ENERGAIR CASE STUDY

FORBO
FLOORING

COMPRESSED AIR OPTIMISED IN COOPERATION WITH **SIEMENS ENERGY,** GEVEKE AND INGERSOLL-RAND AT LINOLEUM PRODUCER.

Forbo Flooring, the world's largest producer of linoleum floor covering has met stringent energy saving targets by generating compressed air more efficiently and controlling the compressed air system more precisely. A complete EnergAir compressor control and monitoring system has been used in conjunction with a new variable speed compressor from Ingersoll-Rand to achieve savings of more than 15%. The results have been realised by Siemens who employed Geveke, EnergAir and Ingersoll-Rand as part of a site wide energy management program. The EnergAir system also provides constant 24hr performance monitoring using PC based software visualization tools, live condition monitoring and variable threshold status alerts.

Forbo operates from two production facilities, one in The Netherlands and one in Scotland. Although you would not immediately think so, linoleum is actually made from natural materials, mostly a mixture of oxidized linseed oil and wood fibre. Forbo prides itself on being a highly environmentally conscious organization and has set itself ambitious targets for energy reduction as one of the company's key objectives.

As part of a site wide survey at the Dutch production facility, Siemens Energy Services in the Netherlands identified energy savings potential within the compressed air system. Siemens Energy Services initiated, researched, investigated, developed and implemented a turnkey compressor station optimisation project in cooperation with Geveke, EnergAir and Ingersoll-Rand.

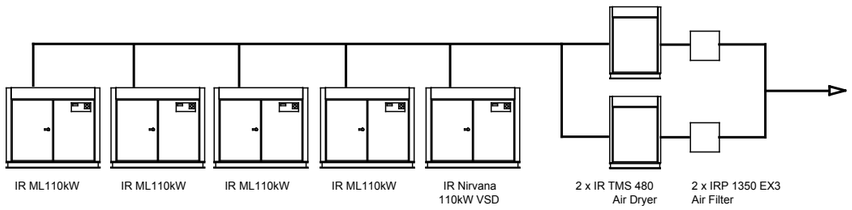
The original installation at Forbo consisted of five Ingersoll Rand rotary screw compressors operating from a cascaded pressure switch arrangement. A challenging efficiency improvement of 15% was set in order to achieve an annual energy reduction.

Analysis of site air utilisation demonstrated a nominal air consumption of 58m3/min, with demand patterns fluctuating from 50m3/min to 74m3/min during operational periods, and a nominal standby consumption of 30m3/min at other times. The compressed air system operates 24 hours a day with site operational periods of 24 hours, 7 days a week.

To maintain maximum efficiency of the existing air compressors an additional Ingersoll Rand Nirvana 110kW variable speed compressor, with an 8m3/min to 20m3/min output capacity was selected. The variable output of this compressor is intended to cope with demand fluctuation variances while the fixed speed units operate at full load efficiency.

The advantages of operating the system coherently, under the integrated control of a comprehensive management system, were recognized as being the only practical way of achieving the efficiency target. The EnergAir Enercon SX management system was selected for this task offering automated single pressure band control with dynamic system characteristics and the ability to totally integrate and utilise the Nirvana variable speed compressor's full potential. Remote system visualization, performance monitoring and data logging were also specified as significant additional features, allowing onsite monitoring and simple reporting for management information.

Prior, during and after the installation and commissioning of the Nirvana variable speed compressor and the EnergAir management system, performance was gauged and measured to demonstrate the contribution of each technology, the synergy between the technologies, and to establish the final performance of the integrated system as a single coherent entity.



ENERGAIR REGIONAL OFFICES

UK PO Box 974, Woking, Surrey, GU22 8ZJ, UK
T: +44 (0) 1932 343638 • F: +44 (0) 1932 340809
email: sales@energair.co.uk

Europe Industriepark De Bruwaan 37B, Oudenaarde, B-9700, Belgium T: +32 (0) 55 23 70 90 • F: +32 (0) 32 55 45 75 18
email: sales@energair.co.uk

Asia Units C60–C66, 11/F, Shanghai Mart 2299 Yanan Road West, Shanghai, China
T: +86 (0) 21 6236 0700 • F: +86 (0) 21 6236 0706
email: sales@energair.com.cn

Visit **www.energair.com** to find your local EnergAir representative.