control design

www.controldesign.com

Motion, Drives and Motors

February 2014
Market Intelligence Report

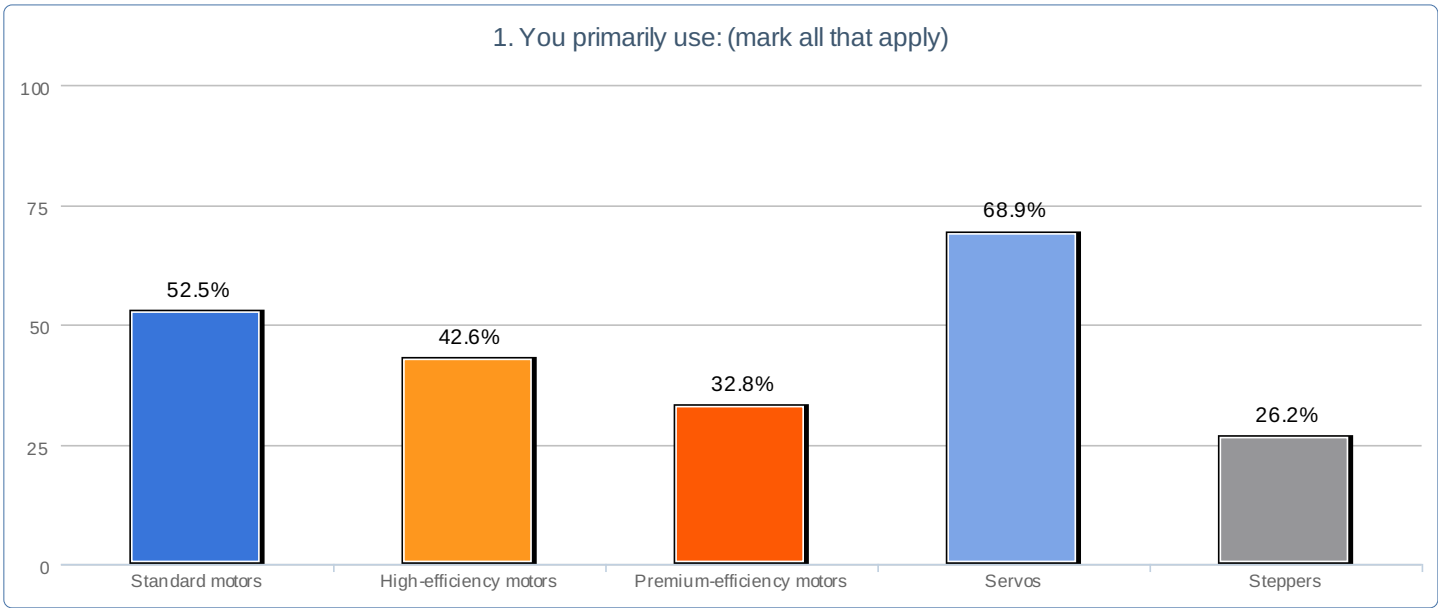
Motion, Drives and Motors

February 2014 Market Intelligence Report

Executive Summary

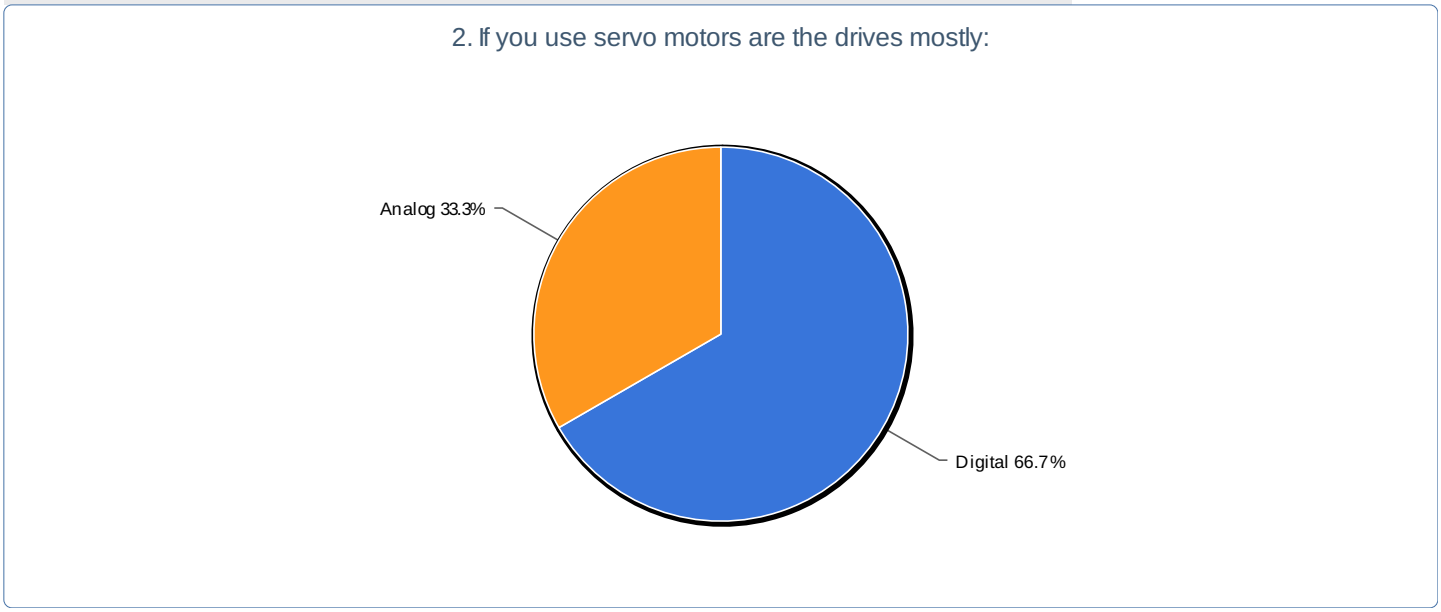
An electronic survey of *Control Design* readers was conducted in February 2014 in order to identify usage and application trends in **motion, drives and motor technology** among the industrial machine builders that comprise *Control Design*'s readership. Detailed survey results are presented on the pages that follow, with key findings summarized below:

- Nearly 69% of respondents report using servo motors, 52.5% are using standard motors, and 26% are using stepper motors. With regards to efficiency motors respondents indicated high-efficiency motor use at nearly 43% and premium-efficiency motors use at 33%.
- The majority (67%) of respondents who use servo motors report they are mostly digital drive technology; 33% use mostly analog drives.
- 47% of respondents who use stepper motors use open-loop steppers; 53% use closed-loop.
- In terms of the importance of performance characteristics for their drive systems, position control and speed control were ranked "most important" by 68.3% and 43.3% of respondents respectively; 31.7% of respondents indicated Torque control as "most important".
- Respondents who use a digital bus indicated use of EtherNet/IP at 44%; CAN/CANopen at 16% and SERCOS/SERCOS III at a further 4%. The remaining digital bus usage for motion control showed EtherCat 8%, Powerlink, (8%), Profinet (6%) and CC-Link (6%).
- Regarding update rates, 9.8% of respondents indicated they required the slowest rate of 500 msec or slower while 5.9% indicated the ultra-higher update rate of faster than 100 msec. 31.4% of respondents require an update rate of 99 – 1 msec; 29.4% require 999 – 100 µsec; while 23.5% require 499 – 100 msec.
- Finally, we polled our readers to find out their biggest motion control challenges. The integration of electronic and mechanical components was cited as the top challenge. More precision/less drift and faster updates/better synchronization rounded out the top three challenges. (see chart for complete details).



