On the road to automation, proceed with caution

Anne Ford

t's an old analogy, but an apt one: Automating a laboratory without first streamlining its processes is like paving a cowpath. Ignore that maxim, and your lab might end up meandering along a back road while others are zipping down the freeway. "The best way to start is to get rid of the inefficiencies. That can be accomplished without starting on automation," points out Peter Bambic, Ortho-Clinical Diagnostics worldwide product director for lab automation.

Ken Koziak, Dade Behring product manager for automation, agrees. "The marketplace is asking for an intelligent approach to automation, as opposed to 'automate everything,'" he says. "If you understand the workflow, you can identify the pinch points that cause the problems. Then you bring in automation to provide solutions."

It might seem odd to hear manufacturers advising labs to exercise restraint in purchasing their products, but it's common sense. These systems represent a big commitment—and if a laboratory ends up saddled with an expensive and ineffective process, it's going to be a very unhappy customer. So as a preemptive measure, many manufacturers try to give laboratories a preview of what automation will and won't do for them. "A lot of customers want to go into the what-if situation," says Abbott Laboratories' Darin Leigh, product development manager for perianalytics. "So we're very much into building simulation models of our automation. We can give our customer the actual throughput of our instrumentation based on their workload within 95 percent accuracy."

One factor fueling laboratories' commitment anxiety is the difficulty of predicting future needs. "The system needs to be expandable to cope with changing demands," says Thermo-Clinical sales manager Klas Vuorinen. Equally important, he says, is the ability to connect analyzers from different manufacturers to the system. "An investment in automation is longer than the life cycle of an analyzer," he says. "It's important for users to know that they can change the analyzers without having to change the whole automation system."

Bayer and PVT are just two of the vendors offering features designed to provide this kind of flexibility. PVT head of marketing and sales overseas Miriam Hoelzel says, "We're independent from any analyzer company, so the lab or hospital can use all the racks or tubes they have from the different analytic companies." Along similar lines, Bayer accepts "multiple size tubes all at the same time," says Bayer senior marketing manager Mike Iskra. "A lot of different automation systems allow you to accept only one size tube, and others will say you can accept various size tubes but you have to choose between one or another."

Still feeling phobic? Consider automation software rather than hardware. "A lot of people look at hardware as a solution when actually there's software out there that can serve the same purpose without the huge capital investment of bringing in a piece of automation," says Leigh. He sees more and more laboratories taking this approach. Besides, as Gary Hall, MDS director of automation systems, says pragmatically, "There has to be some software to track where those specimens are—and there is even more value in software that brings efficiencies to the analytical process."

For many laboratories, the real incentive for adopting automation lies in its labor-maximizing benefits, says Andy Hay, Sysmex director of marketing. "Most of the drivers we see towards automation somehow relate back to labor. Ten years ago we were talking about excess labor; now we're talking about gaps in the workforce and how to spread what you've got thinner." Ron Berman of Beckman Coulter draws an enticing picture of automation's labor advantages: "The specimen comes to the lab, it's got a bar-code label on it, they put it on the automation system, and the operator never has to worry about that specimen again until they dispose of it."

While automation can help a laboratory grow without increasing the size of its labor pool, it can, paradoxically, also help recruit and retain staff members. "You bring in automation, you allow labs to do more with less stress, and it's less stressful environments that attract and keep good people," Koziak says.

Manufacturers are trying to minimize some of the other, nonlabor laboratory resources an automation system requires as well. Tecan, for example, is trying to save laboratories floor space by keeping the footprint of its FE 500 system small. "It's mobile, and it doesn't require reconstruction. It's not like dropping 30 feet of metal in the middle of the laboratory," says Donna Crook, business unit manager for clinical diagnostics. "It's the size of an instrument, so it's 7 feet—it's very compact."

While pondering their automation choices, laboratories can look forward to new products and features from at least two companies, Roche and A&T. Peter Stegger, PhD, Roche marketing manager for laboratory integration, says his company will introduce new automation system features at this year's American Association for Clinical Chemistry meeting. "There's some promising things in the pipeline," he adds. Meanwhile, A&T's Akira Igarashi says his company is introducing an open modular automation system. The system was scheduled to go live in Japan at CAPTODAY press time.

CAPTODAY's lineup of laboratory automation systems includes products from the companies listed above and from AI Scientific, LAB-Interlink, and Olympus America. Vendors supplied the information listed. Readers interested in a particular system should confirm that it has the stated features and capabilities.

Anne Ford is CAP TODAY senior editor.

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Laboratory automation systems & workcells

Part 1 of 10	Abbott Laboratories Diagnostics Division Edward Mede ed.mede@abbott.com	Al Scientific Pty. Ltd. David Halstead david.halstead@aiscientific.com
	100 Abbott Park Rd.	10 Hornibrook Esp.
	Abbott Park, IL 60064-3500 847-937-3335	Liontari, uld 4019 Australia
Please see accompanying article on page 22	www.abbottdiagnostics.com	www.aiscientific.com
Name of cyctom/First year installed	EE 500/2000 (See also Topon listing part 10)	Dathfindar/1009
	re 500/2000 (See also recall listing, part 10)	Fauininuen/1990
Automation products that are available	netuce	1400/mg
Auto, centrifugation/Auto, input or accessioning	ves/ves	in development/ves
 Auto. decapping/Auto. sorting/Auto. storage and retrieval 	yes/yes/in development	yes/yes/yes
Specimen integrity monitor/Auto. aliquoting	yes/yes	in development/yes
Instrument (analyzer) Interfaces/Auto. recapping System architecture	no/no open system	no/yes open system
% of staff dedicated to clinical automation system	50%	n/a
% of budget dedicated to R&D for clin. auto. technology	15%	15%
Company's primary product category	lab automation systems Svhase SOL Anywhere/Windows NT/—/dynamic download, host query	laboratory automation systems Paradox Microsoft SOI server/Windows 95, 98, 2000, NT4/Windows
Database/Operating system/Server/User interface		2000 Server, NT4 Workstation/Borland C++, Borland Delphi
Software features/functionality		
Patient demographics & insurance data/Rules-based architecture	n/a/LAS SW feature	LAS SW feature/LAS SW feature
Supports data retrieval/Internet connectivity Surface real time halo system (00 (State 8 means remember accepted)	LAS SW feature/n/a	LAS SW feature/n/a
Evaluates validity and releasability of results from automated analyzers	n/a	LAS SW leature/—/LAS SW leature
Specimen tracking/Priority processing/Random-access specimen movement	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
Supports accession No. redundancy (duplicate specimen ID)	LAS SW feature	LAS SW feature
Supports specimen carrier and level identification Unique bar-code number per container required	n/a n/a	LAS SW Teature n/a
Specimen routing/Multistop routing (one tube to multiple workstations)	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Specimen scheduling/Instrument scheduling	n/a/n/a	n/a/n/a
 NOUTES TEST TO WORKSTATION/AUTOMATIC reflex, repeat, dilutions Supports multiple hardware config /Supports other proprietary transport, hardware 	LAS SW feature/n/a are LAS SW feature/n/a	LAS SW feature/— LAS SW feature/n/a
Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/—	LAS SW feature/LAS SW feature
LIS interfaces that are live/How LISs are interfaced with auto sys	Misvs, SCC, Cerner, Citation, McKesson, Trinle G. Molis, Per Se	Kestral, MelbPath, Trinle G. Anollo, Raver/ASTM. HI 7
	Meditech/ASTM	
No. of live sites installed in N. America/Outside N. America	36/51	/37
Transportation systems available	yes	no
Supports automatic rerouting for reflex/repeat/dilutions		_
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	_
Modular hardware/Installed options/Device functions independent of track Paguined utilities/Deguined maintenance	//_	
Carrier type/Scalable system	single specimen container per carrier/—	-
Automated centrifugation available	ves	in development
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	—/—/300 @ 10–min spin time	Mk2/—/550 tubes
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	16x100, 13x100, 16x75, 13x75, 12x75, 16x108
 For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available 		 Ves
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-//500	Mk2/yes/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, screw cap, rubber stopper, hemoguard	16x100, 13x100, 16x75, 16x108, 13x75, screw cap, rubber stopper
Automated decapping available • Version/Conforms to NCCLS Standards Auto 1-5/Ava, throughout*	yes /_/500	yes Mr2//500
Types of containers device can accommodate	//300 16x100, 13x100, 16x75, 13x75	16x100, 13x100, 16x75, 13x75, 12x75, 16x108
Automated sorting available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/—/500 16v100_13v100_16v75_12v75_anv_manufacturer's rack	Mk2/yes/500 tubes 16x100_13x100_16x75_13x75_12x75_16x108_anv vendor's rack
 Specimen integrity monitor available Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughout* 	yes 	in development
Types of containers device can accommodate	level sensing & clot detection	level sensing & clot detection
Automated aliquoting available	yes	yes
Version/Contorms to NGCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/—/— 13x75 prenackaged secondary tubes	MK2/—/500 16x100 13x100 16x75 13x75 aliquot can be 12x75 or 16x100
System inspects samples for bar code/Reports clots/Reports QNS specimens	yes/yes	yes/yes
Instrument (analyzer) interfaces		
Rules-based instrument interface control subsystem	-	no
Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface	_	no
Hematology/Chemistry/Coagulation	<i></i> //	<u> </u>
Immunoassay/Urinalysis	<i>—/—</i>	<i>—/—</i>
Instruments to which your system/product is interfaced	contact vendor	n/a, interfaces LIS only
Other robotic products/components to which system, product is linked	_	_
Automated recenter available	10	Vec
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		yes Mk2/yes/500
Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75
Automated storage and retrieval available	in development	no
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-	-
Iypes of containers device can accommodate Befrigeration available	_	
		storage
Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys /Who provides service and support/Hours support is available	contact vendor e 6 weeks/Tecan and authorized service providers/24/7	
On-site biomedical engineer required/User group meets regularly	no/—	no/no
List price	\$450k	_
Individual list prices for components		
Auto. centrifugation/Auto. input. accessioning	_	_
Auto documing (Auto conting (Auto storage & retrioval		
· Auto, decapping/Auto, sorting/Auto, storage & retrieval	_	-
Auto. decapping/Auto. Sorting/Auto. Storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyze) interfaces (Automated recomming		-
Auto, decapping/Auto, sorting/Auto, storage & redreval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping	_ _ _	_ _
Auto, decapping/Auto, sorting/Auto, storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping Distinguishing features	• flexibility, footprint, completely configurable	patented camera-based "correct specimen container" recognition
Auto. decapping/Auto. sorting/Auto. storage & retrievan Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping Distinguishing features	• flexibility, footprint, completely configurable	• patented camera-based "correct specimen container" recognition • delivers capped or uncapped daughter tubes in two sizes • large automated sorting table accepts up to 30 destinations

