CII - GREEN CEMENTECH HYDRABAD, 2024



DYNATECH ENGINEERING COMPANY



About Dynatech Engg. Co (3rd Rank in the 11th Maharashtra State Level Energy Conservation Awards 2016)

Leading manufacturer of energy efficient equipments such as Dryers, Reactors & Mixing Systems, Drive Systems, Blenders Kitchen (Bio) Wet Waste Processor etc.

Cumulative energy saved by our equipments run into crores

Capable of drying operations at low temperature

Continuously evolved to adapt to changing environment by launching new products

50 Years of existence

10 Product Segments

200+ customers





Dynatech - Milestones & Timeline

1983

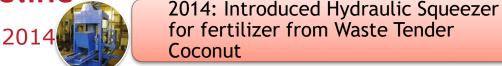


Mr. Ramchandra Madhyastha, Founder & CEO,

Mechanical Engineer - REC Calicut

Has been part of elite Reactor Engg Division(RED) in BARC before starting Dynatech

56 years of experience



2008: Introduced Blender with Specific 2008 reference to Putty and Cement Drymix along with Hydraulic Lift and Screw Feeder

> 1996: Introduced Tunnel Drier and Paddle drier

1988: Developed ANFD with Hydraulic Tilting System

1983: First DCVD developed in India. Introduction of Special Reduction Gear Development.

1980-85: Introduced Terrain Textile processing Machines

1980









Dynatech Products



Agitated Nutsche Filter cum Drier (ANFD)

Drier (DCVD)



Ultra Planetary Gearbox



Hydraulic Squeezer



Rotary Tunnel Drier (RTD)



Reactor and Mixing System



Paddle Vacuum Drier(PVD)



W-Blender







Absolute Energy Savings

- > Dynatech was very sensitive for "Energy Savings" for a long time. To save energy in the industry, we started energy auditing in the industry in early 1976.
- > After auditing, we found that there is a almost 25 % energy lost due to drive system.
- > Power requirement can be optimized/reduced if fluid dynamics are studied carefully before arriving at power requirement
- After studying various reactors & mixing systems, Dynatech observed that Helical Gear System with perfectly assembled unit takes much less power than conventional Worm Gear System
- ➤ To keep all these things before us, we became successful in launching Helical Gearbox with Lantern and stuffing box





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Absolute Energy Savings

- Finally we got big success when we replaced 25 gearboxes at Aarti Drugs, Sarigam (Gujarat)
- > Benefits of Helical Gearbox over conventional Worm Gear System

	Helical	Conventional
Power	Negligible loss. Consumes up to 98% of transmitted power	Significant power loss. Consumes only 75-80% of transmitted power
Maintenance	Low maintenance, not affected by shock loads	High Maintenance, Affected by heavy shock loads, Inner gear unit needs replacement in 2-4 years
Motor	Lower motor configuration E.g. 5 HP for 10000 Ltrs. Reactor	Higher motor required. E.g. 15-20 HP for 10000 Ltrs. Reactor





Absolute Energy Savings - Quantitative Analysis

➤ Let's take a case of Reactor of 10,000 Ltrs

	Helical Gearbox	Comments
Motor	3-5 HP	Conventional system takes 15-20 HP motor
Power Saving over conventional system (KW)	2.8	Based on Dynatech experience
Savings per month (Rs.)	4,480	Assuming 25 working days a month, 8 Hrs per day
Savings per annum (Rs.)	53,760	
Energy savings per Gearbox p.a.	50,000	
No. of Gearboxes produced p.a.	80	
Saving per annum (Rs.)	40,00,000	
Cumulative Savings by Dynatech equipments	150 - 200 Crores	





Absolute Energy Savings - 1. Case Studies

> This is what some of our customers have managed to achieve...

