"Know Floe's Korner"

Top 10 Questions for Selecting Powder Processing Technology

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Powder Process Technology, for this discussion, is defined as a combination of various unit operations and intermediate conveying & storage steps.

1. How well do the process parameters scale up from pilot scale tests to full scale implementation? This is especially important for new processes or novel unit operations.
2. What is the sensitivity of process performance (yield, reliability, product quality etc.) to variability in raw materials? If so, can the variability in raw materials be controlled?
3. What is the turn-down ratio for the process? Can the process be reliably run at reduced capacity?
4. If process automation is desired (e.g. large scale continuous processes), how well does it lend itself to automation? Are there any unit operations in the process that are difficult to automate?
5. Is the operating window for process parameters sufficiently wide to accommodate variations in raw materials and possible variability due to each of the unit operations? Issues related to integration of the new process with current upstream and downstream process steps should be evaluated.
6. Can the product properties be controlled within specifications to achieve acceptable level of performance (low defect rates or off-grade)? Six sigma methodologies can be used to quantify this. Compatibility between a process and the specifications of the final product is critical, especially in pharmaceutical, food and electronic applications.
7. Process upsets are inevitable. How well does the process handle upset conditions in the process? What measures are implemented for a smooth recovery from upset conditions?
8. What is the true cost of ownership for the process? Include operating cost, energy cost, capital cost and cost associated with technology licensing or development.
9. If the product demands continuous improvement or reformulation due to market demands, then the process design should be able to adapt to changes. If multiple products need to be made in the process, then product transitions should be quick and off-grade must be small.
10. Before committing to any processing technology, it is important to investigate the limitations imposed by intellectual property issues. In addition to the licensing costs, if any, thoroughly investigate your rights to practice this technology and your ability to improve or innovate.