

control design

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Motion, Drives and Motors

*February 2013
Market Intelligence Report*

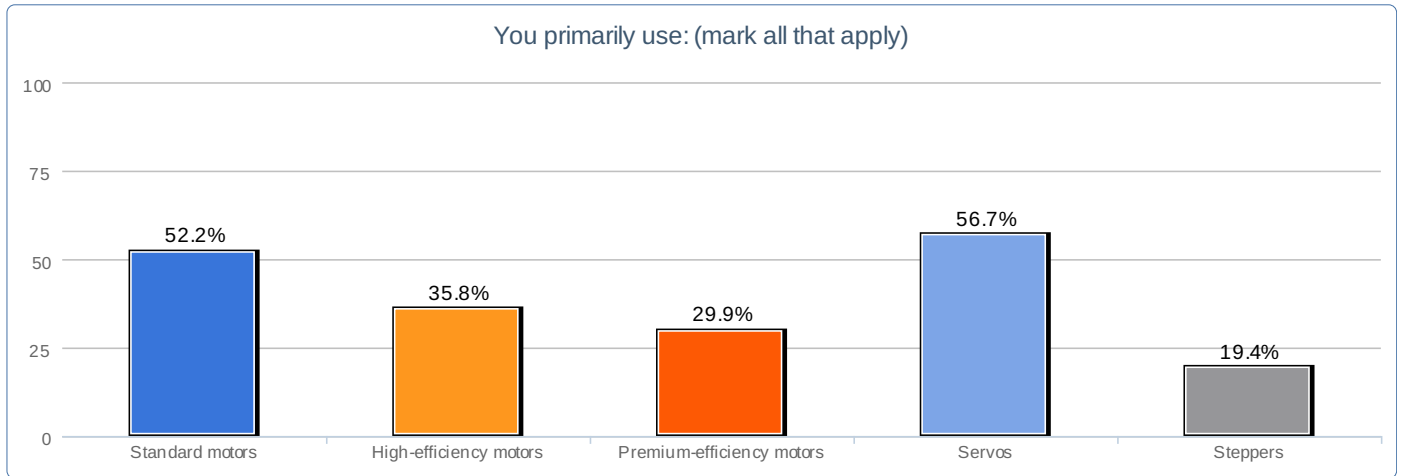
Motion, Drives and Motors

February 2013 Market Intelligence Report

Executive Summary

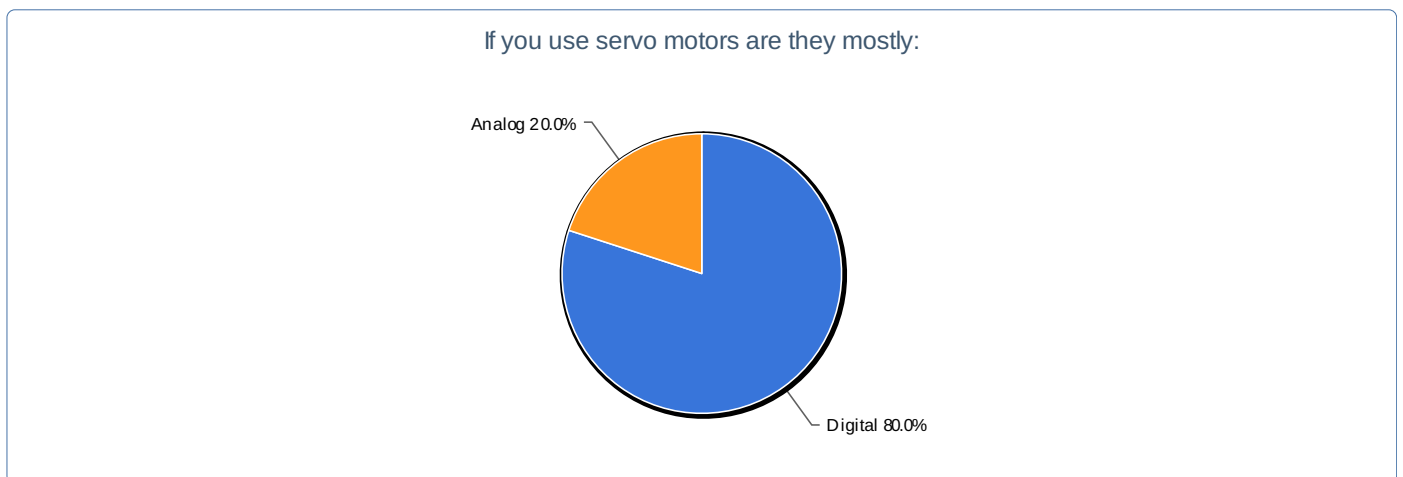
An electronic survey of *Control Design* readers was conducted in February 2013 in order to identify usage and application trends of **motions, drives and motors** among the industrial machine builders that comprise *Control Design's* readership. Detailed survey results are presented on the pages that follow, with key findings summarized below:

