

# CII - GREEN CEMENTECH HYDRABAD, 2024



**DYNATECH ENGINEERING  
COMPANY**



# About Dynatech Engg. Co (3<sup>rd</sup> Rank in the 11<sup>th</sup> 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



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

1974



Established in 1974

1980



1980-85: Introduced Terrain Textile processing Machines

1983



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

1988



1988: Developed ANFD with Hydraulic Tilting System

1996



1996: Introduced Tunnel Drier and Paddle drier

2008



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

2014



2014: Introduced Hydraulic Squeezer for fertilizer from Waste Tender Coconut

# Dynatech Products



Agitated Nutsche Filter cum Drier (ANFD)



Ultra Planetary Gearbox



Rotary Tunnel Drier (RTD)



Reactor and Mixing System



Double Cone Vacuum Drier (DCVD)



Hydraulic Squeezer



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

# 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...

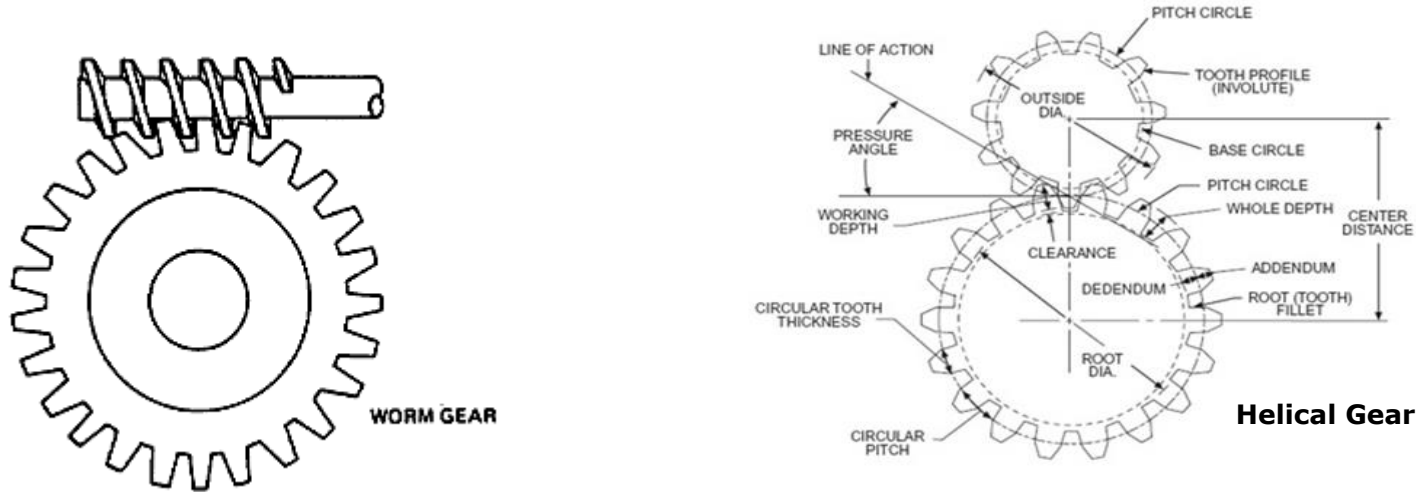
Customer	Power Saving by Dynatech Equipments	Year
Aarti Drugs (Sarigam GIDC)	<ul style="list-style-type: none"><li>➤ Replaced 25 conventional Gearboxes by Dynatech made Helical Gear boxes.</li><li>➤ Power consumption has come down to less than 50%</li></ul>	1995
Excel Industries	<ul style="list-style-type: none"><li>➤ Dynatech provided new drive system for reactors</li><li>➤ Power consumption has come down to less than 50%</li></ul>	2000
Maharashtra Aldehydes & Chemicals	<ul style="list-style-type: none"><li>➤ Replaced the drive system for 10,000 Ltrs. reactor</li><li>➤ 20 HP Motor replaced with 5 HP</li></ul>	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.





