

Some Comments about Backflushing

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In combined inventory and production tracking systems, one known method to record material consumption is *backflushing*. Instead of recording every raw material being consumed in making a finished product right when it is being consumed, a system will postpone any such recording until the final product is recorded as produced. Then, as the system “knows” the bill-of-material for the finished product, it will derive what raw materials and in what quantities have been consumed and will deduct calculated quantities of necessary materials at once.

The main benefit of this method is obvious: it greatly reduces the number of times operators need to record their actions.

The main disadvantage is obvious as well: consumption of raw materials and their quantities is being *assumed*, rather than tracked.

There are usually many “clever” words surrounding backflushing and clouding the issue. Some might say that backflushing produces estimates rather than assumptions. Others might say that backflushing is post-operation recording as opposed to standard pre-operation recording. But the simple truth is that raw materials exist before an operation and can be accurately measured and recorded. They do not exist, however, after they have been consumed, and the system can only assume, not estimate, how and where they were consumed.

Therein lies a danger: if the assumptions were not followed exactly – if an operator substituted a different raw material, if some material was scrapped but not yet reported, if material got used on a different job, if any one of many unplanned but possible events took place – then representation of available inventory will not be accurate. As a result, users will keep thinking and seeing on the reports that everything is fine. A problem will go unnoticed until it is too late: a false-assumed raw material is out of stock. Note that it is exactly the type of a problem a tracking system is supposed to eliminate.

The problem needs to be detected earlier. A warning could be generated immediately after entering finished product at the end of the job and deducting consumption if the amount of raw materials left in inventory is different from the assumed level. Unfortunately, that is not good enough: it is still unknown how the problem occurred – all that is known is that inventory is wrong but the origin of the error is a mystery. If there is extra material left: what material got consumed instead? If there is not enough material: where did the material go? Ignoring these questions will lead to false security and eventual stock-outs. But answers to these questions could be found only in earlier operations and their *unrecorded* consumption. Are operators required to remember everything they had done? Do they take paper notes? If those practices are satisfactory, why is a tracking system being put in place at all?

Additional work is needed up-front when backflushing – every time operators do something unplanned, they should be required to record their actions at once. So, raw material consumption recording must be implemented and operators must be trained to use it no matter whether the system uses backflushing or not. Apart from the system being more complicated, thus more

error-prone and costly, would managers really want the operators to do different recording based on whether they follow assumptions or not? Would operators themselves want such a system?

It is an interesting situation now: backflushing is reduced to a mere mechanism that should not be used alone and requires many safe-guards to assure accuracy of inventory records. Its combined implementation represents a significant challenge, and its proper usage requires extensive training. The system and policies on how and when to use it are inconsistent and cumbersome. Can it be done – sure. But... *should* it be done?

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