- Nearly 57% of respondents report using servo motors, 52% are using standard motors, and 19% are using stepper motors. With regards to efficiency motors respondents indicated high-efficiency motor use at nearly 36% and premium-efficiency motors use at 30%.
- The majority (80%) of respondents who use servo motors report they are mostly digital technology; 20% use mostly analog servo motors.
- 42.1% of respondents who use stepper motors use open loop steppers; 57.9% 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 53.7% and 46.3% of respondents respectively; 34.3% of respondents indicated Torque control as "most important".
- Respondents who use a digital bus indicated use of EtherNet/IP at 36.7%; CAN/CAN open at 10% and SERCOS/SERCOS III at a further 10%. The remaining digital bus usage for motion control showed DeviceNet (8.3%), EtherCat 8.3%, Powerlink, (3.3%), and Profinet (6.7%).
- Regarding update rates 13.8% of respondents indicated they required the slowest rate of 500 milliseconds or slower while 8.6% indicated the ultra-higher update rate of faster than 100 microseconds. 34.5% of respondents require an update rate of 99 – 1 milliseconds; 22.4% require 999 – 100 usec; while 20.7% 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)

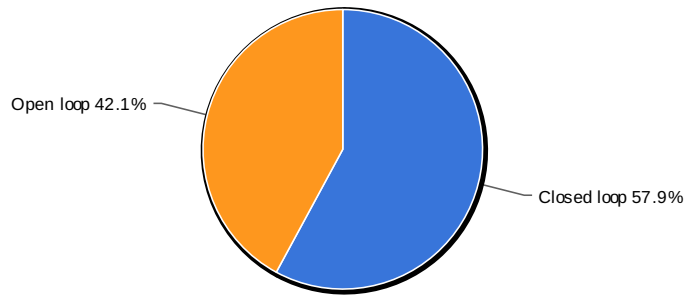
Value	Count	Percent %
Standard motors	35	52.2%
High-efficiency motors	24	35.8%
Premium-efficiency motors	20	29.9%
Servos	38	56.7%
Steppers	13	19.4%



2. If you use servo motors are they mostly:

Value	Count	Percent %
Digital	44	80.0%
Analog	11	20.0%

If you use steppers are they:



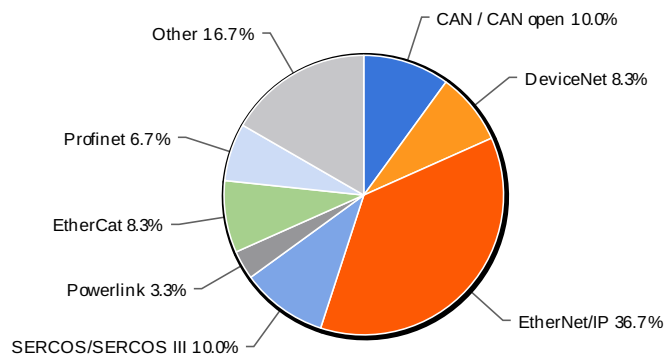
3. If you use steppers are they:

Value	Count	Percent %
Closed loop	22	57.9%
Open loop	16	42.1%

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

	Most important	Important	Not important	Responses
Torque control	34.3% 23	52.2% 35	13.4% 9	67
Position control	53.7% 36	26.9% 18	19.4% 13	67
Speed control	46.3% 31	49.3% 33	4.5% 3	67
Line energy regeneration	6.0% 4	46.3% 31	47.8% 32	67

