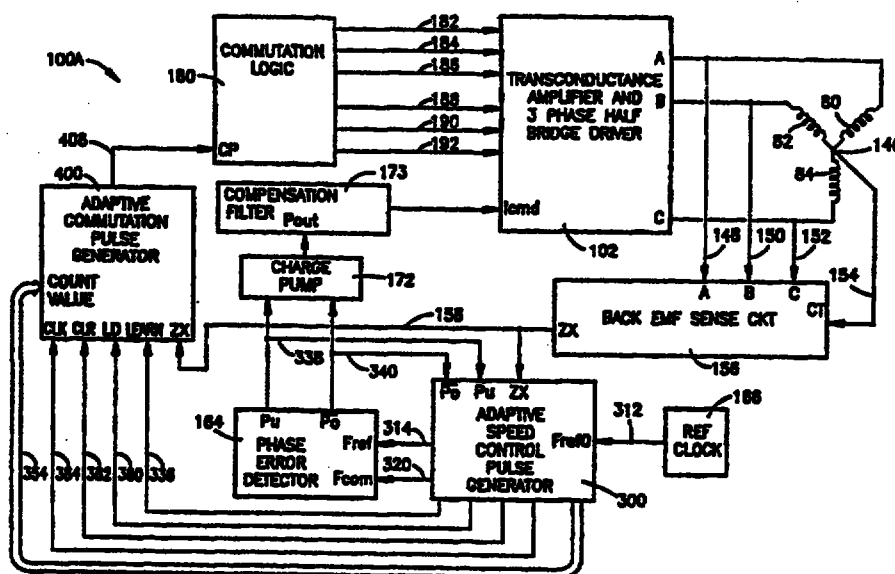


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G11B		A2	(11) International Publication Number: WO 97/11454
			(43) International Publication Date: 27 March 1997 (27.03.97)
(21) International Application Number: PCT/IB96/01019		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 6 September 1996 (06.09.96)			
(30) Priority Data: 08/524,342 6 September 1995 (06.09.95) US			
(71) Applicant (for all designated States except US): SEAGATE TECHNOLOGY, INC. [US/US]; 920 Disc Drive, Scotts Valley, CA 95066 (US).			
(72) Inventor; and (75) Inventor/Applicant (for US only): DINSMORE, Stanley, H. [US/US]; 1041 Stimel Drive, Concord, CA 94518 (US).			
(74) Agent: HELLER, Edward, P., III; Seagate Technology, Inc., 920 Disc Drive, Scotts Valley, CA 95066-4544 (US).			
		Published Without international search report and to be republished upon receipt of that report.	

(54) Title: ADAPTIVE COMPENSATION FOR HARD DISC DRIVE SPINDLE MOTOR MANUFACTURING TOLERANCES



(57) Abstract

Apparatus and method for adaptively compensating for variations in rotational speed of a back emf commutated spindle motor in a hard disc drive. After the motor achieves nominal operating speed, the hard disc drive enters a learn mode during which systematic variations in operational speed of the spindle motor are characterized over a plurality of rotations, including characterization of the average timing of zero crossing signals with respect to reference frequency periods and characterization of the average time between successive zero crossing signals. The hard disc drive next enters a compensation mode, during which modified speed control timing signals and modified commutation timing signals are outputted in response to the average timing characterized during the learn mode.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam