



Why Choose a Chassis Dynamometer?

We Make Your Testing Easy





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AGENDA





What is a Chassis Dynamometer



Why an Eddy Current Dyno?

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Why do I need a Chassis Dynamometer



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What is a Chassis Dynamometer?

A chassis dynamometer measures the power delivered to the surface of the driver roller by the drive wheels. Vehicles are positioned on the rollers, which the vehicle then turns to measure the output.

Data acquisition and – control packages for your testing needs



Main Components of a Chassis Dynamometer





Eddy Current **Chassis Dynamometers**





20" diameter rolls have 30,000 lb of vehicle weight capacity per drive axle and come with a lifetime warranty

Structural steel frames, with lifetime warranty, provide durable dependable product performance

Air-cooled eddy current load absorbers provide a heavy-duty, cost effective, and water-free solution.



Large Roll Chassis Dynamometers

Large 40" diameter, water brake chassis dynamometers allow greater operation speeds and peak HP capacities

Utilize direct coupled water brake absorbers, and weight capacities to 30,000 lbs per drive axle

Allows for drastically increased testing duration and longer tire life



How do you know which system is right for you?









Why an Eddy Current Chassis Dynamometer?





Typical Water Brake Chassis Dyno:

- Water supplied to water brakes provides resistive force, or 'load'
- Water is heated rapidly and needs to be continuously cooled or drained to sewer





Non-Green Water Brake Cooling Solution:

Utilizes municipal water and dumps hot water to sewer

- Water usage: Approx. 400 gal per test
- For 80 tests per month (20 per week, or 4 per day) = **390,000 gal per year**
- Annual Water/Sewer Cost: <u>\$5,900</u> (avg. U.S. rate = approx. \$15/1,000 gal.)



Water Brake Cooling Solution:

Utilize an accompanying Cooling Water System

Cooling System Expense:

Approx. \$50,000 Investment

System Equipment Price: approx. \$30,000
Installation Price: approx. \$20,000 min.
Pump Electrical Consumption: Varies



 Roof-top 100 HP cooling tower
 5,000 gal. outdoor storage tank (INDOOR required if freezing climate)



Cooling System Pumps and Control Panels.

Why an Eddy Current Dyno?



Water Brakes Present Operational Headaches and Expenses

- O A Water Brake dyno pit often becomes filled with water, oil, and debris
- Gearboxes are often needed to increase water brake RPM and provide adequate load at slower speeds
 - Gearboxes require lubrication to avoid catastrophic failure
 - Gearboxes and water brake components are generally replaced every 7-10 years
 - Dyno pit is susceptible to *clogged drains and flooding*, which ruins vented gearbox
 - Water brakes clog with mineral deposits over time and no longer create load
 - Cost of replacement is approx. \$28,000-\$35,000 for 2 water brakes and 2 gearboxes





Eddy Current Chassis Dynos (Green Solution as-is):

- Air-cooled, waterless system
- <u>No water in pit other than dripping from vehicle</u>
- Eddy current brakes utilize electricity and magnetic fields to create load
- No gearboxes needed Eddy's create adequate load at all normal operating vehicle speeds
- Only greasing is for bearings and carried out from easily accessible central manifold
- Extremely fast response time
- Minimal Electrical use (no water consumption):
 - Approximate use: 1.4 kW-hrs per test
 - For 80 tests per month, 1,343 kW-hrs per year
 - Annual Electricity Cost: *\$161*





	Power Test	Competitor
Total Cost of Ownership Comparison	Eddy Current	Water Brake
(Water Brake vs. Eddy Current Chassis Dyno)		
Lubricate all shaft bearings monthly (or 40 hours, whichever comes first):	\$72	\$2,160
Adjust water brake packing seals approx. every 2 months:	\$0	\$540
Calibrate every 6 months:	\$12	\$60
Clear clogged Dyno Pit drain of debris bi-annually on average:	\$0	\$250
Replacement of 2 Water Brakes & 2 gearboxes & water pumps every 7-10 yrs on avg:	\$0	\$3,706
Annual parts costs outside major equipment replacements:	\$461	uncertain
Annual Electricity charges for Eddy Currents:	\$161	\$0
Water & Sewage Charges for Water Brakes withOUT cooling system:	\$0	\$5,743
Water treatment chemicals and service (with coolling system in place):	\$0	\$1,000

