Site Report

Dust Control at Mining Operations, Valé Iron Ore Facility, Brazil

SYSTEM DESIGN AND INSTALLATION:
IRRICOM Intelligence

RAIN BIRD SALESPERSON:
José Giacoia Neto

RAIN BIRD PRODUCTS:
- SiteControl
- WS-PRO2 Weather Station
- 1005M-DC Rain Gun
- 25BJP Impact Sprinkler
- 35A-TNT Impact Sprinkler
- Falcon® 6504 Rotors
- 7005 Rotors
  (8005 Rotor replaced the 7005)
- 300BPE Valve

"We designed and installed a system where we showed an intelligent solution, integrating Rain Bird's hardy agricultural Rain Guns and impact sprinklers, reliable operation with our control valves, and central operation of our central control systems, the result was the best cost benefit solution for the customer"

— José Giacoia Neto, General Manager
Rain Bird Brazil

PROJECT OVERVIEW:

At the Guaíba Island Terminal in Brazil, iron ore is delivered, stored and loaded into shipping containers for export. These activities generated dust that threatened the health of employees, people living nearby and long-term operations. A Rain Bird® distributor, IRRICOM Intelligence, installed a sprinkler system that controlled dust effectively while using resources efficiently.

CHALLENGE:

Valé, the owner of the facility at Guaíba Island, monitored air quality levels and found that dust levels were regularly exceeding the upper limits for particulate matter in the atmosphere. Valé needed a solution that would bring dust levels down to an acceptable level. But they also needed a solution that could be operated without increasing labor costs.

SOLUTION:

In order to achieve Valé's goals, IRRICOM installed a Rain Bird SiteControl central control system, linked to a WS-PRO2 Weather Station. SiteControl allowed Valé to monitor system performance and program watering schedules from a single computer. Since dust creation is affected by weather conditions, weather data like, temperature, relative humidity, rainfall, and wind speed were gathered from the weather station and sent to the central control system on a daily basis. Using the weather data, the system updated watering schedules automatically so that the correct amount of water was applied. Valé saved labor costs too, because employees did not have to spend time adjusting watering schedules manually.

The system also needed to distribute water evenly to wet the surface areas of very large sloping stockpiles of iron ore and surrounding roadways and railways. A mixture of Rain Bird Rain Guns, impact sprinklers, and pop-up rotors were used because these components have long-throw radii (38 – 182 feet or 11,6 – 55,4 meters) and larger trajectories (or angle of spray) that are effective for the surface area and topography.

RESULTS:

The dust levels at Guaíba Island were regularly monitored before and after the Rain Bird sprinkler system was installed. Before the sprinkler system was installed, 67% of the air quality readings for airborne particulate matter exceeded the upper limit. After the sprinkler system was installed, the percentage of air quality readings exceeding the upper limit fell to 31%. The sprinkler system offered a solution that used weather monitoring, centralized control and durable components to successfully control airborne dust, and was cost-effective to operate.

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