
S K Dynamics Pvt. Ltd.



2001 Summary Annual Report
A Glance on the Past Decade

S K Dynamics Pvt. Ltd.

COMPANY PROFILE

SK Dynamics P. Ltd (SKD) is a recognized R&D Organization by the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Govt. of India. SKD holds the capability to build prototypes. In essence, SKD develops Technology and transfers the same.

Core competence of SKD can be listed as Electromechanical Engineering, Digital Signal Processing and (Power/ Analog/ Digital) Electronics.

SKD is strategic partner to Analog Devices, Inc. (ADI) in the area of Motor Control since the past 8 years. SKD has developed unique Motor Control Technology and supplied the same to ADI. Two US patents are to the credit of CEO/ SKD in the area of Motor Control, assignee being ADI.

Over a million household appliances in the USA, Japan, Europe and China are using SKD Embedded Motor Control Solutions. These are products such as Washing Machines, Refrigerators, Air Conditioners, Electric Bikes manufactured by Frigdaire – USA, Sharp – Japan, Huening – China, Eltronic – Italy respectively.

In Fiscal Year 2001-2002, SKD has been honored with 3 prestigious awards from the DSIR (National Award), Engineering Export Promotion Council and Electronic & Computer Software Export Promotion Council respectively for best/ praise worthy export of Technology and services in Motor Control.

Besides Motor Control, CEO/ SKD has a past history of various developments in area of Instrumentation, Transducers and Vibration Testing. SKD has also contributed to Physics in terms of a prototype called ‘Gravity Motor’ which exhibited weight changes and two breakthrough experiments viz. Laser Deflection Experiment and Stone Impact Experiment.

SKD is continuing development work on unmanned VTOL vehicle (Flying Car).

This document contains forward-looking statements that are based on current expectations, estimates and projections about the industries in which SKD operates, management’s belief and assumptions made by management. These statements are not guarantees of future performance and involve risk, uncertainties and assumptions.



S K Dynamics Pvt. Ltd.

The Fiscal Year 2001– 02 saw a series of downfalls in the commercial world after the Eleven-September tragedy.

It was seen globally that thousands of employees were laid off even by Corporates. The scene was similar in India and even some companies were closed down due to the overall market recession.

SKD, nevertheless, stood the test of time. Technology developers are not much affected as industries like IT would have been affected. Relatively SKD was untouched.

SKD continued to get Financial support from ADI and gave technical support to ADI and their clients. SKD also introduced very innovative products (Electronic Submersible Pump and Universal Embedded Controller Chip) after several years of rich experience.

Employment of SKD Embedded Motor Control in household appliances in the USA, Japan, Europe and China crossed the mark of 1 Million this year.

NEW PRODUCT PROGRAMS CONTINUED IN FY 01-02

Despite the volatility of 2001, SKD continued to expend its R&D efforts.

One of the most significant achievements is the development of the Universal Embedded Controller ADMC-YR-SKD-1F. This is a ready to use processor for Motor and Non-Motor control applications.

SKD also started application development on the ADSP 21990 Processor (Class D Audio Amplifier and Intelligent Digital Oscilloscope cum Multi-Analyzer) and on the Black Fin ADSP21535 (Embedded PC).

The Russian Gravitational Society invited the presentation of 'Gravity Motor' and Breakthrough Experiments at the International Conference in Moscow in October'01. The Gravity Motor has pending patents in the US and India.

SKD LOOKS FORWARD TO GOING LIMITED

The closing of FY 2001 – 2002 has given a new dimension in SKD vision.

SKD looks forward to going Public within next 3 years.

SKD also plans to offer 25 % equity for under the future expansion plan Group and retain 75 % equity with the Promoter's Group. This concept was considered by the Management keeping in mind to make SKD a Production Unit as well and thus be self – sufficient apart from the Technology development and sales thereof.

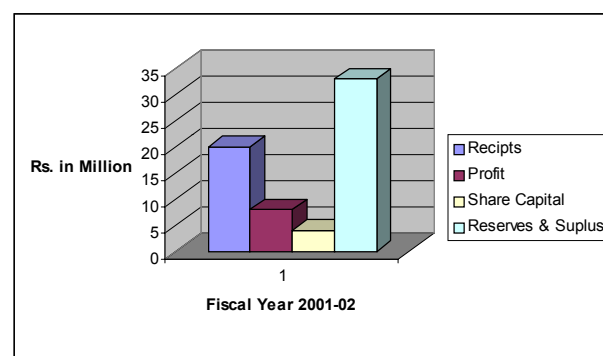
FINANCIAL DATA FOR THE FY 2001 - 02

The total receipts during this year has been Rs. 20 Million (Equivalent US\$ 400K).

The Profit of the company has been Rs. 8 Million (Equivalent US\$ 160K).

