The Value of Proper Light Levels

Proper lighting can improve worker efficiency, safety, and comfort. It is an important consideration in the planning, construction, or maintenance of dairy facilities.

Cost Effective Energy Efficient Lighting

Factors affecting efficiency include amount of light per watt and lamp life. Linear fluorescent and pulse start metal halide systems are more expensive to purchase than incandescent fixtures and bulbs. However, the energy cost savings combined with longer lamp life offset these higher initial costs for energy-efficient lighting systems.

Selection Criteria

Characteristics to consider when choosing between the different types of fixtures include cost, availability from suppliers, geographic location of your farm, and operating conditions. Linear fluorescent lighting fixtures come in a wide range of options: low and high bay, cold starting, and vapor proof for wet or damp locations. It is important to consider the temperature range that the ballast will be performing because some ballasts are optimum for cold starting but may be too warm for enclosed or vapor-sealed fixtures. A high output ballast may not be necessary if the ambient temperature will not go below 50 degrees Fahrenheit. If it is in a wet or dusty environment then a vapor sealed fixture will protect the fixture and facilitate cleaning. For outside lighting such as pole or wall pack fixtures, consider using pulse start metal halide fixtures. Pulse start metal halide fixtures will provide equal light output using less energy than traditional mercury vapor, standard metal halide, and high pressure sodium fixtures.

Linear fluorescent and pulse start metal halide fixtures use quick starting electronic ballasts and have overcome the slow start up time typically associated with high intensity discharge (HID) and fluorescent lighting.

At left are recommended illumination levels for various areas of the dairy. The unit of illumination is the “footcandle,” (f-c) which is defined as one lumen falling on each square foot of work area. A lumen is a measure of the rate of flow of light from a source such as a lamp or the sun. These recommended illumination levels can be met with various types of lamps. In selecting the lamp type, the most important characteristics are light quality and energy efficiency. The quality of the lighting installation is influenced by the color of the light, light uniformity, glare, and reflection of the surfaces in the room.