13 QUESTIONS TO ANSWER BEFORE CHOOSING YOUR NEXT BATCH CHEMICAL REACTOR SYSTEM

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1 What is your application and what do you want to achieve?
Complex chemistry such as hydrogenation may require an automated system with intelligent temperature-dependent dosing, but simpler chemistry can use a manual reactor.

2 What working volumes do you want to use?
Your working volume range – for current applications and possible future needs – will affect the type and size of chemical reactor system you choose.

3 What temperature range do you want to cover?
Will hotplates/solid state heaters be sufficient, or will you need the increased range and accuracy offered by jacketed reactors and a circulator?

4 What viscosity are your typical reactor contents?
Are your contents particularly viscous? Do you require torque feedback information? Is there a certain stirrer speed you need to achieve?

5 What vessel geometry do you need?
Do you need vessels that mimic large-scale production reactors, or a reactor that mimics smaller scale round-bottom flasks?

6 What stirrer geometry do you need?
Anchor, Pitched Blade Radial (PBT), or Retreat Curve Impeller? Do you need high or low shear mixing? Are you stirring particulates?

7 Do you need to work under pressure/ vacuum?
What is the maximum pressure you wish to work at? What level of vacuum do you want to reach? Pressure systems will require additional safety features to ensure user safety (e.g. burst discs and pressure relief valves).

8 Do you perform reaction calorimetry?
Safety in scale-up is incredibly important, so do you want a discrete calorimetry system or a multi-use reactor system that can be used for both your chemistry and calorimetric testing?

9 What chemicals/solvents are you using?
Are there any reagents/solvents you use that are particularly corrosive/ volatile? Are there any particular materials that will react with your reactor system? Does the reactor system have appropriate safeguards in place to protect itself from your chemistry?

10 Do you need reagent addition?
Intelligent syringe pumps could save time and help you improve your chemistry with features such as pH control dosing, temperature-dependent dosing, and autosampling.

11 Jacketed reactor or round-bottomed flasks?
If your application can be performed on both types of systems, you need to weigh up the performance of both types against costs, lab space, and possible future applications.

12 Do you need control of 3rd party devices? What are they?
Choosing an intelligent system – such as the Atlas HD automated jacketed reactor – will enable you to integrate existing lab equipment you just couldn't live without.

13 What do you need to measure?
If you need to measure certain variables – such as temperature, turbidity, pressure, pH, etc. – you'll want a system capable of integrating with the relevant probes and nodes and logging their data.

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Discuss your chemistry with us.

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