



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

**AKJ**

**NALCO** Water  
An Ecolab Company

CASE STUDY - MINING

CH-451



## 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)



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