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			Annual									
	Power Test	Competitor	Difference:	Vear 2	Year 3	Year 4	Year 5	year 6	Year 7	Year 8	year 9	Year 10
Annual "Total Operating Cost" using water & sewer:	\$706	\$12,45 <mark>9</mark>	<mark>\$11,752</mark>	\$2 <mark>3,505</mark>	\$35,257	\$47,009	\$58,762	\$70,514	\$82,266	\$94,019	\$105,771	\$117,523
Annual "Total Operating Cost" with cooling system:	\$706	\$7,716	\$7,010	\$ <mark>1</mark> 4,019	\$21,029	\$28,038	\$35,048	\$42,058	\$49,067	\$56,077	\$63,086	\$70,096
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- SIMPLE installation
- NO cooling system needed
- Green Technology
- HIGH Reliability
- No flooded, smelly pits
- o No water chemistry
- FEW headaches







Why Do I Need a Chassis Dynamometer?



Eliminates liability and lost time from road testing

- Lower liability insurance rates
- No traffic jams to get stuck in and ZERO risk of traffic accidents
- No drive time to get to areas where you can only partially test engine cooling and performance
- Immediate ability to re-create performance complaint issue
- Ability to fully replicate any MPH, RPM, or output load level while recreating a reported issue





- Allows technicians more time to work billable hours in the shop
- No second technician needed to read the OEM PC software



Proper and professional verification of repair



- Proves that performed services have resolved the customer's reported issues
- Increased customer satisfaction with your service organization
- Significant value add in providing professional reports
- Instantaneous credibility and confidence in your repair

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- Reduced risk of warranty coverage
- Simulates loaded conditions under inaccessible terrain
- Increase of service volume from referrals





• Additional performance issues can only be identified on the dyno

• These issues may not be found on a normal test drive

• Former drive time is now replaced with additional billable repair time.

• Increase in parts sales derived from increased repair time

The market allows you to charge for dynamometer testing services

Additional Business Benefits





- Proves to your customers your dedication and ability to efficiently identify and resolve their equipment issues
- Ability to test used trucks prior to accepting them in a trade
- Dynamometer testing services for outside organizations, including your competition
- Provides a direct benefit to used truck business.
 - Properly assess trade in values
 - Tout it as a value add during the sale



How do I Know it Pays back?





Commitment to Exceeding Customer Expectations

Power Test is committed to customer satisfaction which extends to every area of our business. We consistently focus on reducing your maintenance costs and preventing equipment downtime. You can rely on Power Test's Technical Service team to provide training and support when you need it.

A 13 Month Return on Your Investment?? (an example)

Estimated Investment

Purchase of dyno, PowerNet CD controller and exhaust hood	\$150,000
Pit construction, installation and expenses	+ 30,000
Total Investment	\$180,000

Estimated Monthly Operating Revenue and Expenses

Dyno runs per month (assumes 2 trucks/day)	50 @ \$200 average revenue	\$10,000
Dyno labor cost at .5 hours per run	25 labor hours/month @ \$45/hr.	- 1,125
Dyno electricity cost per month (estimated)	1,000kWh @ \$.10/kWh	- 100
Incremental shop repairs identified by dyno Incremental shop cost for parts and labor	25 new repairs @ \$400 each 25 repairs @ \$200 cost each	+ 10,000 - 5,000
Total incremental monthly profit from dyno		\$13,775
Total incremental yearly profit from dyno		\$165,300

Break-Even time = 13 months* (\$180,000 investment + \$13,775 profit/month)

This is one example. Talk to your Power Test sales representative to determine the Break-Even for your location. *Does not include the additional benefit of the Federal Tax Section 179 accelerated depreciation deduction.



Contact Power Test to work through your own payback calculator



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