

What are some general tips for reducing our mixer's operating costs?

The mixer is the cash cow of most manufacturing companies; the faster you can run batches through it, the more product you can produce. One of the biggest costs in operating any mixer is the labor cost for employees to manually fill it with material. I've seen many plants that take 30 minutes to load a mixer and 45 minutes to unload it, but the mixing time is only 5 to 10 minutes. Prebatching allows companies to charge a mixer in a few minutes and unload material into bulk bags in a few minutes, reducing labor time and producing more batches per hour.

Scott Culshaw, president and chief executive officer, Ingredient Masters, 513-231-7432

The greatest operating costs associated with blending or mixing operations are handling (labor) costs and lack of inventory control (waste) costs. Automated blending equipment can address both of these issues. Through automation, you can reduce the amount of labor required to run your operation and the number of times the

finished blend needs to be moved or handled, and you can engineer your process to accurately and consistently control the blend ratios to ensure that the finished blend is correct every time.

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One way to reduce your mixer's operating costs is to review the form in which raw materials are charged to the mixer because this can have a great impact on your mixer's electrical power requirements. For example, a raw material charged in bales or slabs requires much more power and a heavier-duty mixing machine than a raw material charged in ground, granulated, or powder form. Lower power requirements will reduce peak power loads, thereby reducing operating costs.

Charging raw materials into the machine while it's running (if possible) will also reduce the number of starts and stops, reducing the spikes in power required and increasing the equipment's longevity by reducing shock load on components.

Inspect the mixer motor(s) to see if it's a premium efficiency model. Often, a change to a more efficient motor could save energy. Review the agitator drive system to see if it's the most efficient one available. Some drive systems are more efficient than others at transmitting power from the motor to the agitator. Using a soft start or variable-frequency drive for the mixer motor(s) also could reduce power spikes upon motor startup. Selecting the correct insulation and sheathing is an excellent way to conserve heat and cold during the mixing process and, therefore, reduce the energy required.

General maintenance to ensure that all bearings, gearboxes, chains, gears, and other components are properly tensioned and greased will reduce overall load on the machine, saving energy and operational costs.

Regularly cleaning the agitator(s) and mixer walls will reduce weight and load on motors. Also, cleaning the dust and material buildup from motor and gearbox surfaces will allow those items to dissipate heat and run more efficiently.

Jason Hayday, president, Jaygo, 888-815-2946

Remove the stuffing boxes, packing, and lip seals as the main shaft seals. Using the appropriate mechanical seal type for your mixing equipment can provide the following benefits:

- lower energy consumption
- improved cleanability and inspection
- improved ergonomics

- elimination of batch contamination from the seal's packing
- improved allergen removal between batches
- less biowaste production in your plant

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The best thing that you can do to reduce your mixer's operating cost is to run the optimal batch size for your mixer. Frequently, operators run batch sizes that are too large or too small, requiring the mixer to run longer to obtain the desired mix. Partial batches also affect the entire system's throughput since most products have to be mixed prior to further processing.

Testing the mixer's efficiency with your particular product is a good idea. Quite often, you can reduce the manufacturer's recommended mix time because most manufacturers will try to be conservative about the time that's required. By testing the coefficient of variation at various mix times, you can learn exactly how much time is required to achieve your desired mixing result.

The last thing you should do to keep a mixer running efficiently is to perform regular preventive maintenance. This includes lubricating bearings and drives and checking the tolerances between the agitator and mixer shell. This will decrease the possibility of downtime because of a catastrophic failure and will also make sure that your mixer is performing at an optimal level.

Terry Stemler, president, Automated Process Equipment Corp. (APEC), 616-374-1000

You can reduce operating costs dramatically by replacing an existing mixer with a new mixer that delivers the highest possible mixing efficiency and dependability for your application. When this isn't feasible, you can marginally reduce operating costs by avoiding unnecessary start and stop cycles, which draw more amperage than steady operation, and by stopping the mixer as soon as a batch achieves uniformity. This is especially true with mixers, such as ribbon, paddle, and plow blenders that force agitators through stationary material. You can sometimes reduce power usage by efficiently staging ingredients, which eliminates unnecessary run time during mixer loading and unloading.

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