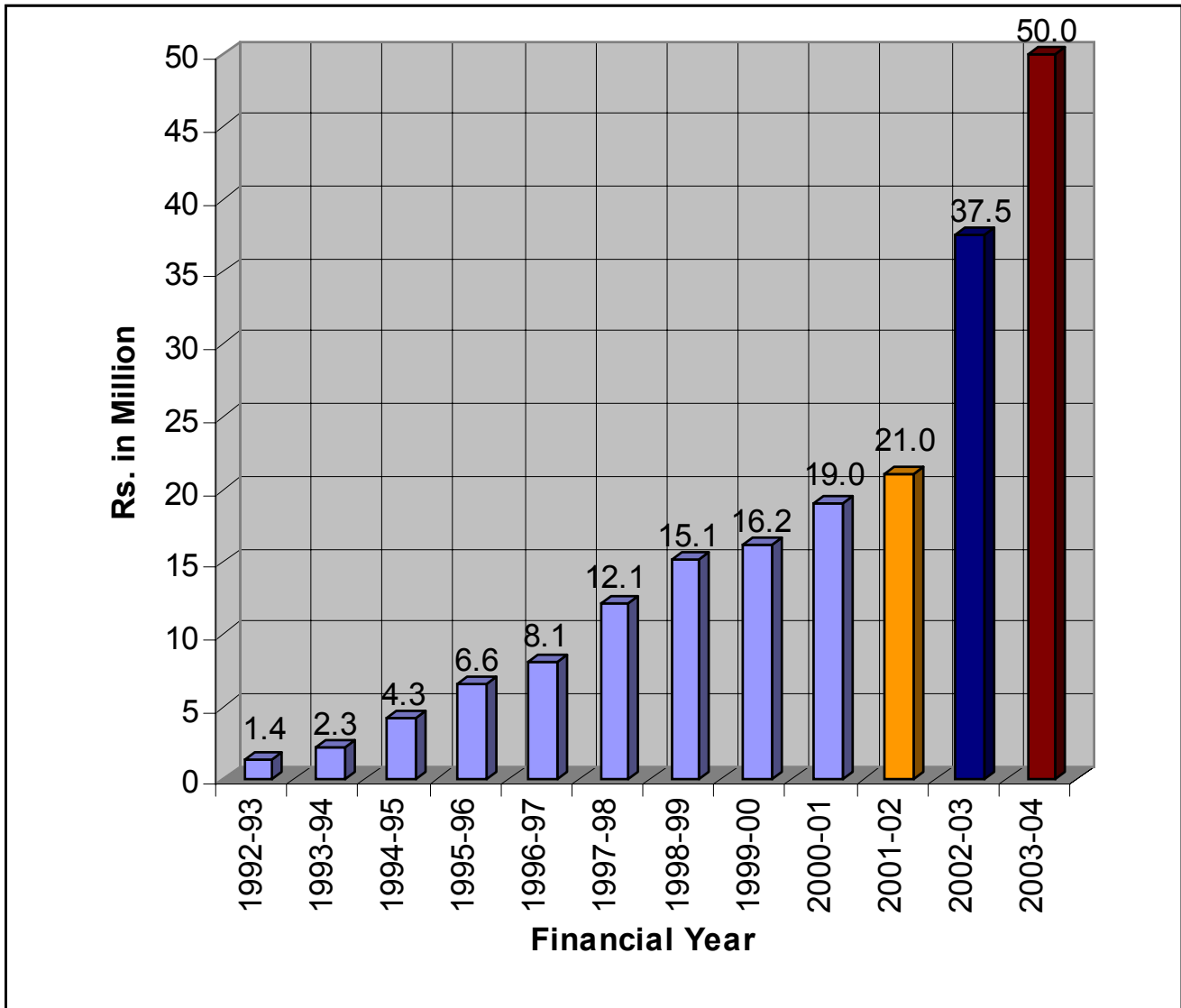
The Share Capital is worth Rs. 4 Million (Equivalent US\$ 80K).

The Reserves and Surplus are of the order of Rs. 33 Million (Equivalent US\$ 660K).



S K Dynamics Pvt. Ltd.

TURNOVER GROWTH IN THE PAST 10 YEARS AND FUTURE PROJECTIONS



SKD was established in 1992 and grew steadily as an organization.

After being a partner and Technical Director in an Engineering firm for several years, CEO Rakesh Goel laid the foundation stone of SKD in 1992 with a pure motive of pursuing R&D and developing Technologies in the area of Electromechanical, Gravitation and Avionics supported by Digital Signal Processing and Power Electronics.

SKD started with few clients in a small way and developed instrumentation and transducers for them to become self-sufficient.

The strategic partnership with Analog Devices, Inc. was entered into 1994 in the area of Motor Control

when ADI could see the potential of a Design House in SKD. Since then SKD has been catering to the technical needs of ADI clients world over in the area of Motor Control and complete System Engineering.

SKD has been training engineers from abroad at their works in Roorkee from time to time and our expert visits ADI clients to train them at their site.

Quarterly Funding from ADI has been the main source of income for SKD and this has been increasing every year.

All ADI chips having SKD Embedded Control sold in the market calls for royalty to SKD over each part sold.