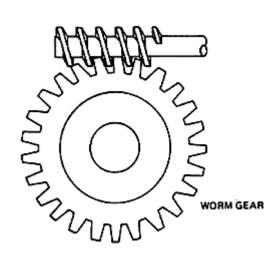
Customer	Power Saving by Dynatech Equipments	Year
Aarti Drugs (Sarigam GIDC)	 Replaced 25 conventional Gearboxes by Dynatech made Helical Gear boxes. Power consumption has come down to less than 50% 	1995
Excel Industries	 Dynatech provided new drive system for reactors Power consumption has come down to less than 50% 	2000
Maharashtra Aldehydes & Chemicals	 Replaced the drive system for 10,000 Ltrs. reactor 20 HP Motor replaced with 5 HP 	2014

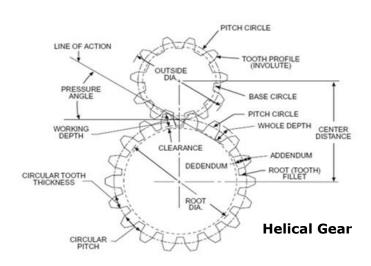
Similarly, over existence of 40+ years, Dynatech has delivered several such systems leading to substantial Energy Savings to our customers



2. Innovative Technologies Employed

In Drive Systems, drive gearbox has importance role. So in conventional worm type gearbox runs through friction force. For this force require additional power which is almost 25 % whereas in helical type gearbox has no friction force. Hence there is almost a little bit power loss. You can understand it in the figure.





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2. Innovative Technologies Employed

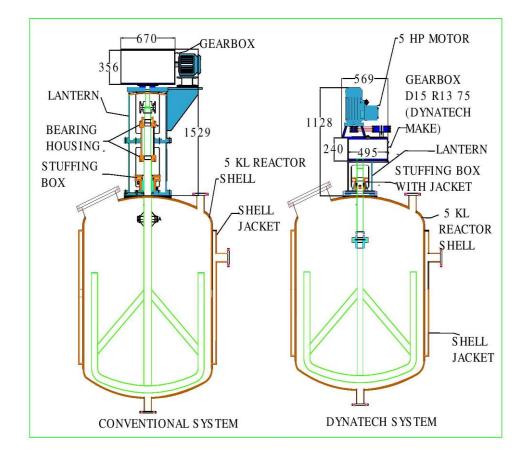
- Drive Systems development for various equipments with reference to near zero maintenance and hydrodynamic studies
- In many manufacturing sectors like Pharmaceutical & Chemical, Heat Transfer Studies with specific reference to Fluid Dynamics are being made to develop high efficiency equipments
- Dynatech conducts Energy Audit on request of customer free of cost and suggests techniques to bring down the power wastage
- In the manufacturing of specialized equipments such as dryers and filters, Dynatech employs energy efficient design techniques. E.g., Telescopic design of agitator shaft improves filtration while reducing power consumption



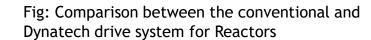


2. Innovative Technologies Employed

- Design eliminates the need of an additional bearing housing in the lantern, reducing the load on the drive motor
- Concentric machining of the mixing shaft eliminates the need for bottom bearing housing, which further reduces the load on the drive motor











3. Use of Renewable Energy

- Apart from the industry, we audited Mumbai urban area, there 1MW power consumed in the morning to boil the water for bath. If we use solar hot water storage, we shall save 1MW in Mumbai. Like this we can apply all over Maharashtra and a big amount of power.
- However, as our work primarily involves saving electrical energy for our customers and stakeholders, we believe this area of Renewable Energy is not applicable to us.





FOR AWARENESS OF THE COMMUNITY

Dynamark -Bulletin Magazine Published between 1990 and 2012 for creating knowledge and awareness among industrialists



Dynatech Website

- Adaptation to digital world
- Viewers have access to Dynatech's work on Energy Saving

Awareness Campaigns and Talks

- Talks on Energy Conservation delivered to the community
- Participated in exhibitions



Vol.18

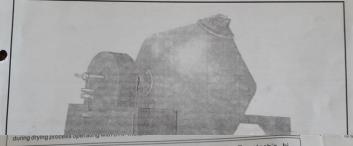
DYNA MARK

DYNATECH : An ISO 9001-2000 Firm
No. 07 and 08 July

July August 2008

CONSERVE ENERGY WHILE IMPROVING PRODUCTION

DOUBLE CONE VACUUM DRIER



ENERGY AUDIT

DYNATECH ENGG. CO. has been manufacturing power saving and energy efficient equipments since 1974. All the equipments are of world standard and are of major use in Chemical, Pharmaceutical, Paint, Food & Agricultural Industries.

