COALINDIA Stock Analysis

EMA 9/15 Crossover Strategy - Comprehensive Backtest Report

Analysis Parameter	Value
Stock Symbol	COALINDIA
Strategy Type	EMA 9/15 Crossover
Data Period	July 30, 2025 to September 10, 2025
Total Data Points	2,175 bars
Base Timeframe	5 minutes
Analysis Timeframes	15min, 30min
Risk:Reward Ratios	1:1, 1:2, 1:3
Stop Loss Types	Fixed, Trailing
Price Range	■368.8 - ■395.5
Report Generated	September 10, 2025 at 11:52 PM

■ Executive Summary

This comprehensive analysis examines COALINDIA stock performance using EMA 9/15 crossover strategies across multiple configurations. We tested 12 different strategy combinations including various timeframes, risk-reward ratios, and stop-loss mechanisms.

Key Findings:

- **Best Return:** 15min Trailing 1:1 (-1.85%)
- **Best Sharpe:** 15min Trailing 1:1 (-1.20)
- **Lowest Drawdown:** 15min Trailing 1:1 (3.68%)
- **Best Win Rate:** 15min Fixed 1:1 (37.8%)
- **Best Profit Factor:** 15min Trailing 1:1 (0.84)

■ Complete Strategy Comparison

Configuration	Timeframe	Risk Ratio	Stop Type	Return (%)	B&H Return (%)	Sharpe	Max DD (%)	Win Rate (%)	Profit Factor	Trades	Avg Trade (%)	Calmar
15min Fixed 1:1	15min	1:1	Fixed	-2.52	2.74	-1.62	4.33	37.8	0.81	45	-0.07	-4.67
15min Trailing 1:1	15min	1:1	Trailing	-1.85	2.74	-1.20	3.68	37.8	0.84	45	-0.05	-4.18
15min Fixed 1:2	15min	1:2	Fixed	-5.78	2.74	-3.60	8.43	28.9	0.62	45	-0.14	-4.82
15min Trailing 1:2	15min	1:2	Trailing	-5.35	2.74	-3.31	8.03	28.9	0.64	45	-0.13	-4.77
15min Fixed 1:3	15min	1:3	Fixed	-7.35	2.74	-4.94	8.93	28.9	0.53	45	-0.18	-5.45
15min Trailing 1:3	15min	1:3	Trailing	-7.43	2.74	-5.16	9.01	28.9	0.51	45	-0.18	-5.45
30min Fixed 1:1	30min	1:1	Fixed	-5.54	2.74	-4.15	8.75	27.8	0.44	18	-0.33	-4.47
30min Trailing 1:1	30min	1:1	Trailing	-5.67	2.74	-4.16	8.86	27.8	0.43	18	-0.34	-4.49
30min Fixed 1:2	30min	1:2	Fixed	-4.87	2.74	-3.19	8.76	22.2	0.51	18	-0.29	-4.02
30min Trailing 1:2	30min	1:2	Trailing	-5.30	2.74	-3.54	8.87	22.2	0.48	18	-0.32	-4.25
30min Fixed 1:3	30min	1:3	Fixed	-4.22	2.74	-2.55	8.76	22.2	0.58	18	-0.26	-3.57
30min Trailing 1:3	30min	1:3	Trailing	-6.27	2.74	-4.43	8.87	22.2	0.38	18	-0.38	-4.85

■ Performance Analysis by Categories

Timeframe Comparison

timeframe	total_return	sharpe_ratio	max_drawdown	win_rate	profit_factor	num_trades
15min	-5.04	-3.31	7.07	31.85	0.66	45.00
30min	-5.31	-3.67	8.81	24.07	0.47	18.00

Risk:Reward Ratio Comparison

risk_ratio	total_return	sharpe_ratio	max_drawdown	win_rate	profit_factor	num_trades
1:1	-3.89	-2.78	6.41	32.78	0.63	31.50

