# PL Hydrogen Fuelcell Forward Demand Z

*PEM fuel cell stacks use platinum as primary catalyst ( 30-60g Pt per stack). Pure-play H2 equity prices forward capex 2-4 quarters ahead of catalyst purchases. Distinct from Z4032 HG copper proxy. Captures 2000 cleantec*

David Stendahl · Market Lab Analytics · November 6, 2026

## What this signal is

PEM fuel cell stacks use platinum as primary catalyst ( 30-60g Pt per stack). Pure-play H2 equity prices forward capex 2-4 quarters ahead of catalyst purchases. Distinct from Z4032 HG copper proxy. Captures 2000 cleantech 1.0, 2008 cleantech 2.0, 2020-21 Biden green stimulus, 2024-26 reset.

The composite is bounded between minus one and plus one through tanh. On 1997-10-13 it reached its series maximum plus 0.995 and on 1997-02-19 its series minimum minus 0.995.

Today the composite reads near −0.97. See live page for current state.

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## How the inputs compose

PEM fuel cell stacks use platinum as primary catalyst ( 30-60g Pt per stack). Pure-play H2 equity prices forward capex 2-4 quarters ahead of catalyst purchases. Distinct from Z4032 HG copper proxy. Captures 2000 cleantech 1.0, 2008 cleantech 2.0, 2020-21 Biden green stimulus, 2024-26 reset.

The engine also computes four confirming features: five-day velocity, 60-day volatility regime, 60-day correlation with platinum returns, 63-day lag-1 autocorrelation.

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## What the state-conditional returns have actually done

The platinum forward-60-day return baseline (unconditional) is mean plus 1.27 percent, median plus 1.36 percent.

> **Reference baseline (7,405 platinum-aligned forward-60-day windows over the live engine window)**

> Platinum forward-60-day return baseline: mean plus 1.27 percent, median plus 1.36 percent. Phase 0 source: Z1434 engine parquet joined with NYMEX platinum back-adjusted continuous closes.

Fuelcell demand forward high (Phase +1), 3,408 trading days, returned on average plus 2.40 percent.

Normal (Phase +0), 2,526 trading days, returned on average plus 0.96 percent.

Fuelcell demand forward weak (Phase −1), 3,026 trading days, returned on average minus 0.58 percent.

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## Three cases that frame how to read the signal

### Case 1: 1997-10 composite series maximum

On 1997-10-13 the composite reached its series maximum plus 0.995. Platinum subsequent 60-day behavior aligned with the fuelcell demand forward high regime pattern.

### Case 2: 1997-02 composite series minimum

On 1997-02-19 the composite reached its series minimum minus 0.995. Platinum subsequent 60-day behavior aligned with the fuelcell demand forward weak regime pattern.

### Case 3: March 2020 COVID shock window

The March 2020 COVID liquidity shock drove violent regime shifts across platinum drivers. The composite oscillated as the underlying mechanism repriced.

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## How to use the signal today

This is a regime detector on a 60-day forward horizon.

Three best uses. First, as a regime filter for platinum exposure (Phase +1 equals fuelcell demand forward high). Second, as a cross-check against positioning and price-momentum signals. Third, as a transition-window warning, pairing with price-based signals for conviction.

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## Methodology notes

PEM fuel cell stacks use platinum as primary catalyst ( 30-60g Pt per stack). Pure-play H2 equity prices forward capex 2-4 quarters ahead of catalyst purchases. Distinct from Z4032 HG copper proxy. Captures 2000 cleantech 1.0, 2008 cleantech 2.0, 2020-21 Biden green stimulus, 2024-26 reset.

The 1990 start reflects the earliest reliable source coverage.

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## What this signal does not cover

Four caveats. The signal is a regime detector, not a timing signal. State-conditional means hold on average, not for every individual window. Regime persistence varies with macroeconomic backdrop.

Individual windows can run much longer or shorter than mean sample. State-conditional edges are backward-looking empirical averages. Future regimes may differ. The baseline is NYMEX platinum back-adjusted continuous (PL_1240BD).

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*Not investment advice. Signal readings and empirical statistics are derived from publicly available data sources. (c) 2026 David Stendahl.*