These equipments save energy from 25% up to 80%. We at Dynatech make regular energy audit as a customer information service. We give below our energy audit report up to 30.11.07
Rate of Electric Energy being saved

Rate of Electric Energy being saved due to Dynatech's systems as on 30.11.07 is Rs. 7.109 Crores / year. Cumulative Electric energy saved till 30.11.07 is Rs. 59.5 Crores.

"DYNAMARK" Dynatech's bi — monthly bulletin was brought out in the year 1990 as a part of its continuous endeavor to contribute towards better understanding of engineering practices and technology development. The goal was to spread maximum awareness of the conditions and technologies prevailing in the Indian industry and try to help ourselves in understanding how to improve our work culture as well as sustain good manufacturing practice. The relevance of that goal is prevalent all the more in the present day scenario with the onset of globalisation. Customers can write to us for their free copy of 'DYNAMARK'.

POWER CRISIS

It is found that there is a severe power crisis faced by both industrial and domestic fields. It is expected that the power crisis will escalate and be more severe as days pass on. Presently there is no positive programme of installing more power generating units. Even if such plans are there that may not materialize immediately. So the immediate solution to the current power crisis is to save power or energy to the maximum extent.

When the subject of power saving arises the first thought is about light energy saving techniques, probably because the common man sees and uses it daily. All out efforts tend to concentrate on the saving of electrical energy in the form of light. Actually light energy constitutes less than 5% of the total energy generated, though in the present scenario it is good to save even that 5%. But it will be akin to the "Penny Wise Pound Foolish" syndrome. The major part of the energy crisis involves industries where there is a huge scope of saving power. Dynatech





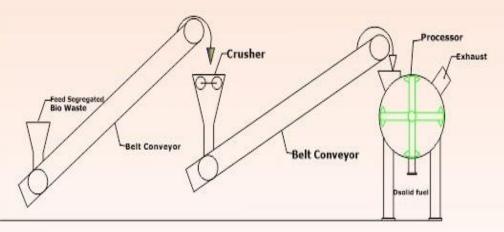
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KITCHEN (BIO) WET WASTE PROCESSOR, 2018

■ We launched Kitchen (Bio) Wet Waste Processor Unit for the community to make India clean and pure. Now we get it Patented (Patent No: 523507).



10 Tonne Processing Unit - Flow Diagram



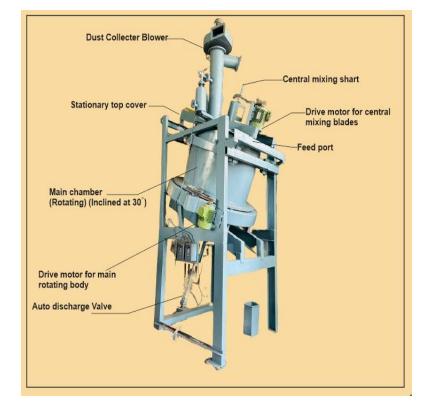




VERTICAL BLENDER 2023

This is with a revolving vertically inclined cylinder along with separate reverse flow mixing shaft with blades. This is very efficient for fast mixing and quick discharge.









Concluding Remarks

- ☐ While focus is on domestic energy saving, conservation of energy in manufacturing sector is normally sidelined due to lack of importance, possible reasons are
 - Cost of power is comparatively lesser compared to other costs
 - Technical expertise acts as a limiting factor
 - Resistance to change due to production loss

As a conclusion, given due importance, we believe that potential energy saving could be as high as 50% with minimal changes to existing systems







DYNATECH ENGINEERING COMPANY



Thank You

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