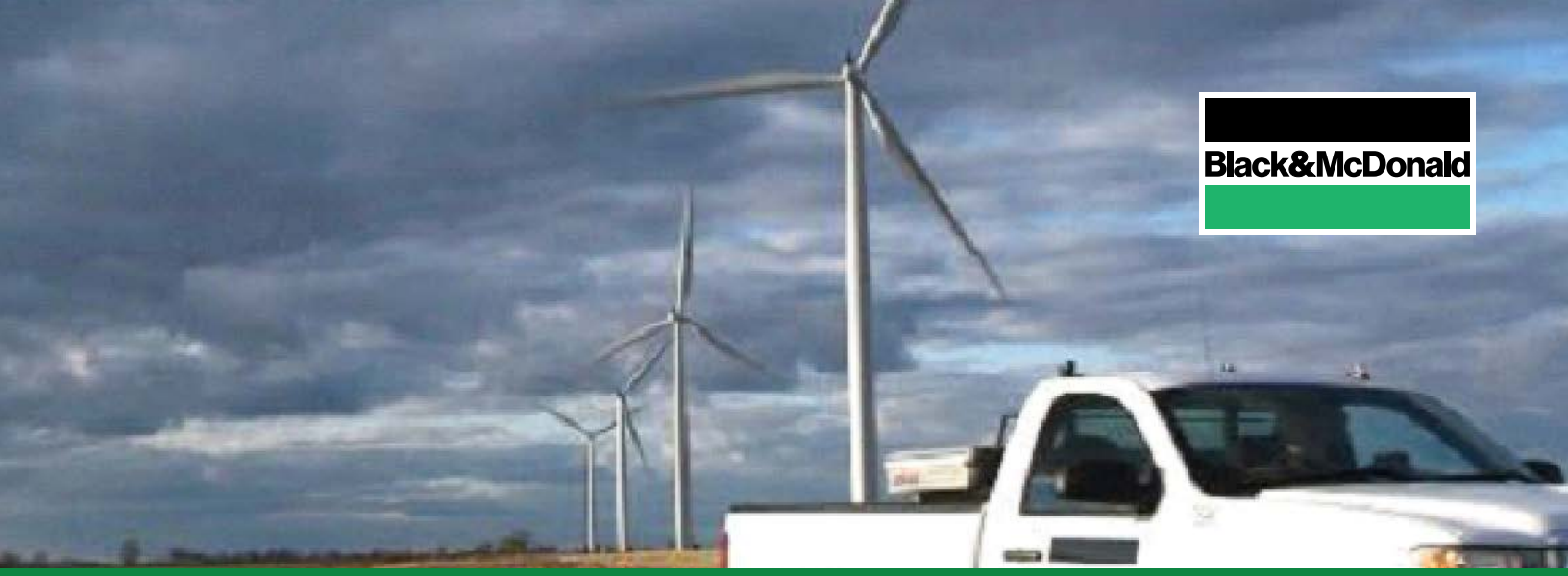

Parc éolien Armow – Essais et mise en service du parc éolien de 180 MW

CLIENT

Armow EPC LP (Samsung Renewable Energy Inc.,
Pattern Development)

LIEU

Kincardine (Ontario)

DESCRIPTION DU PROJET

Le parc éolien d'Armow a été établi dans la région de Kincardine, sur les rives du lac Huron. Le projet comprenait l'installation de 91 éoliennes Siemens, ce qui en fait l'un des plus grands projets d'énergie éolienne en Ontario. Le parc éolien Armow a été conçu pour produire suffisamment d'électricité pour répondre aux besoins annuels moyens d'environ 70 000 foyers ontariens.