S K Dynamics Pvt. Ltd.

S K DYNAMICS Pvt. Ltd., ROORKEE, INDIA Provisional BALANCE SHEET as on 31st MARCH 2002

PARTICULARS	F.Y. 2001 - 2002		F.Y. 2000 - 2001		F.Y. 1999 - 2000	
	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]
I. SOURCE OF FUND						
1 SHARE HOLDERS FUND:						
A. SHARE CAPITAL	4,000,000		4,000,000		4,000,000	
B. RESERVES & SURPLUS	33,642,188	37,642,188	<u>26,962,051</u>	30,962,051	<u>19,700,683</u>	23,700,683
2 LOAN FUNDS:						
A. SECURED LOANS						
B. UNSECURED LOANS						
TOTAL [RUPEES]		37,642,188		30962051		23,700,683
II. APPLICATION OF FUNDS:						
1. FIXED ASSETS						
GROSS BLOCK	13,383,074		12,567,005		8,122,279	
LESS:- DEPRECIATION	1,238,600	12,144,474	<u>3,663,746</u>	8903259	<u>2,872,358</u>	5,249,921
NET BLOCK						
2A. CURRENT ASSETS LOANS AND ADVANCES						
A. INVENTORIES	1,420,772		1,170,849		1,763,717	
B. SUNDRY DEBTORS	100,884		124,331		57,635	
C. CASH & BANK BALANCES	23,676,150		22,139,153		18,573,675	
D. LOANS & ADVANCES	3,335,854		2,067,234		1,267,512	
	28,533,660		25,501,567		21,662,539	
2B. LESS:- CURRENT LIABILITIES AND PROVISIONS						
CURRENT LIABILITIES & PROVISIONS	3,045,746	25,487,914	3,456,119	22,045,448	3,228,664	18,433,875
NET CURRENT ASSETS [2A-2B]						
3. MISCELLANEOUS EXPENDITURE [TO THE EXTENT NOT WRITTEN OFF OR ADJUSTED]		9,800		13,344		16,887
STATEMENT ON SIGNIFICANT ACCOUNTING POLICIES						
NOTES ON ACCOUNTS						
TOTAL [RUPEES]		37,642,188		30962051		23,700,683

S K Dynamics Pvt. Ltd.

S K DYNAMICS Pvt. Ltd., ROORKEE, INDIA
Provisional PROFIT and LOSS ACCOUNT for the YEAR ENDED 31st MARCH 2002

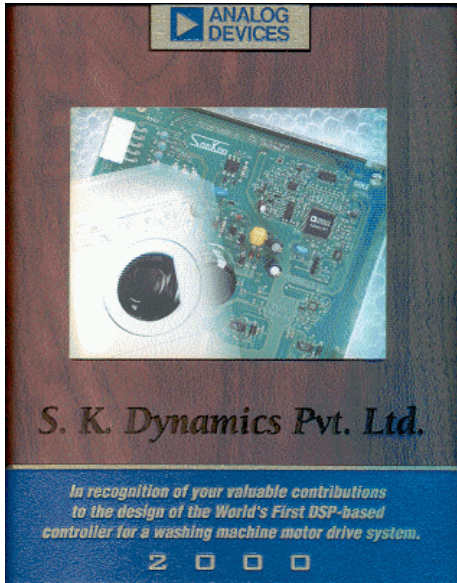
PARTICULARS	F.Y.2001 – 2002	F.Y.2000 - 2001	F.Y.1999 - 2000
	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]
INCOME			
SALES	1,444,900	1,469,975	974,714
OTHER INCOME INCULDING TECHNOLOGY EXPORT*	20,932,337	19,479,401	15,268,154
ACCRETION /(DECRETION) OF STOCK	155,802	(92,101)	(126,297)
TOTAL [RUPEES]	22,533,039	20,857,275	16,116,571
EXPENDITURE			
COST OF GOODS CONSUMED	650,205	670,161	390,707
MANUFACTURING EXPENSES	531,476	255,980	189,250
SALARY & OTHER BENEFITS	5,204,100	4,360,365	3,034,321
ADMINISTRATIVE EXPENSES	5,982,311	5,086,649	3,038,672
SELLING & DISTRIBUTION EXP.	132,863	190,458	97,557
INTEREST & BANK CHARGES	44,588	40,893	29,892
LOSS ON SALE OF VEHICLE	.....	7,683	.....
DEPRECIATION	1,238,600	1,026,347	765,247
PRELIMINARY EXPENSES	3,544	3,543	1,093
WRITTEN OFF REPAIR & MAINTENANCE EXP.	565,215	801,565	461,933
TOTAL [RUPEES]	14,352,902	12,443,644	8,008,672
PROFIT CARRIED TO P&L APPROPRIATION A/C STATEMENT ON SIGNIFICANT ACCOUNTING POLICIES	8,180,137	8,413,631	8,107,899
NOTES ON ACCOUNTS			

(*) → 90% of the other income is from Motor Control Technology Export and consideration of Patents to ADI

S K Dynamics Pvt. Ltd.

