Small-Scale Benchtop Automation Trends 2011

June 2011

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Conditions Under Which This Market Report Is Sold

Executive Summary

- This market report summarizes the results of HTStec's industry-wide global web-based benchmarking survey on small-scale benchtop automation carried out in June 2011.
- The survey was initiated as part of HTStec's tracking of emerging life science marketplaces. The questionnaire was compiled by HTStec to meet the needs and interests of the vendor community.
- The main objectives of this global benchmarking study were to gain a better understanding of the current interest in and future market requirements for small-scale benchtop automated systems. Equal emphasis was given to soliciting opinion from all organisations types and intended application areas, with no geographic bias in the distribution of persons contacted.
- The survey looked at the following aspects of small-scale benchtop automation as practiced today (2011) and in a few cases as predicted for the future (2014): familiarity and current use of automation; current views/thinking on small-scale benchtop automation; what is driving the implementation of small-scale benchtop automation; automation preferences; importance of walk-away automation; degree of flexibility required; key to making small-scale benchtop automation fully accessible and useful to the majority of potential end-users; interest in potential applications of a small-scale benchtop automation system (i.e. sample prep; PCR & next-gen sequencing; liquid dispensing; dose-response analysis; ELISA; aspects of cell maintenance; and cell-based assays); number of samples per batch; automated liquid dispensing requirements; type of vessels to be used; accessories that must be available as options; factors influencing vendor purchasing decision; level of awareness of some examples of small-scale benchtop automated systems; annual CAPEX budget for small-scale benchtop automation and breakdown between different instrument types; vendors most likely to be considered when purchasing in the near future; time frame to purchase a small-scale benchtop automation system and the reason for purchase; and unmet needs in small-scale benchtop automation today.
- The main questionnaire consisted of 37 mainly multi-choice questions. The exact number presented to respondents depended on their interest in the specific applications areas surveyed. In addition, there were 5 questions related solely to the administration of survey.
- The survey collected 138 validated responses, of these 62% (86 out of 138) provided comprehensive input.
- Survey responses were geographically split: 47% Europe, 36% North America, 9% Asia (Excluding Japan), 7% Rest of World and 1% Japan.
- Survey respondents were drawn from persons or groups interested in applying small-scale benchtop automation to various tasks which they mainly process manually today.
- Respondents came from 62 University/Res. Inst./Govn't Lab./Not-For-Profit Facilities; 30 Biotechs; 15 Large Pharma; 9 Others; 6 Medium-Small Pharma; 6 Hospitals/Clinics; 4 Diagnostics Companies; 3 Academic Screening Centers; 2 CROs; and 1 Agrochemical Company.
- Most survey respondents had a senior job role or position which was in descending order: 27 senior scientists/researchers; 27 research scientists; 19 others; 14 section/group leaders; 11 professors/assistant professors; 11 lab managers; 10 post-docs; 8 directors; 6 department heads; 3 vice presidents; and 2 principal investigators.
- Respondents represented the following labs: 48 basic research; 27 applied research; 19 other; 16 assay development; 11 with a combination of drug discovery roles; 10 primary screening (HTS); 2 leads-to-candidate (ADME tox/preclinical research); 2 secondary screening; 1 compound profiling; 1 hits-to-leads (lead optimization); and 1 target identification/validation.
- All data was presented and analyzed as the average response of ALL SURVEY RESPONDENTS. In addition, where appropriate the results were fully reanalyzed after segmentation into a further 5 survey groups based on the following criteria. Familiarity and current use of automation: 1) Expert User; 2) Moderately Aware; or 3) Non-Expert User. Organisational Origin: 4) Pharma & Biotech; or 5) Academic Research.
- The majority of survey respondents were moderately aware of automation i.e. had some familiarity, occasionally utilize automated tools where advantageous.
- Respondent's current view or preference on small-scale benchtop automation was relatively evenly spread between: automation that links multiple instruments to enable a multi-step process; automation incorporated within a single instrument or single-step process; and automation built specifically to enable a multi-step process.
- The majority of respondents were not actively investigating automation technologies to overcome benchtop bottlenecks.
- To enable a technically challenging or repetitive process was ranked the most important driver for implementing small-scale benchtop automation.