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Tabulation does not represent an endorsement by the College of American Pathologists.

Survey editors: Raymond Aller, MD; Rodney S. Markin, MD, PhD; Robin Felder, PhD

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Laboratory automation systems & workcells

	A&T Corp.	Bayer Diagnostics Mike Istra _ michael iskra h@bayer.com
Part 2 01 10	1799 Old Bayshore Hwy., Ste. 168	511 Benedict Ave.,
Please see accompanying article on page 22	Burlingame, CA 94010-1319 650-346-6543 www.aandt.co.jp	Tarrytown, NY 10591 914-333-6123 bayerdiag.com and labnews.com
Name of system/First year installed	Clinilog/1993	Advia LabCell/1998
Automation products that are available		
Process control software/Transportation systems	yes/yes	yes/yes
Auto. centrifugation/Auto. input or accessioning Auto. decapping/Auto. sorting/Auto. storage and retrieval	yes/yes ves/no/no	yes/yes ves/ves/ves (storage & manning)
Specimen integrity monitor/Auto. aliquoting	no/yes	no/in development
Instrument (analyzer) interfaces/Auto. recapping	yes/no	yes/no
System architecture	open system	open system
% of budget dedicated to Chindal automation system	10%	8%
Company's primary product category	laboratory automation systems, instruments and reagents, information sys.	laboratory solutions
Information systems technology for your automation system Database/Operating system/Server/User interface	SQL/Windows NT/Windows NT/Windows NT	SQL & Progress/Windows NT/Windows 2000/Bayer-user interface (proprietary)
Software features/functionality		
Patient demographics & insurance data/Rules-based architecture	LAS SW feature/LAS SW feature	LIS requirement/LAS SW feature
Supports data retrieval/Internet connectivity	LAS SW feature/LIS requirement	LAS SW feature/LIS requirement
• Unline real-time neip system/UC/Stats & management reports • Evaluates validity and releasability of results from automated analyzers	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
Specimen tracking/Priority processing/Random-access specimen movement	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
Supports accession No. redundancy (duplicate specimen ID)	LAS SW feature	via error management
Supports specimen carrier and level identification Inique bar-code number per container required	LAS SW feature	LAS SW feature
Specimen routing/Multistop routing (one tube to multiple workstations)	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Specimen scheduling/Instrument scheduling	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature (load balancing)
Koutes test to workstation/Automatic reflex, repeat, dilutions Supports multiple hardware config (Supports other proprietary transport, bordware)	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/LAS SW feature	LAS SW feature (database mgmt)/—
LIS interfaces that are live/How LISs are interfaced with auto sus	A&T. Triple G. TechniData/ASTM HI 7	SCL 2000. Misus, Lahzis II. LMX. Netliah Telenathuisoft OSL MPS/417 ASTM
No of live sites installed in N America/outcide N America	0/65	2/10
Transportation systems available	yes	yes
Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* Supports automatic recenting for reflex/report/allutions	2.0-3.0/yes/360	—/no/2,000
Supports automatic rerotung for renex/repear/unutons Types of containers device can accommodate	yes 16x100, 13x100, 16x75, 13x75	yes 16x100. 13x100. 16x75. 13x75. 11.5–16.2 mm (diam.) & 75–100 mm (ht.)
Modular hardware/Installed options/Device functions independent of track	yes/floor mounted/yes	yes/floor mounted/yes
Required utilities/Required maintenance	electricity/quarterly	compressed air, electricity/weekly, monthly, quarterly, annually
Carrier type/Scalable system	single specimen container per carrier/yes	single specimen container per carrier/yes
Automated centrifugation available	yes /ugc/250	yes //240
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/yes/250 16x100, 13x100, 16x75, 13x75	—/—/240 11.5–16.2 mm (diam) & 75–100 mm (ht.)
• For multi-unit centrifuges, each cent. operates independently for rate and time	yes	yes
Automated input/accessioning available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/yes/300 16x100, 13x100, 16x75, 13x75	—/10/600 16x100, 13x100, 16x75, 13x75, 11,5–16,2 mm (diam.) & 75–100 mm (ht.)
Automated decapping available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	—/yes/350	—/—/240
Iypes of containers device can accommodate Automated sorting available	16x100, 13x100, 16x75, 13x75 no	11.5–16.2 mm (diam) & 75–100 mm (nt.); cap, plug, screw top
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		/no/600
Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.)
• Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughout*	no 	within each instrument
Types of containers device can accommodate	-	_
Automated aliquoting available	yes	in development
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/yes/250 16x100 13x100 16x75 13x75	_
System inspects samples for bar code/Reports clots/Reports QNS specimens	yes/yes	_
Instrument (analyzer) interfaces		
Rules-based instrument interface control subsystem	yes	yes
Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface	yes	no (nign level only)
Hematology/Chemistry/Coagulation	ptof-reference sampling/ptof-reference sampling/ptof-reference	robotic arm interface/ptof-reference sampling/robotic arm interface
a Immunaceant/Ukinghaia	sampling	nt of reference compliant 9 relation arm interface (hath quail)/
• Immunoassay/orinalysis	ptof-reference sampling/ptof-reference sampling	ptof-reference sampling & robotic arm interface (both avail.)/ ptof-reference sampling
Instruments to which your system/product is interfaced	Bayer Advia 1650, Centaur; Coulter Gen-S; Abbott Aeroset i2000:	Bayer: Advia 120, 1650, 2400, & Centaur; Clinitek Atlas, Immuno1.
	Tosoh Al21; A&T 502X	Stago STA-R
Uther robotic products/components to which system, product is linked	-	none
Automated recapper available	no	no
Types of containers device can accommodate	_	_
Automated storage and retrieval available	no	software tracking retrieval
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-	_
Iypes of containers device can accommodate Betrineration available		 no
Longitudinal upgrade pathway or plan to protect users' investments	scalable modular automation can be designed from front-end workcell	can contain as few as two interfaced modules/instruments & can be
	until full-scale TLA format; step wise construction or upgrade by LAN-	expanded to include up to 16 interfaced modules/instruments; open
Ave, time to install sys./Who provides service and support/Hours support is available	like information technology possible 1 week/A&T or designated service engineer/depends on contract	system allows for instrument exchanges 1 month/Baver Diagnostics/24/7
On-site biomedical engineer required/User group meets regularly	no/no	no/yes
List price	_	varies by configuration
Individual list prices for components		
	—,— —/—	_,
Auto. decapping/Auto. sorting/Auto. storage & retrieval	_/_/	_/_/
Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recogning	—/— —/—	—/— —/—
Distinguishing features (supplied by vendor)	open modular automation bigh_speed single tube transportation	a menu of modules from which to design an individual solution customizable and reconfigurable on packs shares
	 Ingit-spectro single tube it ansportation LAN-like information technology realizes single connection to LIS and 	 allows customer to plan and manage around their changing needs
* Ave. throughput in specimen containers per hr per device	flexible upgrade	single LIS connection for system and instruments

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Laboratory automation systems & workcells