S K DYNAMICS Pvt. Ltd., ROORKEE, INDIA
Provisional PROFIT AND LOSS APPROPRIATION ACCOUNT
 FOR THE YEAR ENDED 31st MARCH 2002

PARTICULARS	F.Y.2001 - 2002	F.Y.2000 - 2001	F.Y.1999 - 2000
	AMOUNT [Rs.]	AMOUNT [Rs.]	AMOUNT [Rs.]
BALANCE OF PROFIT & LOSS ACCOUNT AS PER LAST ACCOUNT	26,962,051	19,700,683	13,035,603
PROVISION FOR I.TAX LAST YEAR NOW WRITTEN BACK	.....	950,000	725,000
NET PROFIT FOR THE YEAR B/D	8,180,137	8,413,631	8,107,899
TOTAL [RUPEES]	35,142,188	29,064,314	21,868,502
PROVISION FOR TAXATION A.Y. 2001-2002	1,100,000	725,000	950,000
INCOME TAX A.Y.2000-2001 [P.Y.1999-2000]	.....	936,463	721,924
PROPOSED DIVIDEND	400,000	400,000	400,000
PROPOSED DIVIDEND TAX	.....	40,800	88,000
INCOME TAX A.Y. 97 – 98	.....	.....	7,895
BALANCE CARRIED OVER TO RESERVE & SURPLUS	33,642,188	26,962,051	19,700,683
TOTAL [RUPEES]	35,142,188	29,064,314	21,868,502



Awards & Awards & Acknowledgement Acknowledgement

Analog Devices Inc.
Motor Control Group
831 Woburn Street
Wilmington MA 01887 USA

Sept 27, 2001

Mr. Rakesh Goel
S K Dynamics Pvt Ltd
Roorkee India

Hello Mr. Goel,

Please find in the attached document a current list of the projects that Analog Devices customers have selected to use software created by SK Dynamics in conjunction with ADMC DSP IC's manufactured by Analog Devices Inc., (ADI).

Most notably, On behalf of ADI, I would like to highlight that together SK Dynamics and ADI has surpassed a tremendous milestone and we can now report that in total, More than 1 Million home appliances throughout Japan, China, Europe, and USA, are currently in operation with ADI DSP's and software created by your talented engineering team at SK Dynamics.

* ((Actual # is 1,031,591 at time of this writing)

On a personal note, it has been my pleasure to work closely with and learn from you for the past 3 years and to watch your tireless efforts begin to show very positive results. We are excited that together, we have been able to increase this number year on year and we project that by Yr 2004, this total is expected to reach a potential of 6 Million units !!

Robert Gardner

Robert Gardner 9/27/01
Manager of Tactical Marketing
and Business Operations
Analog Devices Inc.

S K Dynamics Pvt. Ltd.

Awards received by SKD :



From DSIR, 22 Nov 2001



From ESC, 21 Feb 2002



From EEPCC, 30 Jan 2002



From NSIC

S K Dynamics Pvt. Ltd.

ABOUT S K DYNAMICS P. LTD.

SKD is an In - House R&D Unit with capability to manufacture prototypes. SKD is strategic partner to Analog Devices, Inc. since past several years.

SKD excels in research, design and development of new technologies in the field of Electronics and Electromechanical Engineering with stress of System Engineering. In the past, SKD has provided technological solutions on various motor controls, vibration control systems, DSP applications to Private Industries, Government of India and Indian Military. SKD is competent to modify and upgrade existing products/ processes with that which is State-of-Art.

SKD has core competence in Digital Signal Processing, Electromechanical Engineering, Embedded (& Motor) Control, Digital & Analog & Power Electronics, FPGA, System Engineering and Product Engineering

SKD has its registered office and works at B5 & 6, Industrial Estate, Roorkee 247667 and is a small scale industry.

SKD is spread over an area 35,000 sq. ft. of which built up is 20,000 sq feet covered area (distributed as 12,000 sq. ft in Ground floor and 8000 sq. ft in first floor).

SKD has around 60 employees with Rakesh Goel, B.E. (Electronics and Communication) as CEO and MD leading an effective team of engineers. He has to his credit 26 years of rich Industrial Research experience.

The Plant & Machinery is worth Rs. 7.5 Million and the Land & Building is worth Rs. 4.5 Million.

SKD has well defined divisions viz. Design, Assembly, Prototype Manufacturing, Electronics, Mechanical, Testing, Accounts, Stores & Purchase and Marketing. A Fundamental Research Lab has been dedicated for work on Gravity and experiments on unknown Physics. The Stores & Purchase are actively engaged in import of Processors, Power Devices and Magnets, which are continuously required in the area of Motors and Control.