PORTÉE DES TRAVAUX DE B&M

La division des services sur place de Black & McDonald a été engagée pour fournir les services suivants :

- Examen des dessins de conception, y compris les schémas unifilaires, trifilaires, c.a.-c.c. et les dessins de logique
- Vérification point par point de tout le câblage secondaire et de commande
- Mise en service du poste électrique de 230 kV à 34,5 kV, y compris les sectionneurs motorisés et manuels, les transformateurs à tension constante, les disjoncteurs, les parafoudres, les transformateurs de puissance, la protection et les commandes, les systèmes c.a.-c.c., etc.
- Mise en service complète du réseau collecteur, y compris les câbles moyenne tension, les transformateurs sur socle, les commutateurs, les boîtes de jonction et tous les autres composants électriques
- Mise en service conformément aux normes NETA et IEEE
- Essai des éléments de protection et de la logique de tous les relais (GE, SEL et auxiliaires)
- Mise en place et vérification de la téléprotection
- Exécution d'un test d'injection primaire pour vérifier les angles et les rapports de phase

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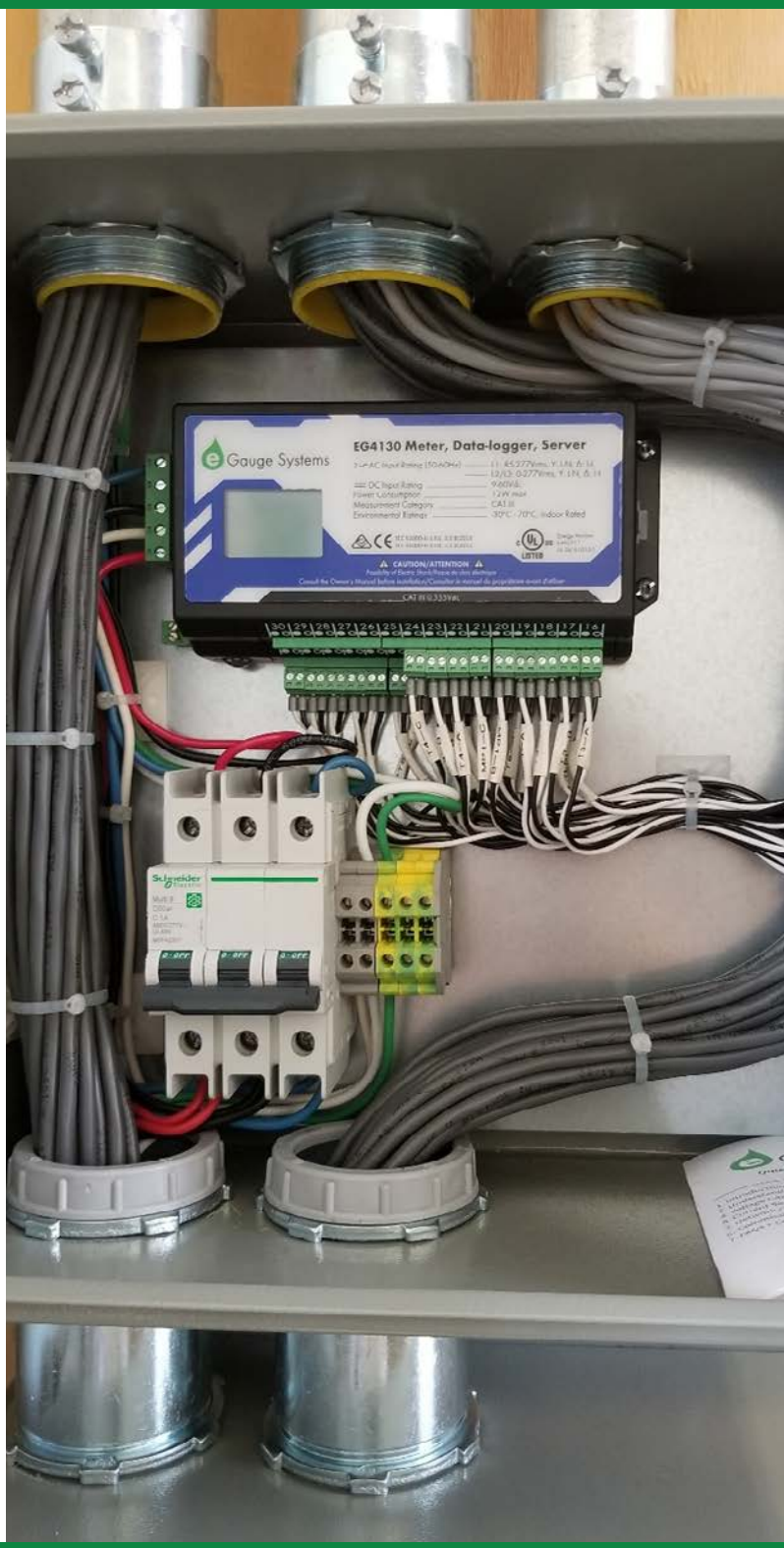
B&M SCOPE OF WORK