1:2	-5.32	-3.41	8.52	25.56	0.56	31.50
1:3	-6.32	-4.27	8.89	25.56	0.50	31.50

Stop Loss Type Comparison

stop_type	total_return	sharpe_ratio	max_drawdown	win_rate	profit_factor	num_trades
Fixed	-5.05	-3.34	7.99	27.96	0.58	31.50
Trailing	-5.31	-3.64	7.89	27.96	0.55	31.50

■ Time Period Performance Analysis

Daily Performance Analysis

Configuration	avg_return	total_return	max_drawdown	sharpe_ratio	num_trades
15min Fixed 1:1	-0.07	-2.52	4.33	-1.62	45.00
15min Trailing 1:1	-0.05	-1.85	3.68	-1.20	45.00
15min Fixed 1:2	-0.14	-5.78	8.43	-3.60	45.00
15min Trailing 1:2	-0.13	-5.35	8.03	-3.31	45.00
15min Fixed 1:3	-0.18	-7.35	8.93	-4.94	45.00
15min Trailing 1:3	-0.18	-7.43	9.01	-5.16	45.00
30min Fixed 1:1	-0.33	-5.54	8.75	-4.15	18.00
30min Trailing 1:1	-0.34	-5.67	8.86	-4.16	18.00
30min Fixed 1:2	-0.29	-4.87	8.76	-3.19	18.00
30min Trailing 1:2	-0.32	-5.30	8.87	-3.54	18.00
30min Fixed 1:3	-0.26	-4.22	8.76	-2.55	18.00
30min Trailing 1:3	-0.38	-6.27	8.87	-4.43	18.00

Weekly Performance Analysis

Configuration	avg_return	total_return	max_drawdown	sharpe_ratio	num_trades
15min Fixed 1:1	-0.07	-2.52	4.33	-1.62	45.00
15min Trailing 1:1	-0.05	-1.85	3.68	-1.20	45.00
15min Fixed 1:2	-0.14	-5.78	8.43	-3.60	45.00
15min Trailing 1:2	-0.13	-5.35	8.03	-3.31	45.00
15min Fixed 1:3	-0.18	-7.35	8.93	-4.94	45.00
15min Trailing 1:3	-0.18	-7.43	9.01	-5.16	45.00
30min Fixed 1:1	-0.33	-5.54	8.75	-4.15	18.00
30min Trailing 1:1	-0.34	-5.67	8.86	-4.16	18.00
30min Fixed 1:2	-0.29	-4.87	8.76	-3.19	18.00
30min Trailing 1:2	-0.32	-5.30	8.87	-3.54	18.00
30min Fixed 1:3	-0.26	-4.22	8.76	-2.55	18.00
30min Trailing 1:3	-0.38	-6.27	8.87	-4.43	18.00

Monthly Performance Analysis

Configuration	avg_return	total_return	max_drawdown	sharpe_ratio	num_trades
15min Fixed 1:1	-0.07	-2.52	4.33	-1.62	45.00
15min Trailing 1:1	-0.05	-1.85	3.68	-1.20	45.00
15min Fixed 1:2	-0.14	-5.78	8.43	-3.60	45.00
15min Trailing 1:2	-0.13	-5.35	8.03	-3.31	45.00

15min Fixed 1:3	-0.18	-7.35	8.93	-4.94	45.00
15min Trailing 1:3	-0.18	-7.43	9.01	-5.16	45.00
30min Fixed 1:1	-0.33	-5.54	8.75	-4.15	18.00
30min Trailing 1:1	-0.34	-5.67	8.86	-4.16	18.00
30min Fixed 1:2	-0.29	-4.87	8.76	-3.19	18.00
30min Trailing 1:2	-0.32	-5.30	8.87	-3.54	18.00
30min Fixed 1:3	-0.26	-4.22	8.76	-2.55	18.00
30min Trailing 1:3	-0.38	-6.27	8.87	-4.43	18.00

■ COALINDIA Market Insights

COALINDIA Trading Characteristics:

1. Sector Profile:
• Coal India Limited is India's largest coal mining company
• Public sector undertaking with government backing
• Dividend-paying stock with consistent payouts
• Sensitive to energy policy and environmental regulations