MAJOR REGISTRATIONS and MEMBERSHIPS of SKD

SKD is registered with :

1. Department of Scientific and Industrial Research, Ministry of Science and Technology.

2. Electronics and Computer Software Export Promotion Council
3. Engineering Export Promotion Council
4. National Small Scale Industries Corporation
5. Confederation of Indian Industry

ACHIEVEMENTS OF SKD IN FY 2001 - 02

1. Development of 3 inch Submersible Pump: This is first of its kind in India and uses PMSM technology which is covered by a US patent awarded to CEO, SKD. This pump operates on high electrical frequency viz. 400 Hz and can be operated on a Home Inverter.
2. Development of Universal Embedded Controller ADMC-YR-SKD-1F : This is a ready-to-use processor for Motor and Non – Motor applications having several Motor Control and other drivers Embedded free-of-cost. The developer gets an advantage over his competitors using processors of other make and can enter in the market arena much faster.
3. SKD has been honored with 3 prestigious awards from the DSIR (National Award), Engineering Export Promotion Council and Electronic & Computer Software Export Promotion Council respectively for best/ praise worthy export of Technology and services in Motor Control.
4. In the area of Fundamental Research, the Laser Deflection Experiment was concluded successfully proving that light deflects along the magnetic field in presence of strong magnetic field. The Stone Impact Experiment proved that magnetism and Inertia are related and that through the medium of Ether or M4.

PRODUCTS OF SKD

- a. Permanent Magnet Synchronous Motors (PMSM) and its Variable Speed Drive VSD: Sensorless and Single Sensor Control
- b. AC Induction Motor : Single Sensor Control
- c. Brushless DC Motor : Three sensors control
- d. Stepper Motor Control
- e. Switched Reluctance Motor Control
- f. 12V, 90W, 61 mm Dia. PMSM with Control
- g. 12V, 20W, 38/28 mm Dia. PMSM with Control
- h. 61 mm Electronic Submersible Pump
- i. Inverter Control
- j. Chopper Drive
- k. Geared PMSM
- l. Electric Vehicle
- m. Unmanned VTOL vehicle (in progress)
- n. Gravity Motor (in progress)

S K Dynamics Pvt. Ltd.

PATENTS :

1. Control System for PMSM US Patent 5,635,810 [Granted]
2. Improved Gate Driver Circuit and Hysteresis Circuit Therefor US Patent 5,675,276 [Granted]
3. Geared Permanent Magnet Synchronous Motor (India, Application No. 1884/cal/96) [Pending]
4. Electronic Compass (India, Application No. 1011/cal/98) [Pending]
5. Gravity Motor India (August 3, 2000) [India, Pending]
6. Gravity Motor (January 23, 2001) [US, Pending]
7. Electrical Transmission based Flying Car India (October 19, 2000) [India, Pending]

FUTURE PROJECTIONS :

1. SKD's immediate expansion plan : Establish Pilot Production Line of capacity 5K units / year for Motors and /or Drives, Digital Scopes, Submersible Pumps etc.
2. SKD would make a Single seating VTOL vehicle after successful flights of unmanned VTOL vehicle.
3. 5 % weight change in the Gravity Motor would be employed for Satellite positioning and Orientation.
4. Using the SKD-1F processor, SKD would enter in the inexpensive Motor Control and inverter/ UPS, Robotics etc.

CEO & MD of SKD :

Name : Rakesh Goel

Qualification : Bachelor of Engineering in Electronics & Communication [Gold Medallist] from University of Roorkee, Roorkee, India in 1977

Specialization : Digital Signal Processing, Microprocessors, Power Electronics Mechanical Vibrations, Gravitation and Magnetism

Past Position and Work Profile : Rakesh Goel worked as a Technical Director and Partner in an engineering firm from 1978 to 1992 and developed many Test Equipment and Control Systems. He had a special knack for Electromechanical Engineering supported with Control Hardware and Software.

Present assignment : He established own company S K Dynamics P. Ltd., a full fledged R&D

Organization in 1992 and gave unique motor control solutions to Analog Devices, Inc. USA which is still continued. He is also involved in delivering a prototype of Gravitational Force Generator which exhibits a weight change.

Paper & Thesis : (i) Flexible Speech/ Audio Coding published in Signal Processing & Communication January 18-20, 1993 Indian Institute of Science, Bangalore, India.
(ii) Generation of Gravitational Force (ICGA-5)

Membership :

- (i) Member IEEE
- (ii) Society of EMC Engineers
- (iii) American Physical Society