1. You primarily use: (mark all that apply)

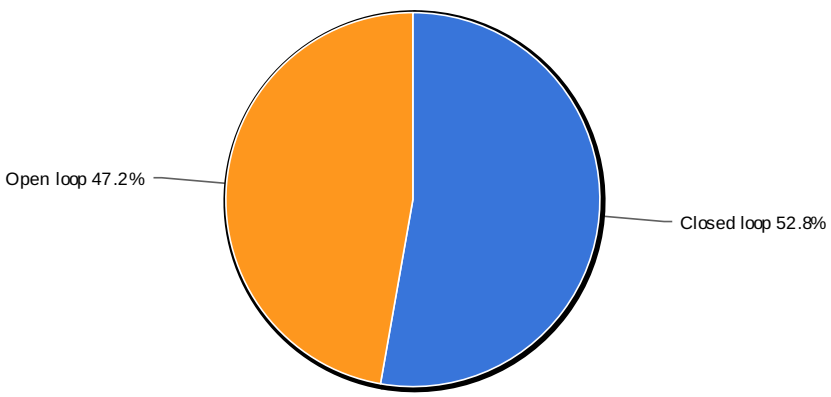
Value	Percent %
Standard motors	52.5%
High-efficiency motors	42.6%
Premium-efficiency motors	32.8%
Servos	68.9%
Steppers	26.2%



2. If you use servo motors are the drives mostly:

Value	Percent %
Digital	66.7%
Analog	33.3%

3. If you use steppers are they:



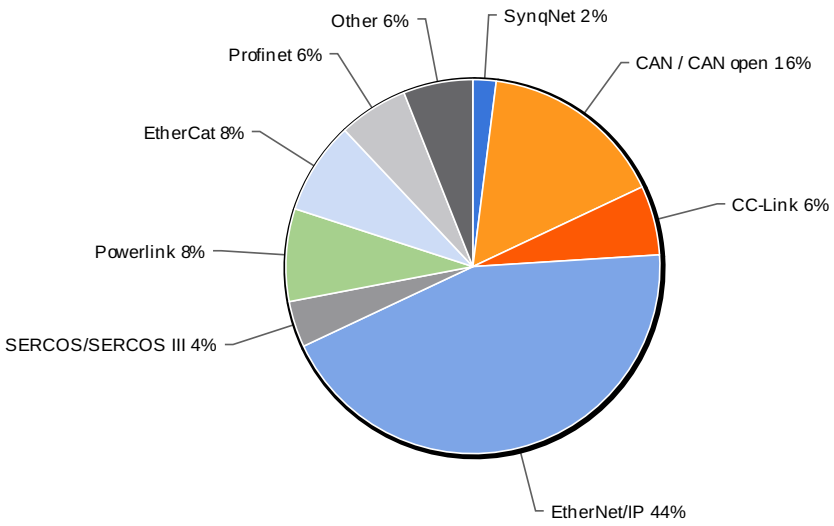
3. If you use steppers are they:

Value	Percent %
Closed loop	52.8%
Open loop	47.2%

4. Rate the importance of these performance characteristics for your drive requirements:

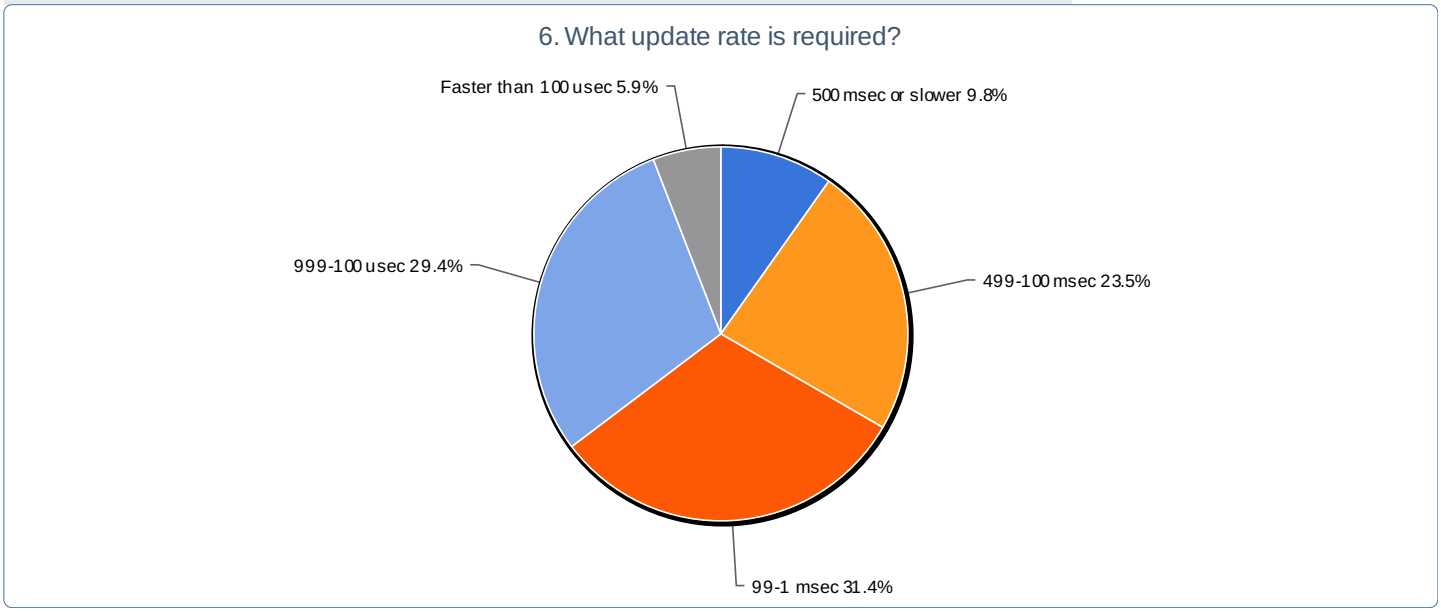
	Most important	Important	Not important
Torque control	**31.7%**	**55.0%**	**13.3%**
Position control	**68.3%**	**21.7%**	**10.0%**
Speed control	**43.3%**	**48.3%**	**8.3%**
Line energy regeneration	**10.2%**	**40.7%**	**49.2%**

5. If you use a digital bus for motion control, which one:



5. If you use a digital bus for motion control, which one:

Value	Percent %
SynqNet	2.0%
CAN / CAN open	16.0%
CC-Link	6.0%
DeviceNet	0.0%
EtherNet/IP	44.0%
SERCOS/SERCOS III	4.0%
Powerlink	8.0%
EtherCat	8.0%
Profinet	6.0%
Other	6.0%



6. What update rate is required?

Value	Percent %
500 msec or slower	9.8%
499-100 msec	23.5%
99-1 msec	31.4%
999-100 usec	29.4%
Faster than 100 usec	5.9%

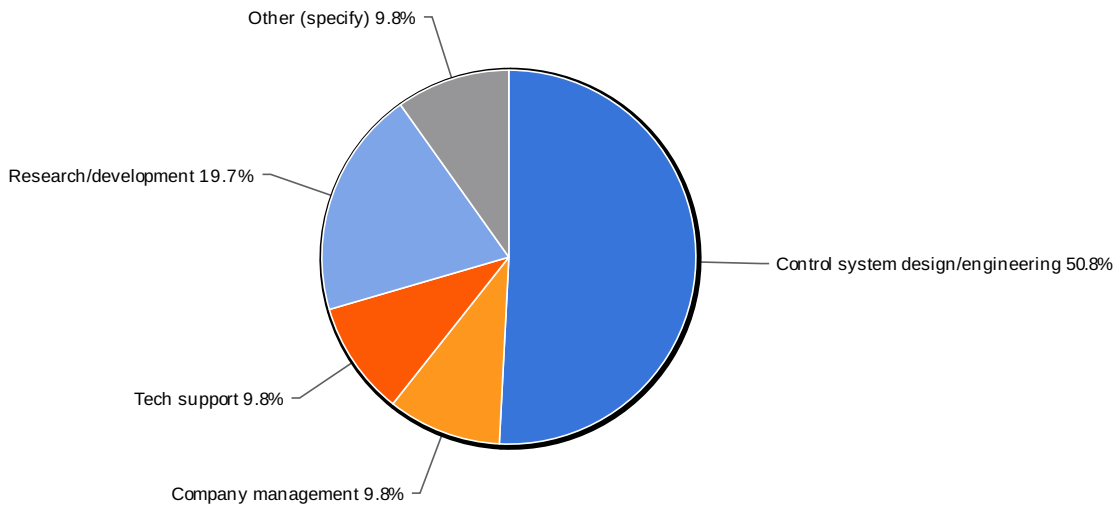
7. What is the biggest motion control challenge for you? (Please rank in order of importance)