## 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

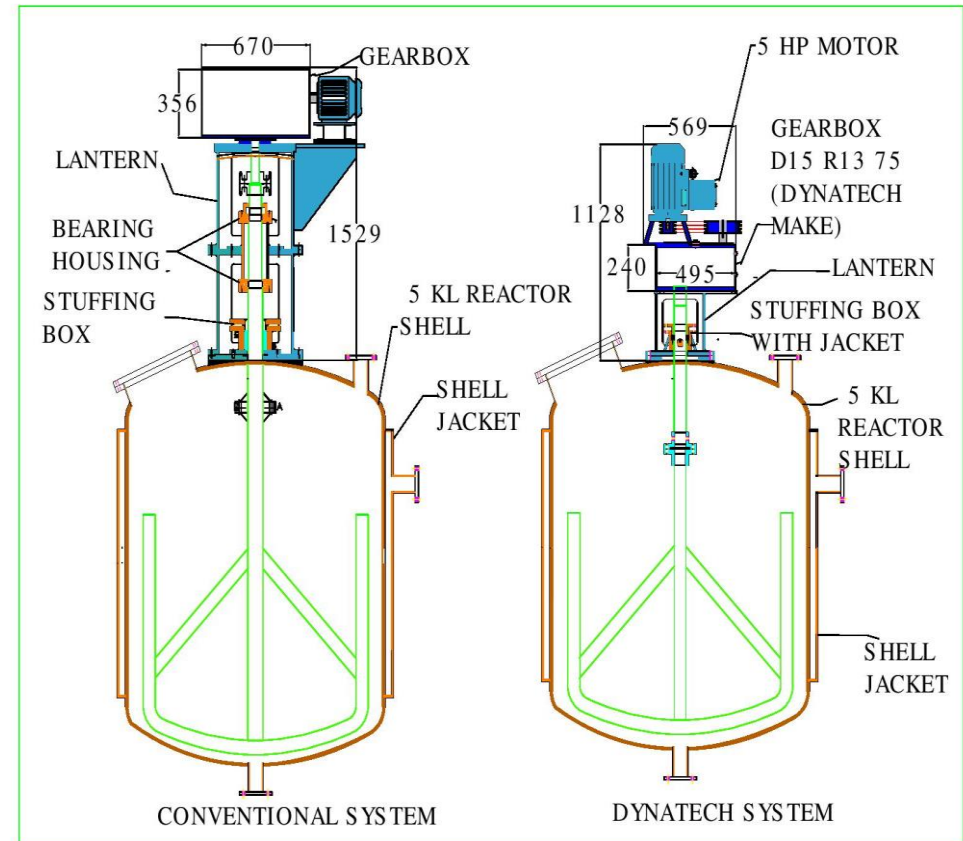


Fig: Comparison between the conventional and Dynatech drive system for Reactors



### 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

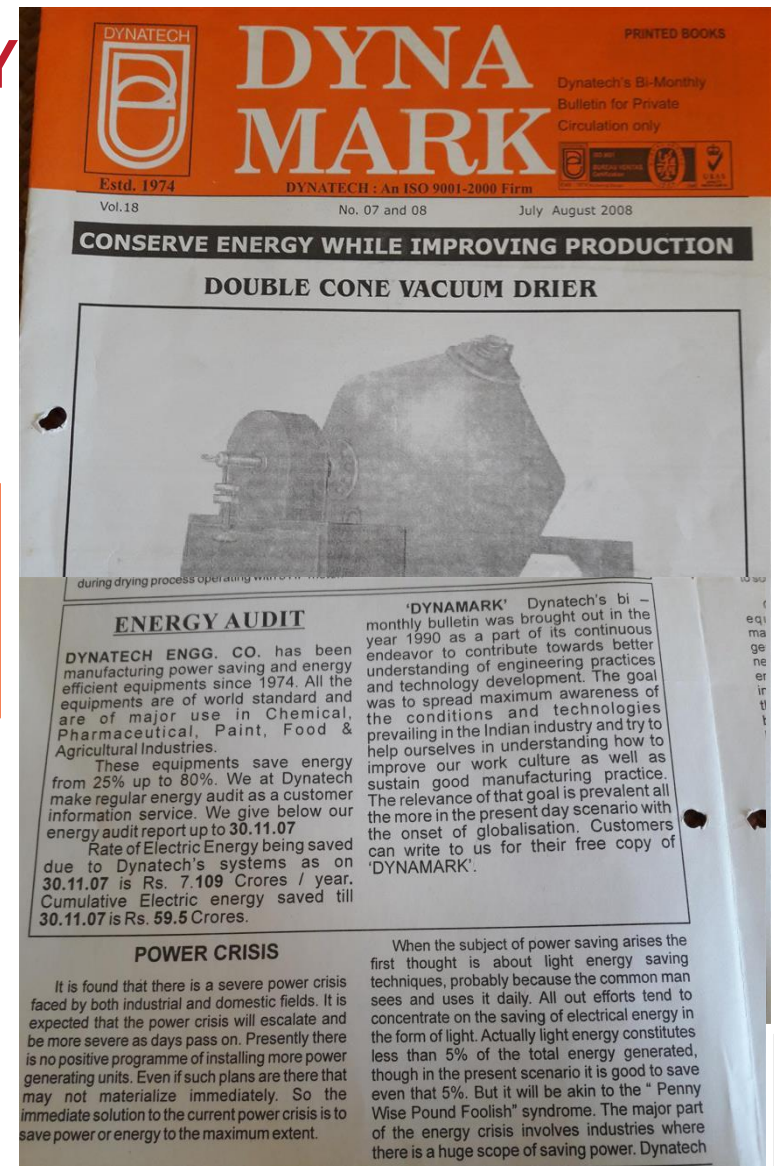
- Published between 1990 and 2012 for creating knowledge and awareness among industrialists

