

Time is money

Parlor efficiency is important but don't sacrifice milk quality for the sake of speedy cow throughput

By Hal F. Schulte III

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Rusty Korth,
Caledonia,
N.Y.*

To evaluate parlor efficiency, dairies track such things as cows milked per hour, turns per hour or pounds of milk per unit per hour with the goal of improving efficiency.

Dairies might better ask these questions:

- What are you trying to do in your parlor?
- What are reasonable measurements of efficiency?
- How important is milk quality to you?
- And what's the relationship between parlor efficiency and milk quality?

Rusty Korth, a QMPS' client in Caledonia, N.Y., says, “The first issue is to do those things that promote milk quality, and the second is to do those things efficiently.”

Measuring parlor efficiency

The unofficial industry standard for parlor efficiency – or throughput – is four to five side changes per hour. In turn, this defines how many cows you can milk in an eight- or 12-hour time period.

For instance, a double-12 parlor, milking at four side changes per hour on both sides, can milk 96 cows per hour ($24 \times 4 = 96$), or 696 cows in 7 hours, 15 minutes, leaving three-quarters of an hour for cleanup.

This is the theoretical maximum number of cows that can be milked 3x in a double-12 parlor.

The first step to measuring parlor efficiency on your dairy is understanding what routinely – and sometimes not so routinely – happens in your parlor. Dr. Tom Fuhrman of Dairyworks in Tempe, Ariz., defines the “parlor routine” as “those things that people do as they move through the parlor.” Part of that routine is the “milking procedure,” which Fuhrman defines as “what and how cow-side activities are performed.”



The bottom line for milking time in a double-12 parlor: It should take about 12 minutes per side to milk, or five turns per hour.

To determine whether parlor routine is efficient, break that routine into measurable segments. If you use turns per hour as a measure of your parlor efficiency, you need to know how much time is involved in each parlor turn.

You can arrive at that by measuring the time intervals for the following events in the routine:

- Between the opening of the parlor gate and when the first udder prep procedure starts.
- Between the beginning of udder prep and the first unit attachment.
- The point when all units are attached.
- The point when all units are off.
- The point at which all cows have exited.

Also measure the times of each part of the milking procedure, such as start time and duration of pre-dipping, foremilk, drying teats and unit attachment.

To understand how to measure parlor efficiency, here's an example of the fairly common double-12 parlor. Dividing each side into two groups of six cows gets the timing of each cow's udder prep and the lag time between udder prep and unit attachment very nearly perfect. Make adjustments in timing to accommodate your parlor.

Parlor assessment starts with cows filling the parlor. Loading takes about 30 seconds, plus one to two seconds per stall. The ideal in our double-12 parlor then would be 30 seconds, plus either 12 or 24 seconds, totaling between 42 to 54 seconds.

Once two to four cows are in their parlor stalls, udder prep should start.

Udder prep and milk quality

Some dairies that are intent on getting as many cows through their parlors in the shortest amount of time willingly sacrifice udder prep. By doing that, they threaten milk quality. Good milk quality depends on excellent udder prep which takes time.

Clean, dry, well-stimulated teats yield the best quality milk through reduced bacteria loads on the teats and good mastitis prevention while in the parlor. Research shows that the best udder prep routines lower bacteria loads on teats by 85%.

The cleaner cows are when they come into a parlor, the easier it is to lower bacteria loads on teats through good udder prep. For example, clean teats may have bacteria numbers of 100,000 CFU/cm² of skin. Dirty teats, on the other hand, may have bacteria loads of 100,000,000 CFU/cm² of skin.

An 85% reduction for both cases means that relatively clean teats would have counts of 15,000 CFU/cm² of skin vs. 15,000,000 CFU/cm² after dirty teats are cleaned.

Here's a per-cow breakdown of approximate times for each step of the prep procedure:

- Teat dipping = 3 seconds. To pre-dip all six cows: 3 x 6 = 18 sec. + 6 sec. to walk = 24 sec.