- Respondents were most interested in accessing generic 'open' automation platforms which have broad applicability to multiple processes or applications.
- Respondents wanted moderate flexibility and moderate levels of walkaway automation in a small-scale benchtop automated system.
- Immediately obvious benefits (i.e. cost, labour savings & better quality data) were ranked as the greatest influence on making small-scale benchtop automation fully accessible.
- From a list of potential application areas for a small-scale benchtop system respondents showed greatest interest in sample prep, liquid dispensing, qPCR & next-gen sequencing and cell-based assays.
- Of the sample prep applications greatest interest was for DNA extraction/purification.
- Of some sample prep tasks greatest interest was for spin column processing.
- Most respondents placed high importance in being able to modify vendor-recommended product protocols and to support multiple vendor product protocols for sample prep on a small-scale benchtop system.
- Of the PCR and next-gen sequencing applications greatest interest was for PCR (or qPCR) assay setup.
- Of the liquid dispensing applications greatest interest was for tube or plate filling.
- Of the dose-response analysis applications greatest interest was for serial dilution by conventional repetitive aspirate and dispense.
- With respect to ELISA assays greatest interest was for full automation i.e. sample addition, plate washing (if applicable), incubation and detection all in one system.
- Of the cell maintenance applications equal greatest interest was for cell plating (seeding) and cell culture (media change, sub-cloning and expansion).
- Of the cell-based assay applications greatest interest was for cell viability assays.
- The names of some commercial assay kits respondents would like to see supported on a small-scale benchtop automation system through provision of vendor-recommended protocols were listed.
- Details of the capabilities respondents should like included in a small-scale benchtop automated system for cell-based assays if it is to be considered a wanted (useful) next step beyond manual pipetting were listed.
- The median batch size (number of unattended samples processed at any one time) on a small-scale benchtop automated system for sample prep, dose-response analysis and aspects of cell maintenance applications was 26-50 samples/batch; and for PCR & next-gen sequencing, liquid dispensing, ELISA and cell-based assays was 51-100 samples/batch.
- The median liquid handling requirements for a small-scale benchtop automated system were: 8 dispenser channels; 1µL minimum dispense volume needed; 500µL maximum dispense volume needed; and 10-50µL typical sample volume.
- The vessel respondents most want to use on a small-scale benchtop automated system was the 96-well plate.
- The accessory respondents most want to see available on a small-scale benchtop automated system was reagent reservoirs.
- Product reliability/robustness was rated as the factor which was most important in the choice of a vendor for a small-scale benchtop automated purchases.
- Respondent's level of awareness in some selected small-scale benchop automation systems was highest for Eppendorf epMotion 5070, Qiagen QIAcube and Tecan Freedom 75.
- The median annual CAPEX budget for small-scale benchtop automation today (2011) was $10K-$25K.
- Based on the mean CAPEX budgets for small-scale benchtop automation the global market for such instruments was estimated to be around $160M in 2011. The biggest proportion of this CAPEX budget was generic 'open' automation platforms. The segmentation of these markets and CAGR estimates were made.
- The most appealing vendors of small-scale benchtop automation were Eppendorf, Beckman Coulter and Qiagen. It was estimated that combined these 3 vendors had at least 1/3rd of the market.
- Most respondents expect to acquire a small-scale benchtop automation system over the next 3 years, with most purchases being from first time users.
- Some unmet needs in small-scale benchtop automation were documented.
- The full report provides the data, details of the breakdown of the responses for each question, its segmentation and a few estimates for the future (2014). It also highlights some differences between the survey groups.

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General Information on HTStec and HTStec's Trends Market Reports

- HTStec Limited an independent market research consultancy founded in September 2003 whose focus is on assisting clients delivering novel enabling platform technologies (liquid handling, laboratory automation, detection instrumentation and assay reagent technologies) to drug discovery. Over the past 7 years HTStec has published more than 50 market reports on drug discovery technologies and authored over 30 review articles in Drug Discovery World (at least one article per issue).
- HTStec's Trends reports owe their origins to the need by developers and vendors of new enabling technologies in drug discovery to get up-to-date relevant market metrics on which to base informed business decisions.
- Typically focused on a specific market niche or segment, in many cases overlooked or frequently misunderstood by broader market studies.
- Investigations are mainly initiated in response to a sponsor's specific requests.
- HTStec's extensive experience of the market, both as a Pharma End-User and working for a major Life Science Tool Provider ensures the industry relevance of the market research collected.
- Based entirely on web-based feedback from potential customers drawn mainly from Pharma and Biotechs, although increasingly University and Research Institute labs are also being researched.
- Produced extremely rapidly and typically published within 3 weeks of starting the collection phase.
- Reports are short, concise and focused on giving readers the basic data, analyzed in several different ways.
- Limited to reporting the main findings alone, without exhaustive discussion on the relevance of the results.
- Market estimates are mainly based on bottom-up calculations and usually avoid attempts to forecast widely beyond the next 2-3 years. Full details on the derivation of market estimates are given so readers can apply their own factors and easily make alternative estimates if they prefer.
- Owing to the sensitivity of some of the data collected, all reference to the origin of participating companies is removed, data is pooled to get an industry average and the anonymity of all respondents fully preserved and guaranteed.
- Critically HTStec's Trends reports have generated much interest and acclaim amongst survey respondents, to whom they are made available free of charge (subject to acceptance of HTStec's copyright terms) so they can benchmark their internal processes.
- Unlike alternatives HTStec's Market Surveys and Report are aimed at giving readers, information they want and can rely on, not information they don't need, cannot easily discern or is of dubious authenticity.
- HTStec aims to be the premier global provider of highly focused market research on enabling technologies in drug discovery.
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