



**MOUNT THE CAMERA IN AN AREA** where it has a clear view of the barn and won't get bumped or damaged.

# Say “cheese,” day and night

Time-lapse cameras can help identify bottlenecks in a dairy barn that occur when no one is watching.

by Brian Dougherty

**C**AMERA technology is becoming more common in dairy facilities. Video monitoring of cattle and their surroundings can save time and quickly identify problem areas. However, one disadvantage with video cameras is that someone needs to be monitoring the video feed in real time in order for it to be useful. Problems that occur more slowly over time or that happen when people are not present may not be identified.

Time-lapse cameras are a relatively new technology that can fill this gap and help identify issues that are harder to detect in dairy facilities. These cameras work by taking photos at a preset interval and then automatically stitching those photos together to create a video clip. The video file can be saved on a computer or external storage device and played back on any compatible screen.



## DOUGHERTY

The author, a former dairy farmer, is now a field ag engineer for Iowa State University Extension and Outreach.

The disadvantage of time-lapse cameras is that the footage cannot be viewed in real time. On the flip side, the great advantage of time-lapse video is that multiple hours or days of activity can be viewed in minutes. This saves time and helps to identify problems that may otherwise go undetected. They are also relatively inexpensive, with most cameras selling for \$100 to \$400, depending on features and accessories.

### Applications for use

Time-lapse cameras can be used anywhere that monitoring is needed. Common applications on a farm include:

- Monitoring cow behavior and traffic flow around the robotic milking units to identify bottlenecks or poor positioning of gates or other equipment.
- Monitoring feed alleys or bunks to identify problems with timing of feed delivery, inadequate feed pushups, or lack of bunk space.
- Evaluating stall usage behavior that may

indicate problems with overcrowding, lack of bedding, stall avoidance, or insufficient resting time within the herd.

- Monitoring cow behavior around waterers to determine if they are properly located and sized.
- Identifying problems with nighttime lighting around robots, improper light timer settings, or malfunctioning of the extended-day lighting system.
- Evaluating timeliness of barn scraping, stall grooming, and other management activities.
- Monitoring calf behavior and usage of automatic calf feeders.
- Capturing video for social media and farm promotional activities.

### The right settings and location

Capturing useful footage requires proper initial setup of the time-lapse camera. The most important settings are the frame rate, capture interval, light settings, and image quality.

The frame rate (frames per second or FPS) determines how many images will be viewed per second during playback. A setting of around 10 FPS generally works well for dairy facilities. Stepping up the frame rate makes a smoother video and improves the playback speed, but too fast of a frame rate may make it difficult to monitor activity during playback. When viewing the video on a laptop or desktop computer, you may be able to do some additional adjustment of playback speed by altering the video settings.

The capture interval determines how often the camera takes a photo. For robots and cow flow monitoring, try a capture interval of five to 10 seconds. For monitoring stall usage or feedbunks, a 15- to 20-second interval generally works well. A shorter capture interval will show more detail but will also increase the length of the video.

Most cameras will have an image quality setting. The better the image quality, the clearer the video will be, but it can also drastically expand the size of the video file. A lower quality image will reduce file size and file transfer times and is generally sufficient for monitoring dairy facilities.

Light settings are also important. Turn on “low light recording” and/or “night scene” or similar settings for nighttime monitoring.

This will not affect daytime image quality.

Time-lapse cameras typically have a wide-angle lens. With strategic placement, the camera may be able to capture footage for evaluating several different areas of the barn at the same time. Hold the camera as close as possible to the installation location and use the viewing screen to determine what will show in the video frame. The higher the camera is mounted, the easier it will be to monitor activity.

Locate the camera where it won't be bumped or damaged, and make sure the view will not be blocked by overhead doors or other obstructions. A protective case is highly recommended to prevent dust and moisture from damaging the camera.

You will also need a wall mounting kit, mounting clamp, tripod, or some bungee cords to secure the camera. Avoid mounting the camera near fans or other equipment if possible, as this can cause the camera to vibrate and distort the video.

### Capturing quality video footage

If the camera has a clock or “time stamp” feature, turn this on and make sure the camera is set to the correct date and time. This is very useful for determining what time of day activities are occurring and for verifying proper functioning of lighting systems.

Recording in very low light conditions can be difficult. Time-lapse cameras are generally designed to capture images at night, but some background light is needed. If the barn is in total darkness, the video will be unusable.

You may need to assess the footage after a few days and move the camera to a different location if lighting is causing shadows over feedbunks or other areas. Another option is to add some nighttime or temporary lighting, but make sure that it does not interfere with extended day lighting systems. Small red bulbs (equivalent to 7.5 watts) can be used during the dark period.

If the camera is mounted in a dusty area, the lens cover or protective case should be wiped off periodically to improve image quality. Try to locate the camera away from fans, inlets, or vents during cold weather to prevent fogging of the lens cover.

Battery life will vary depending on the camera model and settings. Put new batteries in the camera if it will be installed for a week or more to reduce the risk of battery failure during monitoring, especially in cold weather. Some models can be plugged into a wall outlet, but this will limit where the camera can be mounted.

With a bit of planning, you can capture very useful footage of your dairy facilities. This information can be used to help identify and correct problems with facility design and management. 🐄