- Stripping = 5 sec., minimum.

- Drying = 7 sec. To strip and dry all six cows: (5 + 7)/cow x 6 = 72 sec. + 6 sec. to walk = 78 sec.

- Teat massage = 10 to 12 sec. to stimulate good milk letdown. Any less time and you'll have to depend on milking machines to stimulate letdown, resulting in some over-milking when machines are

first attached.

- Prep lag time = 90 sec., approximately, between teat massage and unit attachment.

- Unit attachment = 5 sec. To attach six units at 5 sec./cow = 30 sec. + 6 sec. to walk = 36 sec.

- 24 + 78 + 36 = 138 sec. = 2 min., 18 sec. for the 6 cows.

What's the total: In a double-12 parlor, expect udder prep to take 252 seconds of milker time, or just over 4 minutes.

To hit the targets for stimulation and prep lag time, milkers must do the udder prep routine in groups of six cows. In a double-12 parlor, we must work on two groups of six cows to balance the time requirements.

With the udder prep requirements of 20 seconds per cow, the first unit will be attached to the first cow at 96 seconds into the routine. The next cow's lag time is 96-13+5 seconds, or 88 seconds.

In the earlier example, the prep lag is 78 seconds. It's a bit below the 90-second ideal, but enough extra time can creep into the equation to often meet the 90 seconds.

Most cows that are well stimulated will milk out completely in five minutes, even very high producing ones.

Adding it up

If your procedures fit the goal of 4 minutes, 36 seconds for udder prep and 5 minutes for the last cow to milk out, expect a fast parlor milking rate of 8 minutes, 45 seconds.

Being a bit more reasonable, allow 10 minutes for the "milking time" from the start of udder prep to all units off. By adding the loading time of 42 to 54 seconds and post-dipping time of 36 seconds for

12 cows, the ideal total milking time is about 12 minutes.

The time required to unload the parlor depends on its configuration, and that of the holding area and return alleys. Rapid exit parlors can get all of the

cows out in less than 10 seconds.

This is the bottom line for milking time in a double-12 parlor: It should take about 12 minutes per side to milk, or around five turns per hour. This translates to 60 cows per side per hour, or 120 cows per hour.

The more slack you can afford in your system, the more likely you will be to be able to meet milking schedules.

To reach...



QMPS can come to your dairy and measure individual cow milk-flow rates to determine how well your milking crews are stimulating udders and taking advantage of let-down. The program also provides milker training sessions in English and Spanish to help employees better understand the reasons for particular procedures and their impact on herd health and milk quality.

For information on QMPS, see its website: <http://qmps.vet.cornell.edu>
Reach the four regional QMPS laboratories at:

QMPS Central Lab, 22 Thornwood Dr., Ithaca, NY 14850.
Tel: (607) 255-8202.

QMPS Eastern Lab, 111 Schenectady Ave., B4 Wheeler Hall, SUNY Cobleskill, Cobleskill, NY 12043. Tel: (518) 255-5681.

QMPS Northern Lab, 34 Cornell Dr., SUNY Canton, Canton, NY 13617. Tel: (315) 379-3930.

QMPS Western Lab, 4530 Millennium Dr., Geneseo, NY 14454. Tel: (585) 243-1780.

See the next Milk Quality News in the June issue of *Northeast DairyBusiness*.

Prep time for six stalls

Stall no.	Predip	Wak	Strip	Dry	Walk	Attach	Walk	Total
1	3	1	5	7	1	5	1	23
2	3	1	5	7	1	5	1	23
3	3	1	5	7	1	5	1	23
4	3	1	5	7	1	5	1	23
5	3	1	5	7	1	5	1	23
6	3	1	5	7	1	5	1	23
Totals	18	6	30	42	6	30	6	

Total time = 138 seconds

Timeline	Load	Pre-dip	Walk	Strip & Dry	Walk	Attach	Walk
	0:00:00	0:00:54	0:01:12	0:01:18	0:02:30	0:03:00	0:03:06