Forget fracking -- choking and lifting are latest efforts to stem U.S. shale bust

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Something is awry in the beleaguered U.S. shale patch: older wells, which normally gush oil or natural gas in their first few months before rapidly depleting, are not petering out as quickly as they should.

When oil prices began falling a year and a half ago in the deepest rout in a generation, many analysts expected U.S. crude production, especially from fracking in the new shale plays that contributed to a global supply glut, to follow quickly.

Producers, such as Continental Resources Inc and Whiting Petroleum Corp , have slashed spending on almost everything, in some cases even leaving drilled wells unfinished to conserve cash and wait for a sustained turnaround in prices.

With oilfield activity suddenly contracting, production from a dwindling number of freshly fracked wells would be unable to compensate for the rapid depletion of older wells. Yet that long-anticipated turning point has only just begun to emerge - partly because producers had a couple more tricks in store.

Some drillers are spending a little bit more on measures that are subtly flattening the so-called "production curve" of shale wells, either by limiting the initial surge in output or by squeezing a few additional barrels out of older wells, according to industry executives and analysts.

The measures offer differing benefits.

Choking output at newly fracked wells curtails immediate supply and revenue in hopes that prices will be stronger later, whereas maximizing output at old wells with things like "artificial lift" is a relatively cheap way to increase volume and immediate revenues.

Baker Hughes Inc , the third-largest services company in the U.S. shale patch, cited its artificial lift business as the "one notable exception" to a sector-wide slump in its latest quarter, growing by 4 percent even as other shale-related revenues fell 10 percent.

"Companies still want to grow production, they want to generate cash," said Wade Welborn, vice president of artificial lift at Baker Hughes. His business offers "a means to increase that cash flow."

For oil markets, they amount to the same thing: the long-anticipated fall-off in U.S. shale oil output is still proving slower and more tempered than anticipated, impeding the process of correcting the global glut that has walloped prices.

"Production optimization is going to be the next phase of the shale revolution," said Andrew Slaughter, director for the Deloitte Center for Energy Solutions. "The low price environment will give companies and operators a chance to take stock of the techniques that work."

LATE PHASE LIFT

The volume of daily production from a new shale well typically declines by 70 percent in the first nine months, according to estimates provided by SunTrust Robinson-Humphrey analyst Neal Dingmann.

Yet, that sharp decline rate has been shockingly slow to translate into lower production across the United States.

While the number of oil rigs collapsed by some 75 percent since the end of 2014, U.S. production has only barely begun to ebb, a disconnect generally attributed to the increasing productivity of the hydraulic fracturing process, with each new well yielding more barrels than the one before.

But other measures are also in play by companies keen to maximize immediate revenues to cover interest and other payments, and avoid the cost and hassle of shutting in wells.

For instance, rather than forking out $3 million to $6 million to drill and frack a new well, a producer can spend just $250,000-$500,000 to reinvigorate an older well with artificial lift - which may involve injecting chemicals or gas into perforations, or using an electrically driven pumping system.

With lift, a well can begin to flow again at 50-75 percent of its initial production rate in most instances, said Evercore ISI analyst James West. That may help extend the life of a well that would otherwise be slated for abandonment.

"Demand is strong because it is not directly correlated to new wells and drilling," said Kyle Chapman, president of Weatherford International Plc production and completion line.

Devon Energy Corp says it is using workovers, refracking, artificial lift and other techniques to make its wells more productive, even as it cuts spending for the year by 75 percent. It expects 2016 output to fall about 10 percent.

Older wells, in production, help companies cover costs and it would cost more to shut them down, said Julius Walker, a senior consultant at JBC Energy in Vienna, noting this was contributing to "production resilience" and causing output to outperform the firm's forecasts based on historical models.

For example, in the Bakken - heart of the shale revolution - official data showed production in the fourth quarter was 60,000 bpd - or about 5 percent - higher than what JBC had estimated based on well data and historical decline rates.

CHOKING ON OIL

Other producers are taking a different, and cheaper, approach, by throttling back the initial production (IP) from newly fracked wells, pumping less now but more later and preserving pressure within the underground reservoir.

Most, if not all, recently drilled wells include a choke, a piece of steel placed in the flow path of oil coming out of a producing well, and more companies are now using them to curb early production in ways that can boost overall output from a well by as much as 10 percent, experts say.

"It's like if you take a coke bottle and shake it up and all the drink fizzles up. But if you don't shake it up, you end up getting more to drink - choking has the same effect," said Mike Breard, an analyst at Hodges Capital Management in Dallas.

Continental Resources - an industry pioneer that essentially stopped finishing new wells in North Dakota's Bakken shale field - is also applying chokes to manage production from three news wells in Oklahoma's STACK play.

For example, its Compton oil well, which has been producing for 51 days, pumped 80,000 barrels of oil equivalent in its first 41 days online, but has since been restricted to flow at 1,670 barrels of oil equivalent per day.