2. Price Movement Patterns:
• Generally exhibits lower volatility compared to private sector stocks
• Influenced by commodity cycles and government policies
• Seasonal demand patterns from power and steel sectors
• Support levels often maintained due to dividend yield attraction

3. Strategy Considerations for COALINDIA:
• EMA crossovers may be more reliable due to lower noise
• Longer timeframes might capture policy-driven trends better
• Risk management crucial during regulatory announcement periods
• Consider fundamental factors alongside technical signals

4. Trading Volume Analysis:
• Higher institutional participation compared to retail-heavy stocks
• Volume spikes often coincide with quarterly results or policy changes
• Lower intraday volatility suitable for swing trading strategies
• Good liquidity for position entry and exit

■■ COALINDIA-Specific Risks:
• Environmental and regulatory policy changes
• Coal demand shifts due to renewable energy adoption
• Government divestment plans and stake sales
• Monsoon impact on mining operations

■ COALINDIA Strategy Recommendations

Based on the COALINDIA analysis, here are targeted recommendations:

1. Optimal Configuration Selection:
• Review the best performing configurations from our analysis
• Consider COALINDIA's lower volatility profile when choosing risk ratios
• Factor in dividend ex-dates which can affect technical patterns

2. Timeframe Optimization:
• 15-minute charts may capture intraday institutional flows better
• 30-minute timeframes could reduce false signals from low volatility periods
• Consider daily charts for longer-term position trades

3. COALINDIA-Specific Risk Management:
• Use wider stops during earnings and policy announcement periods
• Consider fundamental support levels (book value, dividend yield)
• Monitor coal prices and energy sector trends

4. Market Timing Considerations:
• Avoid trading during monsoon-related news flows
• Pay attention to government budget announcements
• Monitor energy sector rotation and institutional flows

• Consider quarterly earnings seasonality

5. Portfolio Integration:
• COALINDIA can serve as a defensive component in energy sector allocation
• Pairs well with other PSU stocks for sector-based strategies
• Consider as a dividend-focused holding with technical overlay
• Use as hedge against private sector energy stocks

■■ Important Disclaimers:
• Past performance does not guarantee future results
• COALINDIA is subject to regulatory and policy risks
• Always use proper risk management and position sizing
• Consider transaction costs and dividend impacts in live trading
• Monitor ESG trends affecting coal sector investments

■ Methodology & Technical Details

COALINDIA Analysis Framework:
• **Data Source:** 5-minute OHLCV bars from COALINDIA
• **Analysis Period:** Comprehensive historical backtest
• **Strategy Core:** EMA 9/15 crossover with bi-directional trading
• **Risk Management:** Fixed and trailing stop-loss mechanisms

Technical Indicators:
• **EMA 9:** Fast exponential moving average for trend detection
• **EMA 15:** Slow exponential moving average for confirmation
• **Crossover Logic:** Both long and short position generation
• **Stop Loss:** 1% base with configurable risk-reward ratios

Configuration Matrix:
• **Timeframes:** 15-minute and 30-minute resampling
• **Risk Ratios:** 1:1, 1:2, and 1:3 risk-to-reward testing
• **Stop Types:** Fixed stops vs. dynamic trailing stops
• **Total Configs:** 12 comprehensive combinations

Performance Metrics:
• **Return Analysis:** Total return vs buy-and-hold comparison
• **Risk Metrics:** Sharpe ratio, maximum drawdown, Calmar ratio
• **Trade Statistics:** Win rate, profit factor, average trade
• **Execution:** Realistic commission assumptions (0.1%)

COALINDIA-Specific Considerations:
• **Sector Context:** PSU coal mining characteristics
• **Volatility Profile:** Lower volatility vs private sector peers
• **Liquidity Analysis:** Institutional vs retail participation
• **Fundamental Overlay:** Policy and regulatory impact assessment

Report Generated: September 10, 2025 at 11:52 PM
Analysis Framework: backtesting.py with COALINDIA adaptations
Stock: Coal India Limited (COALINDIA)
Strategy: EMA 9/15 Crossover (Bi-directional)
Configurations Tested: 12
Sector: Energy - Coal Mining
Report Version: 1.0 - COALINDIA Specialized