Item	Total Score[1]	Overall Rank
Integration of electronic and mechanical components	242	1
More precision/less drift	209	2
Faster updates/better synchronization	192	3
Integration of digital safety with motion	186	4
Migration to more electronic components and away from pneumatic and hydraulics	167	5
Migration to more electronic components and away from mechanical	167	6
Combining electronics with pneumatics and/or hydraulics	165	7

Total Respondents: 58

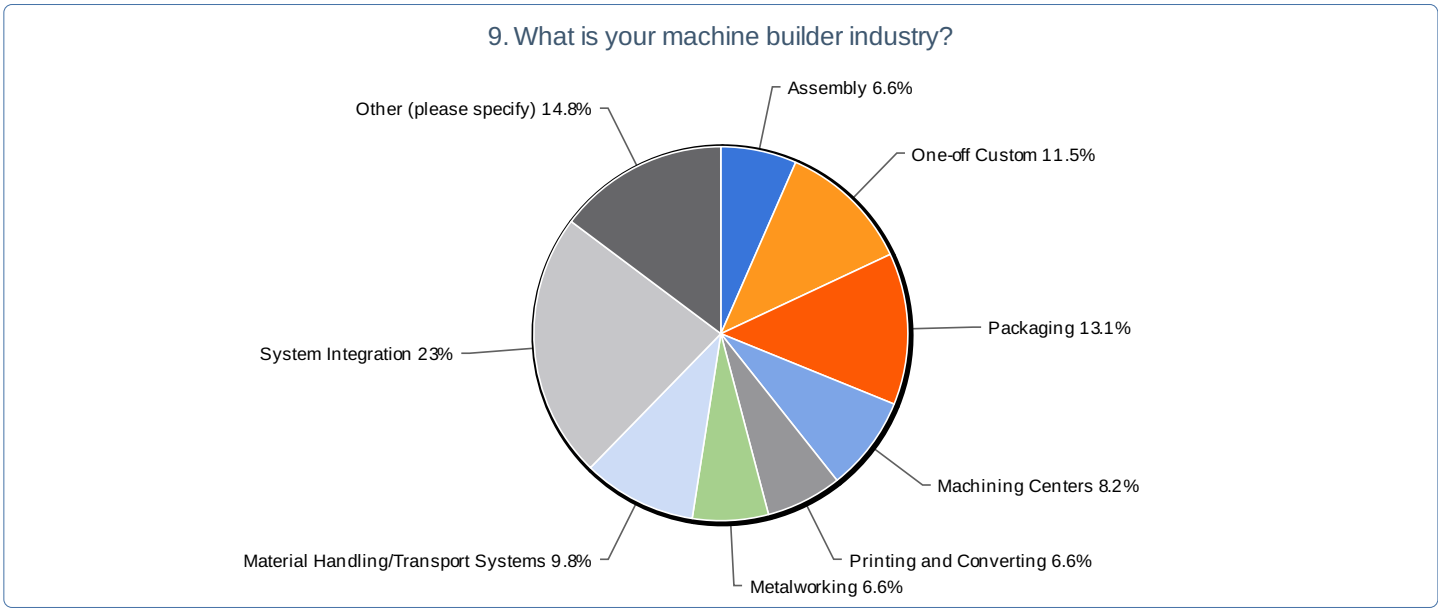
[1] **Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.**

8. What is your job function?



8. What is your job function?

Value	Percent %
Control system design/engineering	50.8%
Company management	9.8%
Tech support	9.8%
Research/development	19.7%
Other (specify)	9.8%



9. What is your machine builder industry?

Value	Percent %
Assembly	6.6%
One-off Custom	11.5%
Packaging	13.1%
Electronics Pick and Place	0.0%
Machining Centers	8.2%
Semiconductor Tools	0.0%
Paper Industry	0.0%
Printing and Converting	6.6%
Rolling Mills	0.0%
Metalworking	6.6%
Woodworking	0.0%
Material Handling/Transport Systems	9.8%
System Integration	23.0%
Other (please specify)	14.8%