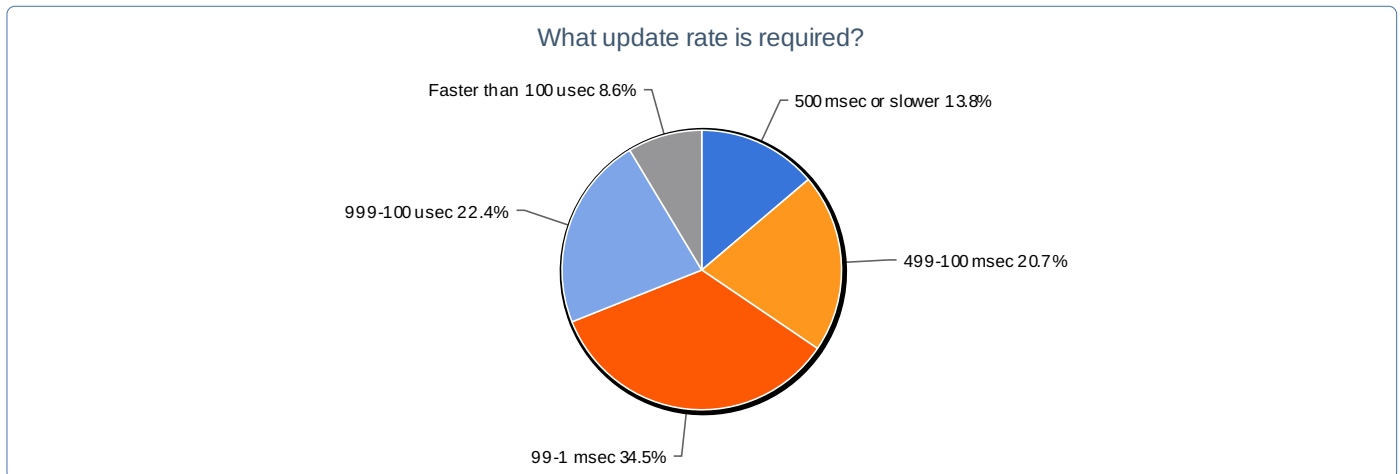
If you use a digital bus for motion control, which one:



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

Value	Count	Percent %
SynqNet	0	0.0%
CAN / CAN open	6	10.0%
CC-Link	0	0.0%
DeviceNet	5	8.3%
EtherNet/IP	22	36.7%
SERCOS/SERCOS III	6	10.0%
Powerlink	2	3.3%

EtherCat	5	8.3%
Profinet	4	6.7%
Other	10	16.7%



6. What update rate is required?

Value	Count	Percent %
500 msec or slower	8	13.8%
499-100 msec	12	20.7%
99-1 msec	20	34.5%
999-100 usec	13	22.4%
Faster than 100 usec	5	8.6%

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	256	1
More precision/less drift	215	2
Faster updates/better synchronization	214	3
Integration of digital safety with motion	205	4
Migration to more electronic components and away from mechanical	193	5
Combining electronics with pneumatics and/or hydraulics	178	6
Migration to more electronic components and away from pneumatic and hydraulics	175	7

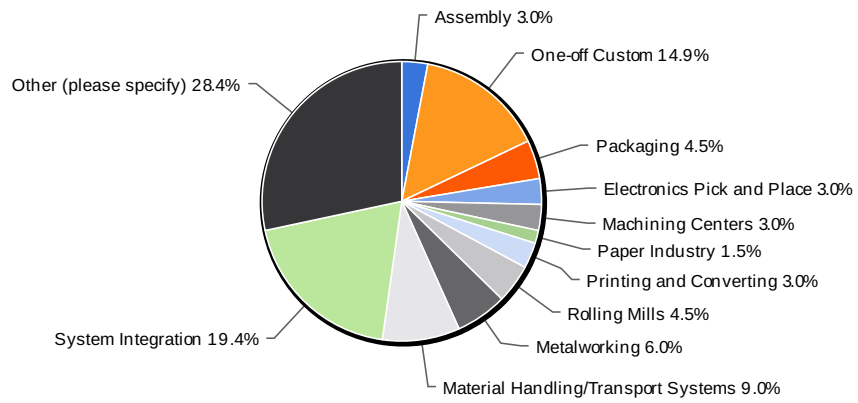
Total Respondents: 61

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?

	Control system design/engineering	Company management	Tech support	Research/development	Other (specify)	Responses
What is your job function?	56.7% 38	17.9% 12	6.0% 4	9.0% 6	10.4% 7	67

What is your machine builder industry?



9. What is your machine builder industry?

Value	Count	Percent %
Assembly	2	3.0%
One-off Custom	10	14.9%
Packaging	3	4.5%
Electronics Pick and Place	2	3.0%
Machining Centers	2	3.0%
Semiconductor Tools	0	0.0%
Paper Industry	1	1.5%
Printing and Converting	2	3.0%
Rolling Mills	3	4.5%
Metalworking	4	6.0%
Woodworking	0	0.0%
Material Handling/Transport Systems	6	9.0%
System Integration	13	19.4%
Other (please specify)	19	28.4%