GOS wanted insight into how its buildings were performing and what would be the main operational changes it could make to reduce GOS's electrical consumption, utility bills and carbon emissions. It wanted a solution that would have the ability to be used by both off site management as well as onsite building operators. GOS wanted a solution with a visualization component to show consumption reduction and savings to the government, as well as to the broader public who use the buildings daily. It also wanted to engage staff and tenants to pursue net zero and other sustainability initiatives.

Beyond the physical installation, B&M was required to provide analytical services to review the data and provide recommendations to reduce utility usage. This included return on investment and carbon footprint reductions. Some examples would be consumption during unoccupied hours, peak demand usage and metrics regarding major building components.

B&M provided full end-to-end Energy Monitoring Services, from creating the scope to installation to monitoring. B&M installed the electrical meters with our fully licensed in-house electricians located in both our Saskatoon office and our Regina office. B&M's Environmental & Sustainability Services Team installed and implemented dashboard software LUCID BuildingOS that is fed by the real-time eGauge electrical meters and will allow the buildings and staff to monitor the performance in real-time.

The customized dashboards are accessible to the client and the building operators to login to at any given time, as well as turn into automatically generated reports that are sent to the client monthly to discuss with the operations team. The ESS team meets regularly with the client to discuss the trends in the data and provide efficiency suggestions.



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INNOVATIVE PROCESS AND TECHNOLOGY USED

Lucid dashboard

Unique dashboards were created to showcase energy usage and pinpoint actionable energy management strategies for the operations team. Data and analytics are only as valuable as the team acting on the information and tracking those interventions to capture savings and lifecycle impacts. The dashboard also allows comparing the buildings with one another, as well as against their own historical data. As sites benefit from the benchmarking process, the goal of greater efficiency leads to actions derived from the data trends observed.

Integration

B&M's electrical team installed more than 150 submeters on key loads throughout the buildings to better understand usage and cost impacts in real time at the panel and asset level.

Another unique aspect of B&M's role was that it acted as the systems integrator for the project. Once the electrical monitoring site devices were installed, the B&M ESS team then completed the integration work to associate each device with the correct building and the correct sensor points. More than 1,000 current transformers were mapped to the correct panels and assets within the portfolio of 11 buildings.

	The Museum of Nature	Canadian War Museum	National Gallery of Canada
Location	240 McLeod Street, Ottawa, ON	1 Vimy Place, Ottawa, ON	380 Sussex Dr, Ottawa, ON
Size of Facility	419,000 sq. ft.	440,000 sq. ft.	800,000 sq. ft.
Key Contact	Martin Leclerc ABCP, FMA, Director, Facilities & Protection (613) 566-4238 mleclerc@mus-nature.ca	Charles Patrick Jefferson Chief of Operations (819) 776-7037 charles.patrick-jefferson@ civilisations.ca	Steve Desousa Facility Manager (613) 993-5747 sdesousa@gallery.ca

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PROJECT FEATURES

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