		Bayer Diagnostics	Beckman Coulter
	Part 3 of 10	Mike Iskra michael.iskra.b@bayer.com	Ron Berman rberman@beckman.com
	Places and accompanying article on page 22	511 Benedict Ave., Tarrytown, NY 10591	200 S. Kraemer Blvd., Brea, CA 92821
	r icase see accompanying arnicle on paye 22	JIY-JJJ-CILJ DAYELUIAY.COITI AILU IADREWS.COITI	/ 14-333-001/ www.Deckinalicounter.com
	Name of system/First year installed	Advia WorkCell (chemistry & immunoassay instruments)/2000	Power Processor/1994
ŀ			
	Automation products that are available	washing	una huna
	Auto, centrifugation/Auto, input or accessioning	yes/yes no/ves	yes/yes ves/ves
	Auto, decapping/Auto, sorting/Auto, storage and retrieval	no/yes/ves (storage & mapping)	ves/ves
	Specimen integrity monitor/Auto. aliquoting	no/no	yes (available in analyzer)/yes
	 Instrument (analyzer) interfaces/Auto. recapping 	yes/no	yes/yes
	System architecture	closed system	open system
	% of statt dedicated to clinical automation system % of hudget dedicated to R&D for clin, auto, technology	8%	0% 7%
	Company's primary product category	laboratory solutions	lab automation systems and instruments/reagents
	Information systems technology for your automation system	SQL & Progress/Windows NT/Windows 2000/Bayer-user interface (proprietary)	SQL/Windows NT/client server/Windows
	Database/Operating system/Server/User interface		
ŀ	Software features/functionality		
	Patient demographics & insurance data/Bules-based architecture	LIS requirement/LAS SW feature	LAS SW feature. LIS requirement/LAS SW feature
	• Supports data retrieval/Internet connectivity	LAS SW feature/LIS requirement	LAS SW feature/LAS SW feature
	 Online real-time help system/QC/Stats & management reports 	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
	Evaluates validity and releasability of results from automated analyzers Specimen tracking (Drighthy processing (Dendem, access analyzers)	LAS SW feature	LAS SW feature
	Specimen tracking/Priority processing/Kandom-access specimen movement Supports accession No. redundancy (duplicate specimen ID)	LAS SW Teature/LAS SW Teature/LAS SW Teature via error management	LAS SW teature/LAS SW teature/LAS SW teature
	• Supports specimen carrier and level identification	LAS SW feature	LAS SW feature
	Unique bar-code number per container required	LAS SW feature	LAS SW feature
	 Specimen routing/Multistop routing (one tube to multiple workstations) 	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
	Specimen scheduling/instrument scheduling Boutes test to worksteller (Automotio softer, second, dilutions)	LAS SW feature/LAS SW feature (load balancing)	LAS SW feature/LAS SW feature
	 nouces cest to workstation/Automatic reflex, repeat, and the non- supports multiple hardware confin /Supports other proprietary transport hardware 	LAS SW Teature/LAS SW Teature	LAS SW leature/LAS SW leature
	Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature (database mgmt)/—	LAS SW feature/LAS SW feature
-		,	
	LIS interfaces that are live/How LISs are interfaced with auto. sys.	Cerner PathNet & Millennium & Citation, Misys, Antrim, Meditech, NetLab,	Antrim, Bayer, Cerner, FlexLab, McKesson, Medisolution, Meditech, others/
		Data Innovations, SCC Softlab, Per Se, others/ASTM, HL7	direct with LIS, consolidated download or listen on analyzer line
	No, of live sites installed in N. America/Outside N. America	52/26	180/85
	Transportation systems available	yes	yes
	 Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	—/no/2,000	3/yes/900
	 Supports automatic rerouting for reflex/repeat/dilutions 		yes
	 Types of containers device can accommodate Modular bardware/installed ontions/Device functions independent of track 	16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) ves/floor mounted/ves	16X100, 13X100, 16X75, 13X75
	Required utilities/Required maintenance	compressed air. electricity/weekly. monthly. guarterly. annually	compressed air. electricity/monthly
	• Carrier type/Scalable system	single specimen container per carrier/yes	single specimen container per carrier/yes
ŀ	Automated contribution qualitable		
	Automated centritugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughput*	no 	yes 3/ves/300_450
	Types of containers device can accommodate	_	16x100. 13x100. 16x75. 13x75
	• For multi-unit centrifuges, each cent. operates independently for rate and time	_	yes
	Automated input/accessioning available	yes	yes
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		3/yes/900
	Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.)	16x100, 13x100, 16x75, 13x75
	Version/Conforms to NCCI S Standards Auto 1-5/Ave. throughout*		yes 3/ves/600
	Types of containers device can accommodate	_	16x100, 13x100, 16x75, 13x75
	Automated sorting available	yes	yes
	 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 		3/yes/500
	Iypes of containers device can accommodate Specimen integrity monitor available	16x100, 13x100, 16x/5, 13x/5, 11.5–16.2 mm (diam.) & /5–100 mm (nt.) within each instrument	16X100, 13X100, 16X75, 13X75
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		-/ves/90
	Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75
	Automated aliquoting available	no	yes
	Version/Conforms to NGCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	_	3/yes/450 16v100 13v100 16v75 13v75
	System inspects samples for bar code/Reports clots/Reports ONS specimens	_	ves/ves
-	· · · · · · · · · · · · · · · · · · ·		
	Instrument (analyzer) interfaces	100	100
	 nuies-based instrument interface control subsystem Process control of instrument via control subsystem 	yes no (hinh level only)	yes ves
	Physical/hardware (instrument/specimen) interface	ווס נוואו ובעבו טוואן	<u>j</u> 03
	Hematology/Chemistry/Coagulation	n/a/ptof-reference sampling/n/a	ptof-ref. sampling & robotic arm interf./ptof-ref. sampling & robotic arm
			interf./ptof-ref. sampling & robotic arm interf.
	• Immunoassay/Urinalysis	ptor-reference sampling/n/a	ptot-ret. sampl. & robot. arm intert./ptof-ref. sampl. & robot. arm interf.
	Instruments to which your system/product is interfaced	Bayer: Advia 1650, 2400, & Centaur	Abbott Architect; Bayer Centaur, Atlas; Beckman Coulter: LX20. DXI 800.
		- , ,	LH 750; Ortho: Vitros 950 & 250; Roche Modular; Stago Star; Sysmex
			CA-6000, VA 2000
	Other robotic products/components to which system, product is linked	none	-
	Automated recapper available	no	Ves
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-	3/yes/500
	Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75
ŀ	Automated storage and retrievel evolution	coffuero tracking ratricual	1/00
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughout*	outwale uduking leuleval	ycs 3/ves/—
	Types of containers device can accommodate	_	16x100, 13x100, 16x75, 13x75
	Refrigeration available	no	yes
	Longitudinal upgrade pathway or plan to protect users' investments	future chemistry & immunochem. systems from Bayer will be compatible;	all systems may be upgraded (software & hardware) due to modular
	Ave time to install svs (Who provides service and support/Hours support is available	can be upgraded to LabGell 2 weeks/Raver Diagnostics/24/7	uesign (nw) and new somware versions 7-30 days/Beckman Coulter (worldwide)/2//7
	On-site biomedical engineer required/User aroup meets requiarly	2. 110003/2010 2103/24/7 NO/Yes	no/yes
-			
	List price	varies by configuration	depends on configuration
	Individual list prices for components Process control software/Transportation systems		contact vendor
	Auto, centrifugation/Auto, input, accessioning	_/	contact vendor
	Auto. decapping/Auto. sorting/Auto. storage & retrieval	<i>_/_/_</i>	contact vendor
	Specimen integrity monitor/Automated aliquoting	—/ <u>—</u>	contact vendor
	 Instrument (analyzer) interfaces/Automated recapping 	—/—	contact vendor
	Distinguishing features (sunnlied by vendor)	• instruments can operate senarately from track for backup	refrigerated storage with recanning & auto rerun
	guioning reasoned (oupprion of folidor)	 pre- and postanalytical sorting capability 	 totally open system—connects to any manufacturer's analyzers
		single-tube carrier vs. rack carrier	• intelligent aliquoting-measures serum volume and transfers based on
		upgradability allows customers to grow into a larger system or Advia LabCell	poriority, dead volume, & requested test volume
	* Ave. throughput in specimen containers per hr per device	 single LIS connection for system & instruments 	

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Laboratory automation systems & workcells