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

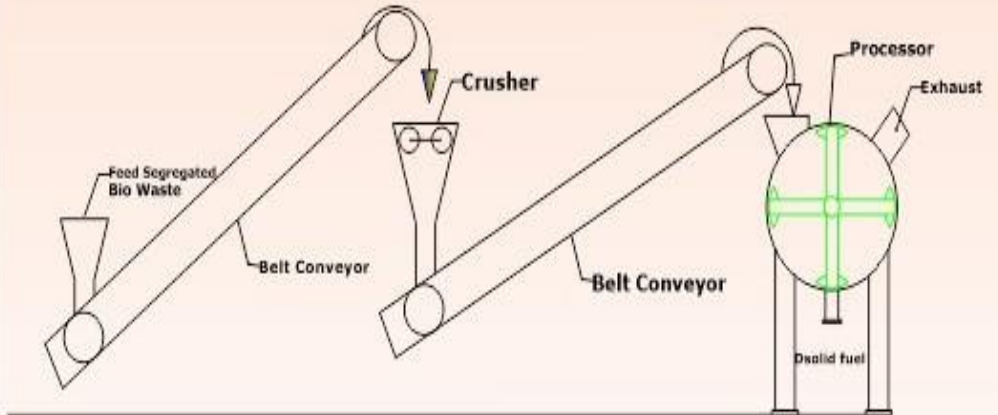


# KITCHEN (BIO) WET WASTE PROCESSOR, 2018

- ❑ 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

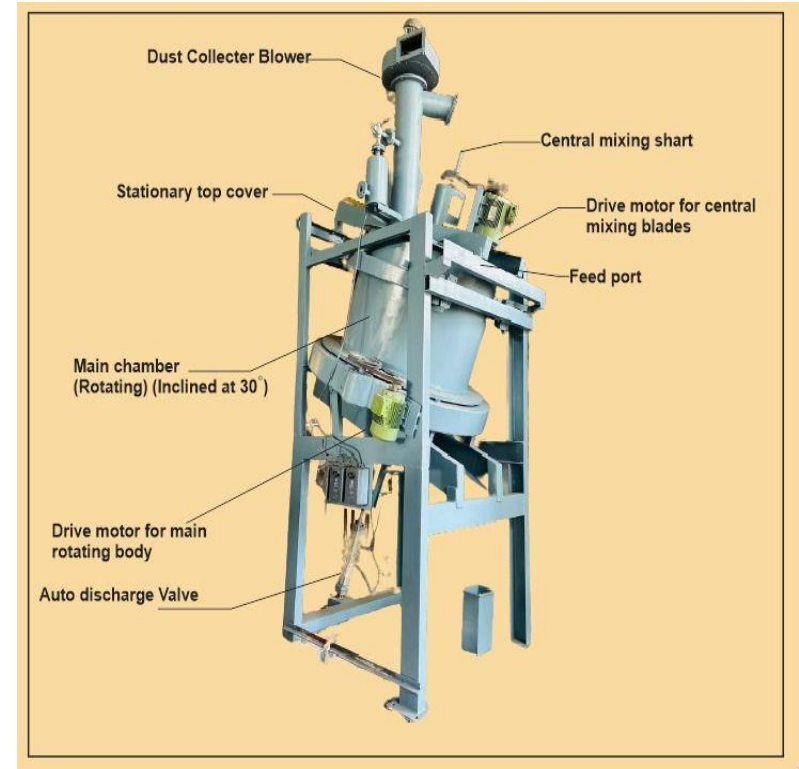


# VERTICAL BLENDER 2023

- 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.



PhotoRoom





## 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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