



J.B. Taylor Diagnostic Laboratory

Retro-Commissioning Services

About the Facility:

J.B. Taylor Diagnostic Laboratory (Elba Labs) is owned and operated by the Alabama State Department of Agriculture and Industries (ADAI). The lab provides a wide range of regional diagnostic services for Alabama livestock and poultry producers. Occupied in 2005, the current building was experiencing difficulty controlling humidity 15 years later. The building consists of two areas, a lab and conference area.

Scope of Work

Sain Engineering Associates, Inc. (SEA) was initially engaged to evaluate the existing building's HVAC and controls, building automation system and envelope to identify the cause of the humidity problem. The desired result was to maintain and enhance predetermined air flow quantity in the desired direction between the adjoining lab and office spaces. One of the early challenges faced by the team was the lack of documentation supporting existing systems on-site. Additionally, many of the parts needing repair were no longer available. SEA's commissioning provider (CxP) not only conducted the necessary assessments to determine and resolve the issues, but also worked to provide documentation of the systems for assisting with ongoing operations and maintenance.

SEA began its work with an initial review of what few design drawings were available and toured the facility to gather historical information pertinent to the evaluation. Initial review of the HVAC and controls system revealed that the operation of the boiler, Phoenix Air Valves (PAVs) and reheat coils were no longer reliable or effectively controlled. Numerous PAV control components had failed and were being set manually as an interim measure. Additionally, the boiler had been offline for some time causing loss of reheat and resulting in abnormally cold discharge air temperatures and condensation on ductwork, grilles and registers. SEA collaborated with the PAV support representatives to:

- Perform a comprehensive condition assessment of each air valve and its controls, taking corrective measures where feasible
- Develop a course of action to restore and correct air valve controls and operation
- Provide recommendations and budgets for PAV control replacement

SEA resolves humidity issues for unique structure and provides necessary documentation for future Operations and Maintenance



Targeted Site Humidity



Years - Age of Infrastructure



Square Feet

As a result, the following items have been completed:

1. Replaced PAV controls and reheat valves, strobic exhaust fan controls and damper actuators, air handler discharge and temperature sensors to return airflows to design values
2. Installed a Java Application and Control Engine (JACE) to interface between the PAV controls and the BMS, a control point to cycle power, 12 additional VAV DAT sensors, as well as a sensor to the air handler to indicate preheat leaving air temperature
3. Relocated the outdoor air sensor, adjusted BMS controls and tuned the PAV system; cleaned strainer on heating water pump

This initial work has resulted in well controlled humidity of 40-50% within the space, even when outside relative humidity is at 100%. Commissioning repairs also greatly reduced the need of repeated support calls. Additionally, SEA has continued to support the owner of Elba Labs with project management activities and the creation of documentation required for future preventative maintenance on key elements and systems.