Technical Training imparted in : USA, Italy, Japan, China and India

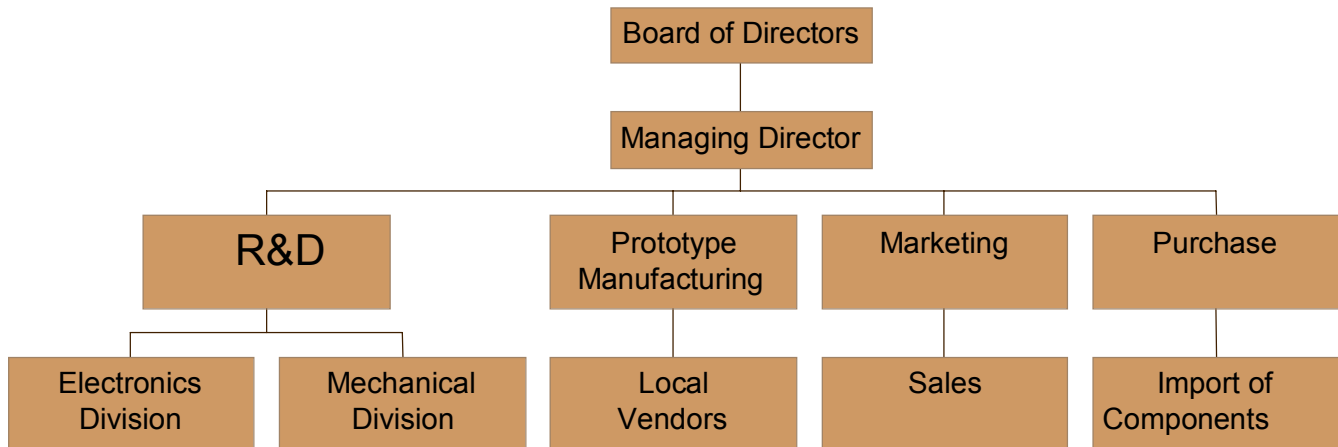
Fundamental Research Work and Contribution to Physics: (i) Origin of Gravitation (ii) Origin of Magnetism (iii) Gravity Motor (Generation of Gravitational Force) (iv) Laser Deflection Experiment (v) Stone Impact Experiment

Developments done in past

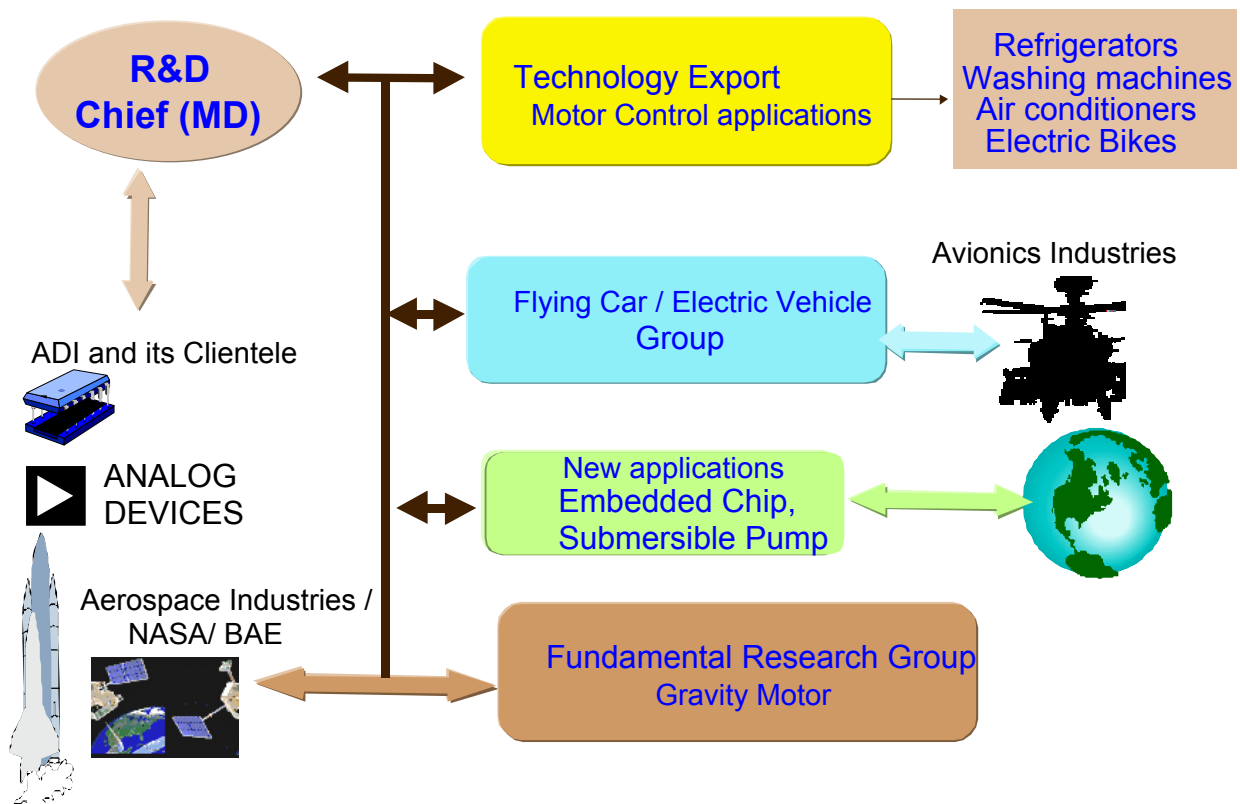
- 1974: Vibration Meter (1st Commercial Product)
1976: Universal Amplifier , Galvanometric Recorder
Variable Reluctance Accelerometer, Vel Pickup
1977: Potentiometric Recorder
1979: SCR based VSD for 3 HP DC Motor
Galvanometric Rectilinear Recorder
1980: MultiChannel Master/Slave recorder
40 KgF ED Shaker System for Vibration Testing
1982: 300 KgF ED Shaker System
1984: Vibrosinker for Pile Sinking
Strain Gauge based Transducers
Z80 based Sine Vibration Controller
1985: 700 KgF ED Shaker System
Eight Channel recorder for Satellite Tracking
1986: Vibrating Wire transducer with readout
Digital multi-channel recorder for Electrologging
1987: Z80 based Ultrasonic Tester, PZT Transducers
500 mm radius Centrifuge machine
1988: PC based Analyzer for circuit breakers
Linear and Rotary Optical Encoders
Bump Test Machine
1989: 2000 KgF ED Shaker System with 12 KVA
Power Amplifier DSP based Sine Vibration
Controller
4.5 m radius Centrifuge Machine
1991: Transmission Line Damper Testing Machine
DSP based Shock and Random Vibration
Controller

