

## FREEDOM TO OPERATE SEARCH

Title: Control electronics for brushless motors Data

Submitted to:

Address:

Email:

Client Reference No:

Patent Number: [US7715698](#)

Priority Date: 31 Aug 2005

IN ASSIGNEE: **Thor Power Corporation**

Date:

### Claims:

1. An electronic control circuit for a brushless motor, comprising:

a power supply circuit;

a microcontroller integrated circuit having control functions to control a brushless motor; and

a host, connected to said microcontroller integrated circuit and including software program instructions, said program instructions when executed dynamically controlling parameters of said control functions of said microcontroller integrated circuit,

wherein said control functions comprise vector control algorithms embedded in said microcontroller integrated circuit.

### Feature to Search

**E1.** An electronic control circuit for a brushless motor, comprising a power supply circuit, a microcontroller integrated circuit having control functions to control a brushless motor. **E2.** A host, connected to said microcontroller integrated circuit and including software program instructions, said program instructions when executed dynamically controlling parameters of said control functions of said microcontroller integrated circuit.

# IPR ANALYTICS

Pioneer in IP Services

**E3.** Control functions comprise vector control algorithms embedded in said microcontroller integrated circuit.

## **Search Strategy**

Database: AcclaimIP, USPTO, Patentscope, Espacenet, Google Patents, Inpass.

Keywords:

Set 1	Brushless motor
Set 2	Microcontroller, integrated circuit, controller unit, microprocessor
Set 3	Vector control algorithms

## **US CLASSIFICATIONS**

318/808 With voltage magnitude control

318/400.4 Optical sensor (e.g., encoder, photodetector, etc.)

## **INTERNATIONAL CLASSIFICATIONS**

H02K11/04 For rectification

B24B23/00 Portable grinding machines, e.g. hand-guided; Accessories therefor

H02K1/14 Stator cores with salient poles

## **Search Results Reference**

**1:**

# IPR ANALYTICS

Pioneer in IP Services

<b>Patent/Publication Number</b> <a href="#">US6320286</a>	
<b>Title:</b> Portable electric tool	
<b>Assignee/Applicant:</b> Ramachandran Ramarathnam	
<b>Filing Date:</b> 8 Nov 1999	
<b>Priority Date:</b> 1 Sep 1999	
<b>Also Published as:</b> DE69905036, EP1081827, AT231663, EP1081827, ES2192022	
<b>Relevant Excerpt E1</b>	<b><u>IN CLAIMS:</u></b>
	1. A portable electric tool comprising:  a. a handle;  b. <b>casing for a motor;</b>  c. a non-drive end cover having a bearing at its <b>center for the said motor;</b>
<b>Relevant Excerpt E2</b>	<b><u>IN CLAIMS:</u></b>
	1.g. A <b>controller unit having a software program of short code length and a driver IC</b> for driving said gates are further connected to a printed circuit board (CB) for driving said gates;
<b>Relevant Excerpt E3</b>	Not Disclosed

## Reference 2:

# IPR ANALYTICS

Pioneer in IP Services

Patent/Publication Number [US7489856](#)

**Title:** Electrical device for automatically adjusting operating speed of a tool

**Assignee/Applicant:** Nokia Corporation

**Filing Date:** 25 Jun 2004

**Priority Date:** 25 Jun 2004

**Also Published as:** CN1977445, CN1977445, EP1766769, EP1766769,  
US20050286875,

WO2006012051, WO2006012051

<b>Relevant Excerpt E1</b>	<b><u>IN CLAIMS:</u></b>  1. A portable electric power tool with automatically adjusting operating speed, the tool comprising:  circuitry that evaluates the operating speed of the tool and that
	produces a speed related signal; <b>a microcontroller receiving the speed related signal and outputting a speed control signal;</b>
<b>Relevant Excerpt E2</b>	Not Disclosed
<b>Relevant Excerpt E3</b>	<b><u>IN CLAIMS:</u></b>  8. The tool of claim 6, wherein the speed control signal is produced based on <b>at least one control algorithm</b> stored in said memory.

**Reference 3:**

# IPR ANALYTICS

Pioneer in IP Services

**Patent/Publication Number** [US7248006](#) **Title:**

Electronically controlled electric motor

**Assignee/Applicant:** Xidem, Inc.

**Filing Date:** 1 Jul 2003

**Priority Date:** 1 Jul 2002

**Also Published as:** US7564208, US20040124796, US20080067965, WO2004004109, WO2004004109

**Relevant Excerpt E1**

**IN CLAIMS:**

1.A system for controlling an electric motor, comprising: an encoder; a central processor in communication with said encoder; a module processor in communication with said central processor; and

feedback circuitry in communication with said module processor.

**Relevant Excerpt E2**

Not Disclosed

**Relevant Excerpt E3**

**IN CLAIMS:**

7. A system as in claim 1, wherein said central processor comprises a field programmable gate array.

\*\*\*\*\*