

PROGRESS COMPLEX EVENT PROCESSING (CEP) FOR ENERGY TRADING AND RISK

Progress® Apama® is pioneering the use of CEP within traded energy markets. In a recent review published by IDC in January 2009, Apama was the highest ranking CEP vendor scoring maximum marks for 3 out of 5 assessment criteria. The report confirms the Apama position as a CEP market leader and highlights superior overall performance, functionality and market penetration.

Just as Apama was among the very first to successfully apply CEP to traded capital markets ten years ago, it is addressing the traded energy markets as they reach maturity in terms of product coverage and liquidity. Apama is working with leading market participants to identify, model and deliver use cases designed specifically for asset-backed energy trading and risk management.

ARBITRAGE TRADING AND AUTO-HEDGING

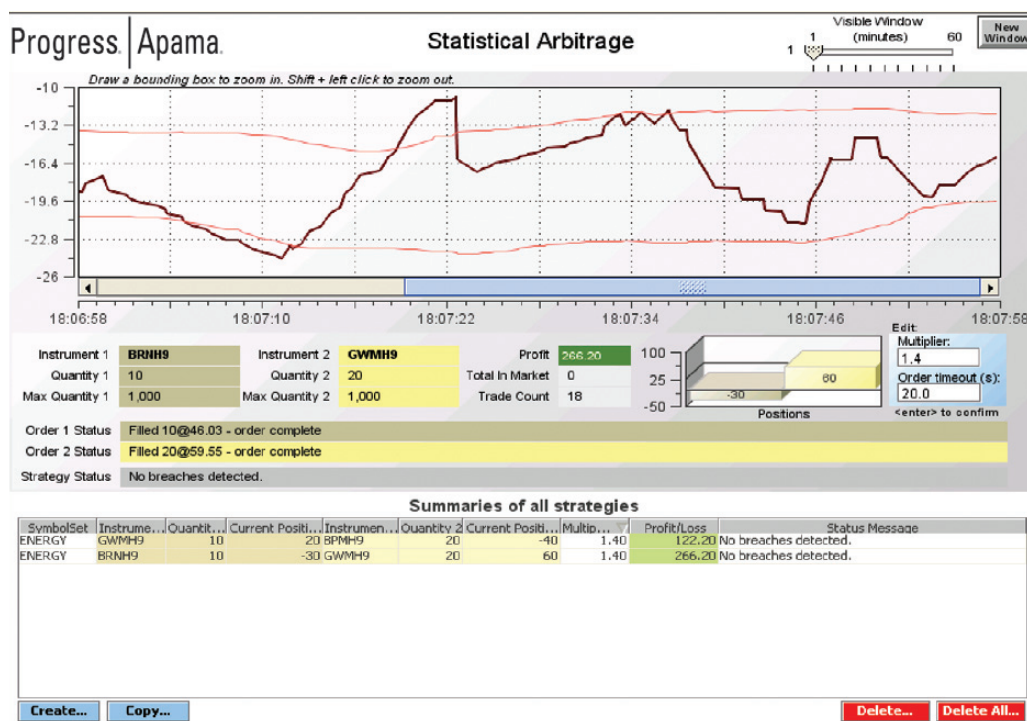
As implied volatilities for energy commodity prices soar and price discovery becomes more difficult, physical and financial energy trading desks need ever – improving techniques and tools to protect themselves from the resulting exposures. The Apama platform has been specifically designed to allow market participants to

HIGHLIGHTS

- > *Exploit arbitrage opportunities through automated execution*
- > *Mitigate exposures with real-time, programmatic hedge trading instructions*
- > *Set position and exposure limits via rules-based risk framework*
- > *Optimize physical assets*
- > *Design strategies and configurable dashboards in a drag-and-drop, codeless environment*

optimize their trading and risk processes. Apama's flexible CEP engine can be applied to a range of applications:

- > **Arbitrage trading**—energy trading desks have an intrinsic understanding of the physical markets in which they operate. This provides a unique insight to market characteristics which can be utilized for discretionary trading for calendar, location, product, grade, and volatility spreads. Apama is a powerful arbitrage trading engine that can be used to exploit arbitrage opportunities, even for hybrid spreads using OTC and exchange-traded instruments.



- > **Auto-hedging**—physical gas and power markets are underpinned by long-term structured trade agreements. Whilst these offer some assurance on delivery prices, energy merchants typically have other exposure parameters. These include: crude oil price, FX rates, counter party credit, interest rates and transmission constraints as well as supply-demand volume uncertainty. Apama provides an ideal platform for “what if?” analysis of the potential risks and can programmatically mitigate the resultant exposures through real-time hedge trading instructions.

- > **Risk framework**—in response to client demand, Apama has developed a real-time risk framework. This has been designed to accommodate the broad range of risk use cases needed by risk managers. These include Risk Aggregation, Concentration Heat Maps, RAROC and a Risk Firewall for real-time limit breach detection, alerting and prevention (see below.) It provides an extensible, rule-based framework with configurable dashboards ideal for risk monitoring and reporting.