	Dada Dahalara kua	LAD lader link has
David of 10	Dade Behring Inc. Ken Koziak	LAB-InterLink Inc.
Part 4 01 10	Glasgow Business Community	1011 S. Saddle Creek Rd.
	P.O. Box 6101, Newark, DE 19714-6101	Omaha, NE 68106-1943
Please see accompanying article on page 22	302-631-9440 www.dadebehring.com	800-449-2527/402-595-3767 www.labinterlink.com
Name of system/First year installed	StreamLab Analytical Workcell/2002	LAB-Frame/1996
Automation products that are available Process control software/Transportation systems	vec/vec	vec/vec
Auto, centrifugation/Auto, input or accessioning	ves/yes	ves/ves
Auto. decapping/Auto. sorting/Auto. storage and retrieval	yes/yes/no	yes/yes
Specimen integrity monitor/Auto. aliquoting	yes/yes	yes/yes
Instrument (analyzer) interfaces/Auto. recapping System architecture	yes/no open system	yes/yes onen svetem
% of staff dedicated to clinical automation system		100%
% of budget dedicated to R&D for clin. auto. technology	-	15%
Company's primary product category	instruments and reagents	laboratory automation systems
Information systems technology for your automation system	proprietary file system/windows N1/n/a/Labview touchscreen guide	Uracie/Unix/Compaq DS-10 or DS-20/Uracie Forms-GUI
Software features/functionality		
Patient demographics & insurance data/Kules-based architecture Supports data ratriaval/Internet connectivity	LAS SW feature, LIS requirement/LAS SW feature	LAS SW feature/LAS SW feature
Online real-time help system/QC/Stats & management reports	LAS SW feature/LAS SW feature/n/a	LAS SW feature/LAS SW feature
• Evaluates validity and releasability of results from automated analyzers	LIS requirement	LIS requirement
Specimen tracking/Priority processing/Random-access specimen movement	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
Supports accession No. regundancy (duplicate specimen ID) Supports specimen carrier and level identification	N/a LAS SW feature	LAS SW feature
Unique bar-code number per container required	LAS SW feature, LIS requirement	LAS SW feature
Specimen routing/Multistop routing (one tube to multiple workstations)	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Specimen scheduling/Instrument scheduling Boutes test to workstation (Automatic antinum state)	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
nouces lest to workstation/Automatic reflex, repeat, dilutions Supports multiple hardware config /Supports other proprietary transport, hardware	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
LIS interfaces that are live/How LISs are interfaced with auto. sys.	Cerner, Meditech, SCC, Olanonea, Horus/—	Misys 5.2 & 5.2.3, Cerner, SCC, Meditech, McKesson, ALG, Rubicon, Triple G. PGP. Philips. MIPS/HL7. ASTM
	FIG	00/4
NU. OT IVE SITES INSTALLED IN N. AMERICA/UUTSIDE N. AMERICA Transportation systems available	0/0 Ves	20/4 VPS
Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*	StreamLab/yes/300	current/yes/1,000
Supports automatic rerouting for reflex/repeat/dilutions	yes	yes
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	16x100, 13x100, 13x75, 12x75
Modular hardware/installed options/Device functions independent of track Required utilities/Required maintenance	yes/1100r mounted/yes compressed air_electricity/weekly	yes/floor, overhead, & subfloor mounted/yes electricity/guarterly
Carrier type/Scalable system	single specimen container per carrier/yes	single specimen container per carrier/yes
Automated centritugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughout*	yes Streaml ab/yes/300	yes current/ves/200_500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, handles intermixed sizes simultaneously	16x100, 13x100, 13x75
• For multi-unit centrifuges, each cent. operates independently for rate and time	yes	yes
Automated input/accessioning available	yes Streaml ab (vac /200	yes
Version/comornis to NCCLS Standards Auto 1-5/Ave. unoughput Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, handles intermixed sizes simultaneously	16x100. 13x100. 13x75
Automated decapping available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	StreamLab/yes/300	current/yes/250-400
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, handles intermixed sizes simultaneously	16x100, 13x100, 13x75, 12x75
Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughput*	StreamLab/ves/300	current/ves/400
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, handles intermixed sizes simultaneously	16x100, 13x100, 13x75
Specimen integrity monitor available	yes, clot detection & sample level sensing, HIL check	yes
Version/Conforms to NGCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	_	aipna/yes/400 16x100 13x100 13x75
Automated aliquoting available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	Dimension sample transfer module/yes/480 (4 analyzers)	current/yes/75 primaries per hr; 225 secondaries per hr; 1:3 ratio
Types of containers device can accommodate System inspects samples for har code/Reports clots/Reports ONS specimens	16x100, 13x100, 16x75, 13x75 ves/ves	16x100, 13x100, 13x75 ves/ves. with alignoter/ves. with alignoter
	,,,	Jos, Joo,
Instrument (analyzer) interfaces Rules-based instrument interface control subsystem	ves	ves
Process control of instrument via control subsystem	yes	yes
Physical/hardware (instrument/specimen) interface		
Hematology/Chemistry/Coagulation Immunoassav/Urinalvsis	in development for Sysmex CA-7000 in development for DPC Immulite 2000	robotic arm interface/ptof-reference sampling/robotic arm interface ptof-reference sampling, robotic arm interface/no
Instruments to which your system/product is interfaced	Dade Behring Dimension RxL Max Integrated Chemistry System	Urtho Vitros 950AT & 250AT; Roche Hitachi 912; Bayer Centaur & Immuno-1: Abbott Architect 2000. Cell Dyn 4000: II. MLA 1600C: MDA
		180; Sysmex HST; Diagnostica Stago STA-R; DPC Immulite 2000; others
Other robotic products/components to which system, product is linked	-	customizable to client's needs
Automated recapper available	no	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-	current/yes/750
Iypes of containers device can accommodate	-	10x100, 13x100, 13x75, 12x75
Automated storage and retrieval available	yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	StreamLab/yes/300	current/yes/300
I ypes of containers device can accommodate Refrigeration available	10x100, 13x100, 16x/5, 13x/5 no	10x100, 13x100, 13x/5, 12x/5
Longitudinal upgrade pathway or plan to protect users' investments	modular systems can change/grow with user needs	easily upgraded
Ave. time to install sys./Who provides service and support/Hours support is available	5 days/Dade Behring/24/7	2 weeks/LAB-InterLink/24/7
Un-site biomedical engineer required/User group meets regularly	no/yes	no/no
List price	contact Dade Behring representative for all pricing information	_
Individual list prices for components		
Process control software/Transportation systems	—/— —/—	—/— /
Auto, decapping/Auto, sorting/Auto, storage & retrieval	,	
Specimen integrity monitor/Automated aliquoting	—/ <u>—</u>	<i>—/—</i>
Instrument (analyzer) interfaces/Automated recapping	<i>—/—</i>	<i>—/—</i>
Distinguishing features (supplied by vendor)	analytical workcell links to multiple Dimension RvL systems via	LAB-Manager—advanced software system yields process control
g-terming termine (wapping b) termini	single operater interface for multi-tasking & workload management	for open-
	automated pre- & post-analytical functions	connectivity lab
	 Intelligent software routes samples to optimize throughput & turnaround time 	 Iong-term protection due to unbiased, open support from any manufacturer: convenient plug and play modularity.
* Ave. throughput in specimen containers per hr per device	 space efficient & open architecture can be customized 	
	•	

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Laboratory automation systems & workcells

