AKJ/Nalco Water DustFoam™ program helps coal company control dust, ship drier coal and save money

PROBLEM
A coal company was experiencing Btu’s penalties placed on them because of high moisture during winter months. They were using a 2,000 tons per hour high impact crusher to crush strip coal. During the winter, the moisture levels would rise, resulting in heavy Btu penalties and a reduction of actual shippable Btu’s per ton.

PROGRAM
AKJ/Nalco Water proposed and installed a DustFoam system. The dust and the moisture level of the strip coal was reduced using only 20% of the water previously applied. Total water consumption was decreased from ~100 gpm (378 lpm) utilizing water sprays to a mere 20 gpm (75 lpm) using the DustFoam foaming agent.

SUMMARY
The moisture reduction of 63% translated into a significant net weekly Btu savings. Ask your AKJ/Nalco Water sales engineer to show you what DustFoam can do for you.

CONCLUSIONS
Controlling dust may:
• Help avoid citations
• Improve morale
• Reduce cleanup costs
• Provide a safer work environment to employees
• Help facilitate PM10/PM2.5 compliance
• Reduce moisture
• Increase profit and production
• Improve relations with neighbors and reduce future perimeter expansion friction

RETURN ON INVESTMENT VALUE ADDED
Coal crushing rate = 2,000 tons per hour
Coal shipped per year = 2,000,000 tons per year
Moisture added before foaming agent = 100 gpm (378 lpm) or 1.25%
Moisture added using foaming agent = 20 gpm (75 lpm) or 0.25%
Savings: 1% Reduction in total “as shipped” moisture x the coal revenue per ton
RETURN ON INVESTMENT CALCULATION BASICS

1 Therm = 100,000 Btu's

1 Btu is required to raise 1 pound of water by 1 degree Fahrenheit

Heat of vaporization of water is 970 Btu per pound of water

To raise 1 pound (0.45 kg) water from 70°F (21°C) to vapor consumes ~1,112 Btu's

To raise 1 gallon (3.78 kg) water from 70°F (21°C) to vapor consumes ~9,275 Btu's

Before foam:
To evaporate 3,000 gph (11,356 lph) of water requires 27,825,000 Btu's per hour
(3,000 x 9,275)
Water evaporation Btu cost: (27,825,000 + 100,000 Btu's x current cost of fuel)

Using foam:
To evaporate 720 gph (2725 lph) of water requires 6,678,000 Btu's per hour (720 x 9,275)
Water evaporation Btu cost: (6,678,000 + 100,000 Btu's x current cost of fuel)