Progress | Apama **Firewall Status Overview** New Window

Rule	Description	#Objections
Position Limit	Checks whether order will violate position limit	

Order Operation Alerts Filter on Rule

Op	Order Id	Trader	Symbol	Service	Exchange	Market	Book	Broker
NEW	1233166556-3:45:4	mccannel	FESX					
NEW	1233166556-9:41:8	mccannel	FESX					
NEW	1223166552-7:40:7	mccannel	FESX					

Progress | Apama **Heat Map for Joint Trading**

AAL.L	ABF.L	AL.L	ANTO.L	AUN.L	AV.L	AVZL	AZN.L	BAL	BAAL	BARC.L	BATS.L
0	1	1	0	0	4	0	0	1	0	0	0
BAY.L	BG.L	BLND.L	BLT.L	BOC.L	BP.L	BSY.L	BT.L	CBRY.L	CCL.L	CNAL	CNEL
0	1	2	0	1	2	0	0	1	0	0	0
CPG.L	CPI.L	CW.L	DGE.L	DMGT.L	DSGL	EMG.L	ETIL	FP.L	GLH.L	GSK.L	HBOS.L
0	0	2	0	1	1	0	1	0	0	0	10
HMSO.L	HNS.L	HSBA.L	IC.L	IHG.L	IIL	IMT.L	IPR.L	ITV.L	JMAT.L	KAZL	KEL.L
0	0	2	1	1	0	2	0	0	1	0	0
KGF.L	LAND.L	LOEN.L	LIL	LLOY.L	MKS.L	MRW.L	NG.L	NRK.L	NXT.L	OML.L	PTY.L
1	0	0	1	1	0	0	0	0	0	0	1
PRU.L	PSON.L	RB.L	RBS.L	ROSA.L	RDSB.L	REL.L	REX.L	RIO.L	RR.L	RSAL	RTO.L
1	1	1	0	2	0	0	1	1	0	0	1
RTR.L	SAB.L	SBRY.L	SCTN.L	SDR.L	SDRC.L	SGE.L	SMIN.L	SNL	SSE.L	STAN.L	SVT.L
0	1	0	1	0	1	1	2	0	0	0	1
TATE.L	TSCO.L	ULVR.L	UUL	VOD.L	WOS.L						
0	0	0	0	1	0						

Detail

Op	Order Id	Rule	Instance	Message
NEW	1233166556-3:45:4	PositionLimit	175-1233166550-1	Order's impact sufficient to

Book: _____

Service: _____

Symbol: FESX

New Price: 0.0

Broker: _____

Exchange: _____

Type: MARKET

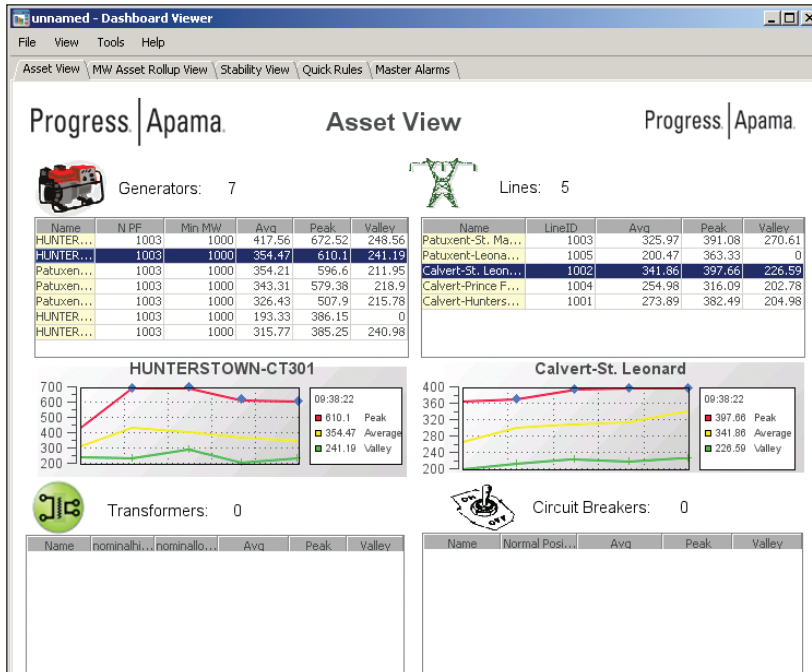
New Quantity: 100

Market: _____

Side: SELL

New Extra Param: _____

- > **Asset optimization**—from production despatch and monitoring to distribution and balance trading, Apama can help asset-backed companies optimize energy portfolios. Apama has worked on various parts of the value chain: from upstream production & refining; supply grid / network monitoring; and through to downstream shipping and distribution.



PROGRESS SOFTWARE

Progress Software Corporation (NASDAQ: PRGS) is a global software company that enables enterprises to be operationally responsive to changing conditions and customer interactions as they occur. Our goal is to enable our customers to capitalize on new opportunities, drive greater efficiencies, and reduce risk. Progress offers a comprehensive portfolio of best-in-class infrastructure software spanning event-driven visibility and real-time response, open integration, data access and integration, and application development and management—all supporting on-premises and SaaS/cloud deployments. Progress maximizes the benefits of operational responsiveness while minimizing IT complexity and total cost of ownership.

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