

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZHONGSHAN BROAD OCEAN MOTOR CO., LTD.;
BROAD OCEAN MOTOR LLC; and
BROAD OCEAN TECHNOLOGIES, LLC

Petitioners

v.

NIDEC MOTOR CORPORATION

Patent Owner

U.S. Patent No. 7,626,349
Issue Date: December 1, 2009
Title: LOW NOISE HEATING, VENTILATING AND/OR
AIR CONDITIONING (HVAC) SYSTEMS

**SECOND PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 7,626,349**

Case No. IPR2015-00762

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	a. Claim 1	11
	(1) “A heating, ventilating and/or air conditioning (HVAC) system comprising”	11
	(2) “a system controller”	12

	(3)	<i>“a motor controller”</i>	14
	(4)	<i>“an air-moving component, and”</i>	15
	(5)	<i>“a permanent magnet motor having a stationary assembly, a rotatable assembly in magnetic coupling relation to the stationary assembly, and a shaft coupled to the air-moving component,”</i>	17
	(6)	<i>“wherein the motor controller is configured for performing sine wave commutation, using independent values of q- and d-axis currents, in response to one or more control signals received from the system controller to produce continuous phase currents in the permanent magnet motor for driving the air-moving component.”</i>	19
b.		Claim 2	27
	(1)	<i>“The HVAC system of claim 1 wherein the stationary assembly includes a plurality of phase windings and the motor controller is configured for energizing all of the phase windings at the same time”</i>	27
c.		Claim 3	28
	(1)	<i>“The HVAC system of claim 2 wherein the continuous phase currents are substantially sinusoidal.”</i>	28
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	(1) “The HVAC system of claim 3 wherein the permanent magnet motor is a brushless permanent magnet (BPM) motor.”	29
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	(1) “The HVAC system of claim 8 wherein the BPM motor is a back-emf BPM motor.”	30
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	(1) “The HVAC system of claim 3 wherein the at least one control signal from the system controller represents a desired torque or speed of the permanent magnet motor..”	31
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	(1) “A blower assembly for a heating, ventilating and/or air conditioning (HVAC) system, the blower assembly comprising”	32
	(2) “a motor controller”	34
	(3) “a blower”	35
	(4) “a permanent magnet motor having a stationary assembly, a rotatable assembly in magnetic coupling relation to the stationary assembly, and a shaft coupled to the blower,”	36
h.	Claim 19	41
	(1) “A method for driving an air-moving component of a heating, ventilating and/or air conditioning (HVAC) system in response to a control signal, the HVAC system including a permanent magnet motor having a stationary assembly and a rotatable assembly in	

	<i>magnetic coupling relation to the stationary assembly, said rotatable assembly coupled in driving relation to the air-moving component, the method comprising”</i>	41
(2)	<i>“receiving at least one control signal from a system controller, and”</i>	43
(3)	<i>“performing sine wave commutation, using independent values of q and d axis currents, in response to the at least one control signal received from the system controller to produce continuous currents in the permanent magnet motor for driving said air-moving component.”</i>	44
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