	MDS Laboratory Services	Olympus America Inc.
Part 5 of 10	Gary Hall ghall@mdsintl.com	Hiroshi Sekiya hiro.sekiya@olympus.com
	100 International Blvd., Toronto, Ontario M9W 6J6 Canada	Two Corporate Center Dr., Melville, NY 11747-3157
Please see accompanying article on page 22	416-6/5-6/// www.masax.com	800-223-0125 www.olympus.com
Name of system/First year installed	AutoLab System/1994	Olympus OLA2500 High Speed Sorter/2004
Automation products that are available		
Process control software/Transportation systems Auto contribution/Auto input or cooperioring	yes/yes	no/no
Auto, decanning/Auto, sorting/Auto, storage and retrieval	ves/ves/ves (software only)	ves/ves
• Specimen integrity monitor/Auto. aliquoting	no/no	in development/no
 Instrument (analyzer) interfaces/Auto. recapping 	yes/yes	yes/in development
System architecture	open system	open system
% of staff dedicated to clinical automation system % of budget dedicated to R&D for clin, auto, technology	n/a n/a	_
Company's primary product category	health & life sciences	instruments/reagents
Information systems technology for your automation system	MS SQL server, relational/Windows 2000 server & workstation/Intel-	Microsoft Access/Windows NT//touch-screen, keyboard, touchpad
Database/Operating system/Server/User interface	based Enterprise servers/graphical Windows based	
Software features/functionality		
Patient demographics & insurance data/Rules-based architecture	LIS requirement/LAS SW feature	LAS SW feature. LIS requirement/LAS SW feature
Supports data retrieval/Internet connectivity	LAS SW feature/n/a	LAS SW feature/LAS SW feature
 Online real-time help system/QC/Stats & management reports 	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LIS requirement/n/a
Evaluates validity and releasability of results from automated analyzers Specimon tracking/Priority processing/Pandom-access specimon movement	LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature	LIS requirement
• Supports accession No. redundancy (duplicate specimen ID)	n/a	LAS SW feature/LAS SW feature/LAS SW feature
• Supports specimen carrier and level identification	LAS SW feature	LAS SW feature
 Unique bar-code number per container required 	LAS SW feature	no
 Specimen routing/Multistop routing (one tube to multiple workstations) Specimen scheduling (Instrument scheduling) 	LAS SW feature/LAS SW feature	LAS SW feature/LIS requirement
Specifien scheduning/histrament scheduning Autes test to workstation/Automatic reflex_repeat_dilutions	1/d/1//a I AS SW feature/I AS SW feature	LAS SW feature/LIS requirement
• Supports multiple hardware config./Supports other proprietary transport. hardware	LAS SW feature/n/a	LAS SW feature/n/a
 Storage retrieval & disposal/Supports approved NCCLS standards 	LAS SW feature/partially	LAS SW feature/LAS SW feature
LIC interfaces that are live/liew LICs are interfaced with suits and	Maditaah Trinla C. Duhiaan LahCam Carner Olassis (1117	Corner Mieue Data Innovationa/000200 naturale Olympus interfere
LIS INTELLACES THAT ALE INFELHOW LISS ARE INTELLACED WITH AUTO. SAS.	weuteen, Triple &, Rubicon, Labuern, Gerner Glassic/HL/	cemer, wisys, Data innovations/k52326, network, Utympus Interface format/conforms to ASTM 1381-91
No. of live sites installed in N. America/Outside N. America	7 HW & SW; 7 SW only/0	0/2
I ransportation systems available • Version/conforms to NCCLS Standards Auto 1_5/Aug. throughout*	yes II/nartially/1 000 or 2 000 per br	
Supports automatic rerouting for reflex/repeat/dilutions	Ves	_
• Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 12x75	_
 Modular hardware/Installed options/Device functions independent of track 	yes/floor mounted/yes	yes/floor mounted/yes
Required utilities/Required maintenance Convigentume/Seelable gueterm	compressed air, electricity/weekly	electricity/semiannual
	single spec. cont. carriers that can be converted into inditiple/yes	-/call be mourned to standard system with anquoting
Automated centrifugation available	no	no
 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	-	-
Types of containers device can accommodate For multi-unit contributes, each cont, operates independently for rate and time	_	_
Automated input/accessioning available		
 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	ll/partially/2,000 per hr	—/yes/1,200
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 12x75	16x100, 13x100, 16x75, 13x75 & 10.5–17 mm diam., 70–110 mm ht.
Automated decapping available	yes II/partially/1.000	yes /// 200
Types of containers device can accommodate	16x100. 13x100. 16x75. 13x75. 12x75	
		Vacutainer, BD Hemoguard, Sarstedt monovette, screw top closures, all
		at same time, Terumo foil top with optional unit
Automated softing available Version/Conforms to NCCI S Standards Auto 1-5/Ave_throughput*	yes II/nartially/1 000	yes —/ves/1 200
• Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 12x75	16x100, 13x100, 16x75, 13x75, 10.5–17 mm diam., 70–110 mm ht.,
		sorting to any mftr's sample holder
Specimen integrity monitor available	no	no
Version/conforms to NGCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	_	_
Automated aliquoting available	no	no
 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	-	-
Types of containers device can accommodate System inspects commode for her code/Penette clete/Penette ONS enceimente		
• System inspects samples for bar code/hepoits clots/hepoits QNS specifiens		yes/110/yes
Instrument (analyzer) interfaces		
Rules-based instrument interface control subsystem	yes	no
 rrocess control of instrument via control subsystem Physical/hardware (instrument/specimen) interface 	yes	liu sorts to any analyzer rack
Hematology/Chemistry/Coagulation	—/ptof-reference/—	sorts to any analyzer rack
• Immunoassay/Urinalysis	ptof-reference/—	sorts to any analyzer rack
Instruments to which your system/product is interfaced	Sucmay 2100/LASC: OCD Vitras: Dade Dimension BYL/MAY: Bayer	
monuments to which your system/product is internated	Centaur; Abbott AxSym & Cell Dyn; Roche Integra: Coulter STKS/GEN-S.	
	Immulite 2000	
Other robotic products/components to which system, product is linked	n/a	-
Automated recapper available	VPS	in development
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	II/partially/1,000	
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 12x75	-
Automated storage and retrieval available	software only	Ves
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		
Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75, 10.5–17 mm diam., 70–110 mm ht.
Refrigeration available		no
Longuatinal upgrade pathway or plan to protect users' investments Ave. time to install sys /Who provides service and support/Hours support is available	ow upgrades provided anually under support agreements 4 weeks/MDS/24/7	upen, modular systems are compatible with most instruments/systems 1 week/Olympus America Inc. Diagnostic Systems Group/24/7
On-site biomedical engineer required/User group meets regularly	no/no	no/—
		40-21
List price	n/a	\$250k
Process control software/Transportation systems	n/a	n/a
Auto. centrifugation/Auto. input, accessioning	n/a	n/a
Auto. decapping/Auto. sorting/Auto. storage & retrieval	n/a	n/a
Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recaming	n/a n/a	n/a n/a
איטע אוויטוע (עוועראבטר) אווטרומטכט/אענטוומנטע וכטמאָטווע 	174	10.4
Distinguishing features (supplied by vendor)	• specimen transport carriers (STC) snap together for use throughout	• fastest throughput of its kind currently in the market
	client's operation	 cap color recognition and sample level detection modules
	a strong boliof and focus in value and development of out of our	a gooy to change configurations from control
* Ave. throughout in specimen containers per briner device	strong belief and focus in value and development of automation SW auto, tools and lab mamt, expertise to customize tools for client	 easy-to-change configurations, from sorter/decapper to archive preparation

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For more information from Genentech, circle No. 43 on card

Laboratory automation systems & workcells

	Olympus America Inc.	Ortho-Clinical Diagnostics
Part 6 of 10	Hiroshi Sekiya hiro.sekiya@olympus.com Two Corporate Center Dr., Melville, NY 11747-3157	Melissa Heard mheard@ocdus.jnj.com 1001 US Hwy 202, Raritan, NJ 08869
Please see accompanying article on page 22	800-223-0125 www.olympus.com	908-218-8480 www.orthoclinical.com
Name of system/First year installed	Olympus OLA2500/2001	enGen Series Automation Systems, designed and manufactured by Thermo Electron Corp./2000
Automation products that are available Process control software/Transportation systems	no/no	yac/yac
Auto. centrifugation/Auto. input or accessioning	no/yes	yes/yes
Auto. decapping/Auto. sorting/Auto. storage and retrieval Specimen integrity monitor/Auto. aliguoting	yes/yes in development/ves	yes/yes/no no/ves
Instrument (analyzer) interfaces/Auto. recapping	yes/in development	yes/no
System architecture % of staff dedicated to clinical automation system	open system —	open system n/a
% of budget dedicated to R&D for clin. auto. technology		n/a
Information systems technology for your automation system	Microsoft Access/Windows NT/—/touch-screen, keyboard, touchpad	Object database/Windows XP/—/GUI
Database/Operating system/Server/User interface		
Software features/functionality Patient demographics & insurance data/Rules-based architecture 	LAS SW feature. LIS requirement/LAS SW feature	LIS requirement/n/a
Supports data retrieval/Internet connectivity Online real time hale outern (00 (tete % management reports)	LAS SW feature/LAS SW feature	LAS SW feature/n/a
 Evaluates validity and releasability of results from automated analyzers 	LIS sw leading/Lis requirement/1/a	LIS requirement
Specimen tracking/Priority processing/Random-access specimen movement Supports accession No. redundancy (duplicate specimen ID)	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
Supports specimen carrier and level identification	LAS SW feature	LAS SW feature
Unique bar-code number per container required Specimen routing/Multiston routing (one tube to multiple workstations)	NO LAS SW feature/LIS requirement	LAS SW feature
Specimen scheduling/Instrument scheduling	LAS SW feature/LIS requirement	LAS SW feature/LAS SW feature
Routes test to workstation/Automatic reflex, repeat, dilutions Supports multiple hardware config /Supports other proprietary transport, hardware	LAS SW feature/n/a LAS SW feature/n/a	LAS SW feature/LIS requirement
Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/LAS SW feature	n/a/LAS SW feature
LIS interfaces that are live/How LISs are interfaced with auto. sys.	Cerner, Misys, Data Innovations/RS232C, network Olympus interface format/conforms to ASTM 1381-91	—/HL7 or ASTM
No. of live sites installed in N. America/Outside N. America	5/120	<i>!</i>
Transportation systems available • Version/conforms to NCCLS Standards Auto 1-5/Ave_throughput*	no 	yes —/ves/500
Supports automatic rerouting for reflex/repeat/dilutions	_	yes
Types of containers device can accommodate Modular hardware/installed ontions/Device functions independent of track		16x100, 13x100, 13x75, 13x100 ves/floor mounted/no
Required utilities/Required maintenance	electricity/semiannual	compressed air, electricity/—
Carrier type/Scalable system	—/standard config. expands to twin-sorter or tandem with 2x capacity	single specimen container per carrier/yes
Automated centrifugation available Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughput*	no	yes —/ves/un to 400 samples
• Types of containers device can accommodate	<u> </u>	13x100, 13x75
For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available		
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	—/yes/800	—/yes/up to 500
Types of containers device can accommodate Automated decapping available	16x100, 13x100, 16x75, 13x75, 10.5–17 mm diam., 70–110 mm ht. ves	16x100, 13x100, 13x75, 16x75 ves
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	-/yes/	-/yes/up to 500
Types or containers device can accommodate	BD Vacutainer, BD Hemoguard, Sarstedt monovette, screw-top closures, all at same time, Terumo foil top w/ optional unit	16X100, 13X100, 13X75, 16X75
Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	yes —/ves/800	yes —/ves/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 10.5–17 mm diam., 70–110 mm ht.,	16x100, 13x100, 13x75, 16x75
Specimen integrity monitor available	no	no
Version/Conforms to NGCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	_	-
Automated aliquoting available	yes (SEO	yes
Version/conforms to NUCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	—/yes/650 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht.	—/yes/up to 240 samples 16x100, 13x100, 13x75, 16x75
System inspects samples for bar code/Reports clots/Reports QNS specimens	yes/yes	yes/yes
Instrument (analyzer) interfaces Rules-based instrument interface control subsystem 	no	ves
Process control of instrument via control subsystem Physical/hardware (instrument/snecimen) interface	NO sorts to any analyzer rack	
Hematology/Chemistry/Coagulation	sorts to any analyzer rack	point-of-reference sampling & robotic arm interface for all three
Immunoassay/Urinalysis	sorts to any analyzer rack	point-of-reference sampling & robotic arm interface for both
Instruments to which your system/product is interfaced	-	Ortho Vitros 950AT, 250AT; Bayer Advia 1650; Abbott Architect; Konelab 30i & 60i. Roche Modular
Other robotic products/components to which system, product is linked	-	_
Automated recapper available	in development	in development
Version/conforms to NUCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	_	_
Automated storage and retrieval available • Version/Conforms to NCCLS Standards Auto 1-5/Ava, throughout*	yes —/ves/800	yes —/ves/un to 500 samples
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, 10.5–17 mm diam., 70–110 mm ht.	16x100, 13x100, 13x75, 16x75
Kerrigeration available Longitudinal upgrade pathway or plan to protect users' investments	no open, modular systems are compatible with most instruments/systems	_
Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly	1–2 weeks/Olympus America Inc. Diagnostic Systems Group/24/7 no/no	1–2 weeks/Ortho-Clinical Diagnostics/24/7 no/no
List price	\$350k	\$400k-\$2M, depends on configuration
Process control software/Transportation systems	_	available upon request/available upon request
Auto. centrifugation/Auto. input, accessioning Auto. decanning/Auto. sorting/Auto. storage & ratriaval	_	available upon request/available upon request
Specimen integrity monitor/Automated aliquoting	_	available upon request/available upon request
Instrument (analyzer) interfaces/Automated recapping	-	available upon request/available upon request
Distinguishing features (supplied by vendor)	 fast throughput, high capacity, open system sorting to any manufacturer racks 	 upgradable—phased implementation is built into design versatile—process control provides continuous sample tracking
* Ave throughout in openimen containers are by any device	uninterrupted processing with access to output samples organdable configuration to fit update access to act access to access the access the access to access the a	flexible—open system can be interfaced to variety of different analyzers
Ave. unoughput in specimen containers per fir per device	- expanuable configuration to ne various needs	

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Laboratory automation systems & workcells

Part 7 of 10	PVT LabSystems LLC info@pvtlabsystems.com 225 Peachtree St. NE, Ste. 506 Atlanta, GA 30303 404-586-6837	PVT LabSystems LLC info@pvtlabsystems.com 225 Peachtree St. NE, Ste. 506 Atlanta, GA 30303 404-586-6837
Please see accompanying article on page 22	www.pvtlabsystems.com	www.pvtlabsystems.com
Name of system/First year installed	Auquoting System RSD 800A/2002	workstation/2003
 Automation products that are available Process control software/Transportation systems Auto. centrifugation/Auto. input or accessioning Auto. decapping/Auto. sorting/Auto. storage and retrieval Specimen integrity monitor/Auto. aliquoting Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface 	yes/yes yes/yes yes/yes (via software) yes/yes yes (via software)/yes open system 100% 80% of annual investment laboratory automation systems ISAM/QNX (Linux)/—/GUI	yes/yes yes/yes yes/yes (via software) yes/yes yes (via software)/yes open system 100% 80% of annual investment laboratory automation systems ISAM/QNX (Linux)/—/GUI
Software features/functionality Patient demographics & insurance data/Rules-based architecture Supports data retrieval/Internet connectivity Online real-time help system/QC/Stats & management reports Evaluates validity and releasability of results from automated analyzers Specimen tracking/Priority processing/Random-access specimen movement Supports accession No. redundancy (duplicate specimen ID) Supports specimen carrier and level identification Unique bar-code number per container required Specimen routing/Multistop routing (one tube to multiple workstations) Specimen scheduling/Instrument scheduling Routes test to workstation/Automatic reflex, repeat, dilutions Supports multiple hardware config./Supports other proprietary transport. hardware Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/n/a/LAS SW feature n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature n/a LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/n/a LAS SW feature/n/a	LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature n/a LAS SW feature LAS SW feature LAS SW feature/LAS SW feature
LIS interfaces that are live/How LISs are interfaced with auto. sys.	Gerner, MCS, LDS, Medat, Systek, Providens, Mips, Bayer, Molis, Omega, Misys, Vertex, Zavacore, Data Innovations/ASTM	Cerner, MCS, LDS, Medat, Systek, Providens, Mips, Bayer, Molis, Omega, Misys, Vertex, Zavacore, Data Innovations/ASTM
No. of live sites installed in N. America/Outside N. America Transportation systems available • Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Supports automatic rerouting for reflex/repeat/dilutions • Types of containers device can accommodate • Modular hardware/Installed options/Device functions independent of track • Required utilities/Required maintenance • Carrier type/Scalable system	2 (and 30 of former version)/17 (and 100 of former version) no — — — — — — — —	0/1 (and 17 of former version) no
Automated centrifugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated decapping available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	yes (upgradable to Workstation possible) ACM or ACM-8/yes/400 or 800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes input sorter/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes decapping module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes output sorter/yes/800	yes ACM or ACM-8/yes/ACM=400; ACM-8=800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes input sorter/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes decapping module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes output sorter/yes/800
Types of containers device can accommodate Specimen integrity monitor available Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate Automated aliquoting available Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate System inspects samples for bar code/Reports clots/Reports QNS specimens	16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes QSI module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes aliquoting unit/yes/300 primary tubes if 100% aliquot. means 600 throughput 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes/yes/yes	16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes QSI module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes aliquoting unit/yes/300 primary tubes if 100% aliquot. means 600 throughput 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes/yes/yes
Instrument (analyzer) interfaces • Rules-based instrument interface control subsystem • Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface • Hematology/Chemistry/Coagulation • Immunoassay/Urinalysis	no no no/no no/no	no no no/no/no no/no
Instruments to which your system/product is interfaced Other robotic products/components to which system, product is linked	-	
Automated recapper available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate	yes RCS module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92	yes RCS module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92
Automated storage and retrieval available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly	no modules can be upgraded 2–3 weeks/PVT LabSystems/8 AM–5 PM M–F (24/7 avail. on request) no/no	no — — — modules can be upgraded 2–3 weeks/PVT LabSystems/8 AM–5 PM M–F (24/7 avail. on request) no/no
List price Individual list prices for components • Process control software/Transportation systems • Auto. centrifugation/Auto. input, accessioning • Auto. decapping/Auto. sorting/Auto. storage & retrieval • Specimen integrity monitor/Automated aliquoting • Instrument (analyzer) interfaces/Automated recapping	\$215k-\$315k without automatic centrifuge module \$10k-\$40k/— \$109k/included included/included/— ~\$60k/included —/\$38k	\$330k-\$490k \$10k-\$40k/— included/included included/included/— ~\$60k/included —/\$38k
Distinguishing features (supplied by vendor) * Ave. throughput in specimen containers per hr per device	 one platform (basic platform) can be assembled with all modules for a so-called all-in-one system recapping module works with all different tube sizes the quality module QSI (specimen integrity monitor) 	 independent from any IVD company automated centrifuge can work with tubes or racks all kinds of tubes and racks can be used

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Laboratory automation systems & workcells