S K Dynamics Pvt. Ltd.

Organization Chart of SKD



R & D Activities of SKD

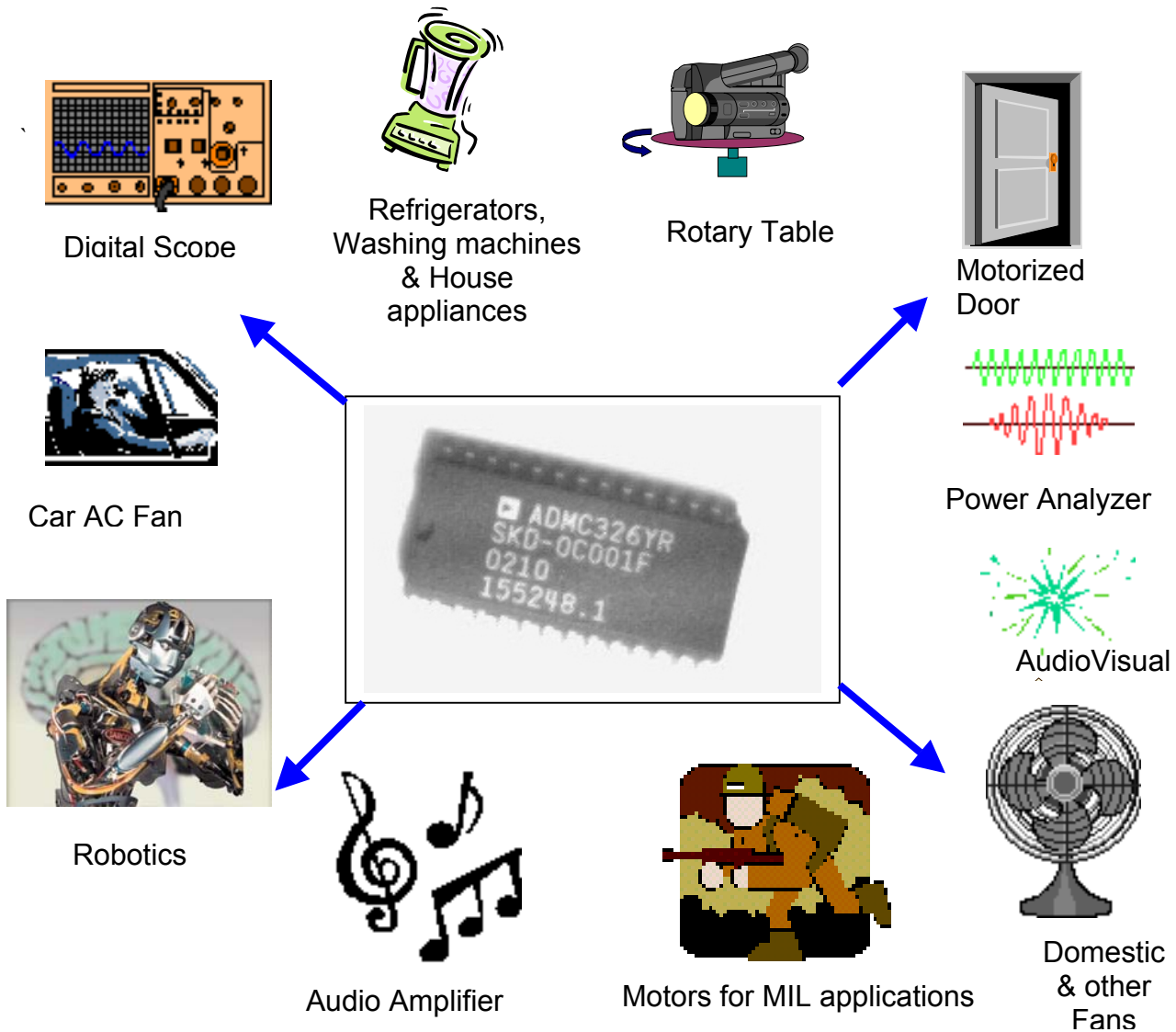


Achievements

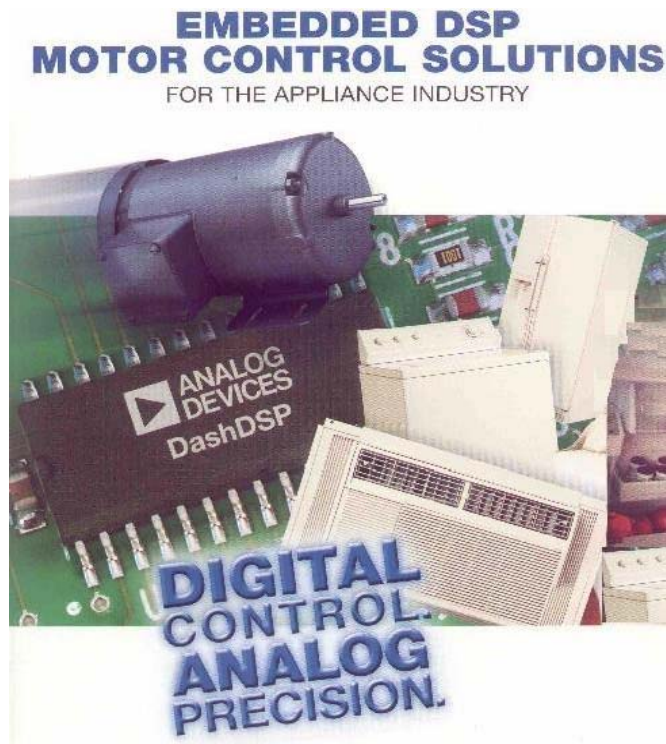


PMS Motor of capacity 1 Kg per HP operates at 400 Hz Electrical Frequency, PWM Frequency being 7.2 KHz

3 inch dia Submersible pump using PMSM Technology



MOTORS AND CONTROLS



Geared PMS Motor



Different type of Motors like
BLDC, PMSM, SRM with their
Electronics Drives

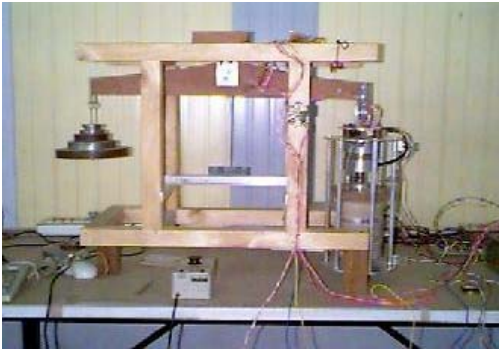


Variable Speed Drive

SKD software running on over 1 Million
Home Appliances

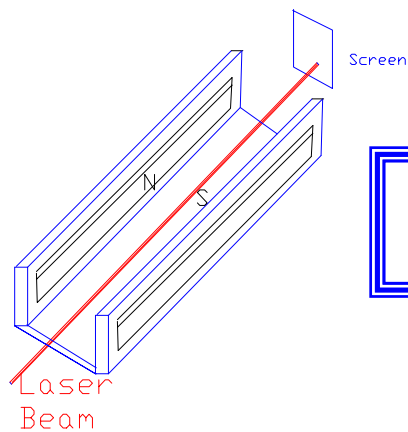
S K Dynamics Pvt. Ltd.

Fundamental Research On Gravitation and Magnetism



