for example, power grids, conventional and nuclear power plants, chemical industries, pulp and paper, steel mills, etc.
- Alarm analysis and fault diagnosis for complex products, for example, medical equipment, vehicles, airplanes, and airport systems, that is, products where a large amount of information is stored and needs to be analyzed in fault situations.

GoalArt was founded in 2000, and is based on unique research results in artificial intelligence from Lund University, Sweden, the Danish Technical University, Denmark, and Stanford University, California. The technology is world leading in alarm management and fault diagnosis. GoalArt is located at the Ideon Science Park in Lund, Sweden, and has active customer contacts in Scandinavia, Europe, USA, South Africa, and Dubai. For more information, please visit www.goalart.com.

Swedish National Grid – Svenska Kraftnät
The Swedish National Grid manages the main electric power grid and is responsible for electric power in Sweden. The grid comprises around 15 000 km 220 kV and 400 kV power lines, sub-stations, international connections, control systems, IT systems, and optic fiber communications networks. The Swedish National Grid is the Swedish TSO and currently has 300 employees. The main office is located in Stockholm, together with the main control center.