

Detailed Load Monitoring For Movable Architecture



Case Study

OVERVIEW

ATA Engineering (ATA) installed over 200 strain gages at planned locations on the load bogies and counter-balance trolleys supporting all eight petals of the operable roof developed by Uni-Systems Engineering for Mercedes-Benz Stadium in Atlanta, Georgia. At all of the load bogies and trolleys, ATA applied and calibrated a measured load to the measured strains. These calibrated loads were measured and monitored during a number of construction movements of the operable roof. Later, new strain gages were permanently installed and calibrated, and ATA assisted Uni-Systems with the installation of a complete data acquisition solution to monitor the bogie and trolley loads for the long-term operation of the operable roof.

Uni-Systems and facility personnel continue to rely on this system to guarantee the longevity of the operable roof's drive system. Data from the strain gage system is evaluated on an annual basis as part of a preventative maintenance program and evaluation of the health of the fixed and operable roof structures.

TASKS PERFORMED & KEY OUTCOMES

- Delivered time-critical support integrated with complex facility construction timelines and weather-dependent schedules.
- Performed load-versus-strain calibration at all load bogie and counter-balance trolley locations, using this information to monitor the loads at all locations on all eight roof petals.
- Supported several required movements during the construction process, assisting test engineering personnel to configure the data acquisition systems and to analyze and process the measured load data.
- Installed a long-term operational load monitoring system at the completion of construction by permanently installing all strain gages and data acquisition systems.
- Trained Uni-Systems and facility personnel in the function of this load monitoring system for long-term use.



ATA applied and calibrated a measured load to over 200 strain gages on the facility roof

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