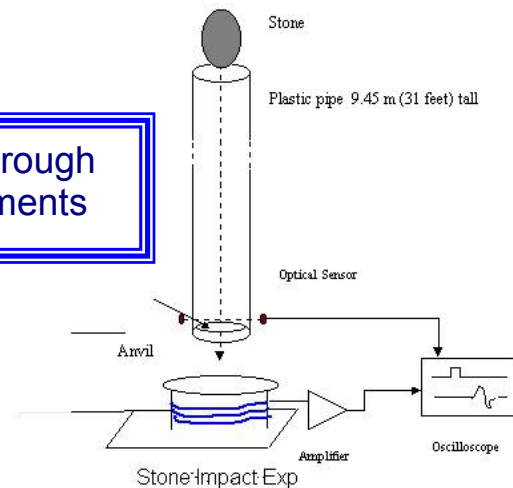
Gravity Motor (right) (on Test Stand, left) : 3 prototypes exhibited weight change maximum of 14 grams

Lab and Experiments on Gravitation and Magnetism



Laser Deflection Experiment proving that light beam deflects in presence of strong magnetic field.

Breakthrough Experiments



The Stone Impact Experiment giving the link between Magnetism and Inertia

VTOL Vehicle



Prototype View of Flying Car



Thrust Motor



Propeller under Test

Past Products



Data Display Unit for 155 mm Field Howitzer Gun
for indirect Firing



Vibration Test System

Our Clients

Analog Devices Inc.

Sharp Japan

Frigidaire USA

Eltronic Italy

Huening China

Indian Military