	Roche Diagnostics	Roche Diagnostics
Part 8 of 10	9115 Haque Rd., Indianapolis, IN 46250	9115 Haque Rd., Indianapolis, IN 46250
	317-521-4033	317-521-4033
Please see accompanying article on page 22	us.labsystems.roche.com	us.labsystems.roche.com
Name of system/First year installed	PSD 1/1007- VS II/1000	Modular Pre-Analytics/1997: Hitachi/1990
	1 30 1/1331, 43 1/1333	modular 116-Analytics/1997, Intacin/1990
Automation products that are available		,
Process control software/Transportation systems Auto control software/Interiment or processioning	yes/no	yes/yes
Auto. centrifugation/Auto. input or accessioning Auto. decapping/Auto. sorting/Auto. storage and retrieval	NO/YES PSD 1 (vec) VS II (no)/vec/no	yes/yes ves/ves/no
Specimen integrity monitor/Auto, aliguoting	PSD 1 (no), VS II (ves)/PSD 1 (no), VS II (ves)	ves/ves
Instrument (analyzer) interfaces/Auto. recapping	no/no	yes/yes
System architecture	open system	closed system (modular systems)
% of staff dedicated to clinical automation system	15 employees	15 employees
% of budget dedicated to K&D for clin. auto. technology Company's primary product category	n/a instruments reagents	n/a instruments reagents
Information systems technology for your automation system	—/Windows NT. Unix/—/—	—/Windows NT. Unix/—/—
Database/Operating system/Server/User interface	,	
Coffigere features /functionality		
Patient demographics & insurance data/Rules-based architecture	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Supports data retrieval/Internet connectivity	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
 Online real-time help system/QC/Stats & management reports 	LAS SW feature/n/a/LAS SW feature	LAS SW feature/—/LAS SW feature
Evaluates validity and releasability of results from automated analyzers	n/a	LAS SW feature
Specimen tracking/Priority processing/Random-access specimen movement Supports accession No. redundancy (duplicate accession ID)	LAS SW feature/LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature
• Supports specimen carrier and level identification	LAS SW feature	 LAS SW feature
Unique bar-code number per container required	n/a	LAS SW feature
 Specimen routing/Multistop routing (one tube to multiple workstations) 	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
Specimen scheduling/Instrument scheduling	n/a/n/a	LAS SW feature/LAS SW feature
Routes test to workstation/Automatic reflex, repeat, dilutions Supporte multiple bootstations	LAS SW feature/n/a	LAS SW feature/LAS SW feature
 Supports mutuple naroware config./Supports other proprietary transport. hardware Storage retrieval & disposal/Supports approved MCCLS standards 	; LAS SW TEATURE/LAS SW TEATURE LAS SW feature/LAS SW feature	—/— —/I AS SW feature
סיטימשט וטנווטימו ע מוסףטסמו/סעףטו נס מאלוטינט מטטרס פנקוועלועט		, LAU UTI IGUIUIG
LIS interfaces that are live/How LISs are interfaced with auto. sys.	Cerner v3.x, Misys 5.2 w/o SMART, Misys v5.23 w/o SMART, Misys v5.3 w/o	Cerner v3.x, Misys v5.2 w/o Smart, Misys v5.23 w/o Smart, Misys
	SMART, Misys v5.3 w/SMART, Soft v1.x, Soft v2.x, Per Se, Antrim	w/o Smart, Misys v5.3 w/ Smart, VA Vista/DHCP, Soft v2.x, Per Se
	(Johnmon Jents), McKesson Starlab, McKesson Advantage, Homegrown Systems: Topliab, Omnitech, ASTM/ Ethernet, ASTM/sorial, 41.7.2.4/Ethernet	Mickesson Stariab, Department of Defense (CHCS)/ASTM/Ethernet ASTM/serial HL7 2 4/Ethernet HL7 2 4/serial
	HL7 2.1/Ethernet, HL7 2.4/serial	ao iniyoshai, illi 2.4/Euistiist, illi 2.4/Settäi
No. of live sites installed in N. America/Outside N. America	PSD 1, 50/130; VS II, 30/65	15/140
Iransportation systems available • Version/conforms to NCCLS Standards Auto 1 E/Aug. throughouts		yes MPA system 3 or 7/voc/600
Supports automatic rerouting for reflex/reneat/dilutions	_	WI A SYSTEM S OF 7/YES/OUD Ves
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap	16x100, 13x100, 16x75, 13x75, rubber or hemoguard
Modular hardware/Installed options/Device functions independent of track	_/_/_	yes/floor mounted/no, fully integrated automation & analytics
Required utilities/Required maintenance	compressed air, electricity/weekly	electricity, water (for analyzers)/weekly
• Carrier type/Scalable system	multiple specimen container per carrier (5 positions)/yes	multiple specimen container per carrier (5 positions)/yes
Automated centrifugation available	no	yes
 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	-	system 3 or 7/yes/250
Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75
For multi-unit centrifuges, each cent. operates independently for rate and time	 100	yes, 2 can run at 500 per hr
Automated input/accessioning available Version/Conforms to NCCLS Standards Auto 1-5/Ave_throughout*	yes PSD 1/ves/000_1 200: VS II/ves/340 with 1 aliquot per primary tube	yes system 3 or 7/yes/600
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap	16x100, 13x100, 16x75, 13x75
Automated decapping available	yes	yes
 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* 	PSD 1/yes/900–1,200	system 3 or 7/yes/400
Iypes of containers device can accommodate	16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap	16X100, 13X100, 16X75, 13X75
Version/Conforms to NCCLS Standards Auto 1-5/Ave, throughput*	PSD 1/ves/900–1.200: VS II/ves/340 with 1 aliquot per primary tube	system 7/ves/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap	16x100, 13x100, 16x75, 13x75
Specimen integrity monitor available	VS II/yes	yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	n/a	n/a
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	16x100, 13x100, 16x75, 13x75
Version/Conforms to NCCI S Standards Auto 1-5/Ave_throughout*	yca VS II/ves/340 with 1 alignot per primary tube	yes system 7/yes/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	16x100, 13x100, 16x75, 13x75
System inspects samples for bar code/Reports clots/Reports QNS specimens	yes/yes	yes/yes
Instrument (analyzer) interfaces		
Rules-based instrument interface control subsystem	00	Ves
 Process control of instrument via control subsystem 	no	yes
Physical/hardware (instrument/specimen) interface		
Hematology/Chemistry/Coagulation	no/no/no	no/ptof-reference sampling/ptof-reference sampling
• Immunoassay/Urinalysis	no/no	ptof-reference sampling/no
Instruments to which your system/product is interfaced	none	Roche/Hitachi Modular Systems—Clin Chemistrv. Immunoassav.
		Integrated Systems Stago•R
Other robotic products/components to which system, product is linked	none	-
Automated recapper available	no	Ves
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		System 7/yes/500
Types of containers device can accommodate	-	16x100, 13x100, 16x75, 13x75
Automated starses and retrievel available	1/00	20
Automated Storage and retrieval available Version/Conforms to NCCLS Standards Auto 1-5/Aug. throughout*	yts PSD 1/yes/1 200: VS II/yes/340 with 1 aliquet per primary type	10 —
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, hemoduard, rubber, screw can	-
Refrigeration available	no (uses a special archive rack)	no
Longitudinal upgrade pathway or plan to protect users' investments	can be easily configured to meet changing workloads & demands	customers can place modules to increase capacity & functionality
Ave. time to install sys./Who provides service and support/Hours support is available	3 days to 1 week/Roche/24/7	<2 weeks/Roche/24/7
on-site biometrical engineer required/oser group meets regularly	10/10	10/10
List price	PSD 1: \$175k; VS II: \$200k	\$300–\$800k, depending on system configuration
Individual list prices for components		
	-	n/a
Process control software/Transportation systems		n/a
Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto decompling (Auto estimate Auto estimate Auto estimate)	_	nlo
Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto. decapping/Auto. sorting/Auto. storage & retrieval Specimen interrity monitor/Automated alignating	-	n/a n/a
 Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto. decapping/Auto. sorting/Auto. storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping 	- - -	n/a n/a n/a
 Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto. decapping/Auto. sorting/Auto. storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping 	- - -	n/a n/a n/a
 Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto. decapping/Auto. sorting/Auto. storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping Distinguishing features (supplied by vendor)	PSD 1: stand-alone archiving; low-cost, easy implementation; sorting,	n/a n/a n/a • fully integrated and designed to work with analytics
Process control software/Transportation systems Auto. centrifugation/Auto. input, accessioning Auto. decapping/Auto. sorting/Auto. storage & retrieval Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping Distinguishing features (supplied by vendor)	PSD 1: stand-alone archiving; low-cost, easy implementation; sorting, decapping, exceptional handling, archiving; VS II: archiving, aliquoting and sorting fast easy extern and install exceptional estimation estimates a supervised section.	n/a n/a n/a in/a in/a fully integrated and designed to work with analytics easy implementation, no hassles with third-party analyzers and integrated and the set of the bards off secults driven by set of the bards off secults driven by set of the bards.

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Laboratory automation systems & workcells

	Part 9 of 10	Sysmex America Inc. Nilam Patel	Sysmex America Inc. Nilam Patel
		1 Nelson C. White Parkway Mundelein, IL 60060	1 Nelson C. White Parkway Mundelein, IL 60060
	Please see accompanying article on page 22	847-996-4500 www.sysmex.com	847-996-4500 www.sysmex.com
	Name of system/First year installed	Sysmex Systemization—HST-N/—	Alpha N Hematology Transport System/2000
	Automation products that are available • Process control software/Transportation systems	yes/yes	yes/yes
	Auto. centrifugation/Auto. input or accessioning Auto. decanning/Auto. sorting/Auto. storage and retrieval	no/yes	/yes //_
	Specimen integrity monitor/Auto. aliquoting	yes/no	yes/n/a
	Instrument (analyzer) interfaces/Auto. recapping System architecture	yes/no open system	yes/n/a closed system
	% of staff dedicated to clinical automation system % of hudget dedicated to B&D for clin. auto, technology	25% 15%	25% 15%
	Company's primary product category	lab automation systems, instruments, reagents, information systems,	lab automation systems, instruments, reagents, information systems,
	Information systems technology for your automation system Database/Operating system/Server/User interface	Sybase/Windows 98, NT, Unix/—/—	Sybase/Windows 98, NT/Windows 98, NT/Windows
	Software features/functionality	LAD DW feeture // AD DW feeture	LAC CW (seeking // AC CW (seeking
	Supports data retrieval/Internet connectivity	LAS SW feature/LAS SW feature	LAS SW feature/LAS SW feature
	 Online real-time help system/QC/Stats & management reports Evaluates validity and releasability of results from automated analyzers 	LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature
	Specimen tracking/Priority processing/Random-access specimen movement Supports accession No. redundancy (duplicate specimen ID)	LAS SW feature/LAS SW feature/n/a	LAS SW feature/LAS SW feature/LAS SW feature
	• Supports specimen carrier and level identification	LAS SW feature	LAS SW feature
	 Unique bar-code number per container required Specimen routing/Multistop routing (one tube to multiple workstations) 	LAS SW feature LAS SW feature/n/a	LAS SW teature LAS SW feature/LAS SW feature
	 Specimen scheduling/Instrument scheduling Boutes test to workstation/Automatic reflex, repeat, dilutions 	n/a/n/a LAS SW feature/LAS SW feature	n/a/n/a LAS SW feature/n/a
	Supports multiple hardware config./Supports other proprietary transport. hardware Supports multiple discool (Currently Config.)	LAS SW feature/LAS SW feature	n/a/n/a
┝	Storage retrieval & disposal/supports approved NUCLS standards	LAS SW TEature/LAS SW Teature	LAS SW leature/
-		ASTM, TCP IP	ASTM, TCP IP
	No. of live sites installed in N. America/Outside N. America Transportation systems available	85/1,000 yes	>100/>200 yes
	 Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* Supports automatic rerouting for reflex/repeat/dilutions 	—/yes/config. dependent ves	—/—/>150 no
	Types of containers device can accommodate Medulor backware/installed actions/Device functions independent of track	16x75, 13x75, rubber stopper, hemoguard	13x75, 16x75, rubber stopper, hemoguard
	Required utilities/Required maintenance	electricity/none	electricity/none
	Carrier type/Scalable system	multiple specimen container per carrier/yes	multiple specimen container per carrier/yes (to HST-N multiple versions)
	Automated centrifugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	no 	no
	Types of containers device can accommodate For multi-unit contributions and time	-	-
	• For multi-unit centrifuges, each cent, operates independently for rate and time Automated input/accessioning available	yes	yes
	 Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate 	1.08/yes/depends on configuration 13x100, 13x75, 16x75	1.08/yes/depends on configuration 13x100, 13x75, 16x75
	Automated decapping available	no	no
	• Types of containers device can accommodate	-	-
	Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	no 	no
	Types of containers device can accommodate Specimen integrity monitor available	n	n
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	_	_
	Iypes of containers device can accommodate Automated aliquoting available	no	no
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate	-	-
	System inspects samples for bar code/Reports clots/Reports QNS specimens	-	-
ſ	Instrument (analyzer) interfaces	100	line
	Process control of instrument via control subsystem	yes	yes
	Physical/hardware (instrument/specimen) interface Hematology/Chemistry/Coagulation	physical hardware available for hematology & coag only	no/no/no
	• Immunoassay/Urinalysis	no/no	no/no
	Instruments to which your system/product is interfaced	Sysmex XE-2100 & XE-2100L/	Sysmex XE-2100, XE-2100L/—
-	Automated recanner available		
	Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate		_/_/
	Automated storage and retrieval available • Version/Conforms to NCCI S standards Auto 1-5/Ave. throughout*	yes —/ves/depends on configuration	no —/ves/depends on configuration
	Types of containers device can accommodate	13x100, 13x75, 16x75	13x75, 16x75, 16x75
	• Remigeration available Longitudinal upgrade pathway or plan to protect users' investments	по scalable automation	no upgrade to HST-N
	Ave. time to install sys./Who provides service and support/Hours support is available	1 week/Sysmex/24/7	3–5 days/Sysmex/24/7
	On-site biomedical engineer required/User group meets regularly	no/yes	no/yes
	List price Individual list prices for components	depends on system configuration	\$360k
	Process control software/Transportation systems Auto, centrifugation/Auto, input, accessioning	_	_
	Auto, decapping/Auto, sorting/Auto, storage & retrieval	_	-
	 Specimen integrity monitor/Automated aliquoting Instrument (analyzer) interfaces/Automated recapping 	Ξ	Ξ
	Distinguishing features (supplied by vendor)	• upgradable, scalable	• upgradable, scalable
		proven automation in coag & hematology—10+years guick implementation_one week	work area manager e norven automation_10+ vegre
		• чиск третенацоп—опе week	• proven automation—10+ years
	* Ave. throughput in specimen containers per hr per device		

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Laboratory automation systems & workcells

	Tagan	Thormo Elocitore Core
Part 10 of 10	lecan Donna Crook donna.crook@tecan.com Recearch Triangle Park, NC	Inermo Electron Corp. Klas Vuorinen info.cca.fi@thermo.com
Please see accompanying article on page 22	800-352-5128 www.tecan.com	Vantaa, Finland +358 9 329 100 www.thermo.com
Name of system/First year installed	FE 500/2000	TCAutomation/2000
Automation products that are available		
Process control software/Transportation systems	no/yes	yes/yes
 Auto. centrifugation/Auto. input or accessioning Auto. decapping/Auto. sorting/Auto. storage and retrieval 	yes/yes yes/yes/in development	yes/yes yes/yes/in development
Specimen integrity monitor/Auto. aliquoting Instrument (analyza) interference(Auto, recomping	yes/yes	no/yes
System architecture	open system	open system
% of staff dedicated to clinical automation system	50%	<u> </u>
Company's primary product category	lab automation systems	— lab automation systems and instruments, reagents
Information systems technology for your automation system Database/Operating system/Server/User interface	Sybase SQL Anywhere/Windows NT/—/dynamic download, host query	object database/Windows XP/—/GUI
Software features/functionality		
Patient demographics & insurance data/Rules-based architecture	n/a/LAS SW feature	LIS requirement/n/a
 Supports data retrieval/internet connectivity Online real-time help system/QC/Stats & management reports 	LAS SW feature/n/a LAS SW feature/n/a/n/a	n/a/LIS requirement/LAS SW feature
Evaluates validity and releasability of results from automated analyzers	n/a	LIS requirement
 Specimen tracking/ritority processing/kandom-access specimen movement Supports accession No. redundancy (duplicate specimen ID) 	LAS SW Teature/LAS SW Teature/LAS SW Teature LAS SW feature	LAS SW feature/LAS SW feature/LAS SW feature LIS requirement
Supports specimen carrier and level identification	n/a	LAS SW feature
 unique bar-code number per container required Specimen routing/Multistop routing (one tube to multiple workstations) 	π/a LAS SW feature/LAS SW feature	LAS SW teature LAS SW feature/LAS SW feature
Specimen scheduling/Instrument scheduling	n/a/n/a	LAS SW feature/LAS SW feature
 Nources test to workstation/Automatic reflex, repeat, dilutions Supports multiple hardware config./Supports other proprietary transport, hardware 	LAS SW teature/n/a LAS SW feature/n/a	LAS SW teature/LIS requirement LAS SW feature/—
Storage retrieval & disposal/Supports approved NCCLS standards	LAS SW feature/—	n/a/LAS SW feature
LIS interfaces that are live/How LISs are interfaced with auto. sys.	Misys, SCC, Cerner, Citation, McKesson, Triple G, Molis, Per Se, Meditech/ASTM	—/HL7
No. of live sites installed in N. America/Outside N. America	36/51	0/16
Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*	yes conveyor/—/—	ycs —/yes/1,000 tubes per hr
Supports automatic rerouting for reflex/repeat/dilutions Tunce of containers device can accommodate		YES
 Nypes or containers device can accommodate Modular hardware/Installed options/Device functions independent of track 	10x100, 13x100, 16x75, 13x75 —/—/—	yes/floor mounted/no
Required utilities/Required maintenance	compressed air, electricity/	compressed air, electricity/—
• Carrier type/Scalable system	single specimen container per carrier/—	single specimen container per carrier/yes
Automated centrifugation available	yes	yes
• Types of containers device can accommodate	—/—/300 @ 10-inin spin time 16x100, 13x100, 16x75, 13x75	—/yes/400 13x100, 13x75, 16x100, 16x75
For multi-unit centrifuges, each cent. operates independently for rate and time		yes
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	yes —/—/500	-/yes/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75, screw cap, rubber stopper, hemoguard	16x100, 13x100, 16x75, 13x75
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	yes —/—/500	yes —/yes/500
Types of containers device can accommodate	16x100, 13x100, 16x75, 13x75	16x100, 13x100, 16x75, 13x75
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	//500	—/yes/500
Types of containers device can accommodate Specimen integrity monitor available	16x100, 13x100, 16x75, 13x75, any manufacturer's rack	16x100, 13x100, 16x75, 13x75
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*		
Types of containers device can accommodate Automated aliquoting available	level sensing & clot detection	
Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*	_/_/	—/yes/240
 Types of containers device can accommodate System inspects samples for bar code/Reports clots/Reports QNS specimens 	13x75 prepackaged secondary tubes yes/yes/yes	16x100, 13x100, 16x75, 13x75 yes/yes/yes
Instrument (analyzer) interfaces		
Rules-based instrument interface control subsystem Process control of instrument via control subsystem		_
Physical/hardware (instrument/specimen) interface		
Hematology/Chemistry/Coagulation	<i>_/_/_</i>	/ptof-reference-sampling & robotic arm interface/
• Immunoassay/Urinalysis	—/—	ptof-reference sampling & robotic arm interface for both
Instruments to which your system/product is interfaced	contact vendor	Roche Modular, Konelab 30 & 60, Bayer Advia 1650, Abbot Architect, Ortho Clinical Vitros 250AT & 950 AT
Other robotic products/components to which system, product is linked	-	
Automated recapper available	no	in development
• Version/Comforms to NGLES Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate	_	
Automated storage and retrieval available	in development	in development
 version/Contorms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate 		_
Refrigeration available		-
Longitudinal upgrade pathway or plan to protect users' investments Ave, time to install sys,/Who provides service and support/Hours support is available	contact vendor 6 weeks/Tecan and authorized service providers/24/7	
On-site biomedical engineer required/User group meets regularly	no/—	no/no
List price	\$450k	_
Process control software/Transportation systems	_	_
Auto. centrifugation/Auto. input, accessioning Auto. decomping (Auto. centrics)	_	-
 Auto, decapping/Auto, sorting/Auto, storage & retrieval Specimen integrity monitor/Automated aliquoting 	_	Ξ
Instrument (analyzer) interfaces/Automated recapping	-	-
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Distinguishing features (supplied by vendor)	 flexibility, footprint, completely configurable 	 modularity—the system can be extended to meet custon
Distinguishing features (supplied by vendor)	 flexibility, footprint, completely configurable 	 modularity—the system can be extended to meet custon both workcell and preanalytical part can be upgraded and needed

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