SIGMAFINE®

Traceable, auditable and completely transparent material balances

Sigmafine in Fertilizers

Domain:

Improve data quality for better business decision-making

Process monitoring to improve daily operations

Model based KPIs you can trust

Sigmafine has modeling flexibility with solutions to target:

- **Production accounting** from single process units to multi-purpose sites
- **Component balance** for elemental balancing and **emissions monitoring**
- **Performance monitoring** at plant and equipment levels
- **Balancing** of the **full business chain**

Implement automated plantwide data reconciliation and balancing for your fertilizer plant with Pimsoft's expertise and experience to achieve timely project implementation and eliminate measurement errors from operational and financial reports.

The fertilizer industry is highly competitive which suppresses the product value. Yet the main feed stock is linked to the increasing price of natural gas, thus prioritizing efficient asset utilization.

Top tier fertilizer producers' solution landscape includes an optimum use of its process data, which must be consistent, accurate and timely available. Sigmafine transforms process data into accurate and actionable information to improve business performance and decision-making. Data quality matters!
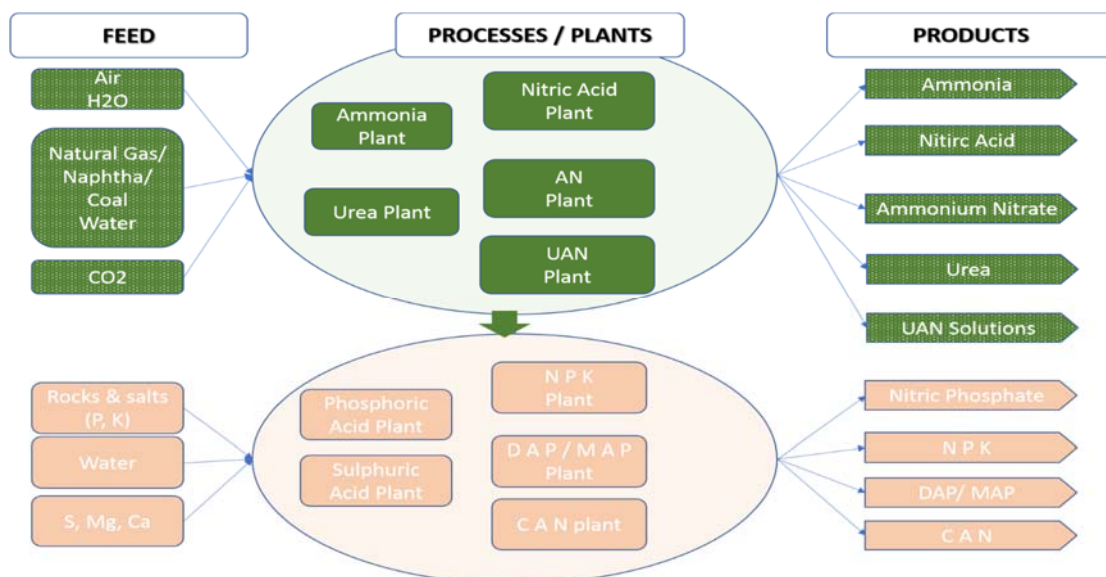
Sigmafine is a robust, scalable and efficient state-of-the-art data validation and reconciliation software. Sigmafine can explain unaccounted losses from your fertilizer facility by finding and resolving errors in raw plant data, thus closing the mass balance used for production and financial accounting. This improves the management of feedstock, intermediates and products.

Production Accounting

Sigmafine supports the daily job of accountants for the full business chain, from raw materials to production sites, storage and distribution as well as accounting at the production site level, e.g. ammonia plant or urea plant. Validated and reconciled data are combined with material information to provide reports on topics such as production and consumptions, inventory stocks, and site balance by material or plant / process units' yield.

Sigmafine balances mass, energy, volume or components when modeling flow meter data, inventory data, and both intra- and inter-company material trades and transfers. Sigmafine also provides consistent daily or batch balance of production/ consumptions to the ERP.

Example of Multiple Process Site

A MODEL BASED SOLUTION FOR DATA QUALITY DRIVEN DECISIONS

Full Business Integration

Sigmafine Integration Framework provides easy connectivity to external systems, facilitating integration with most common ERP systems, including **SAP**. SAP modules commonly integrated with Sigmafine include:
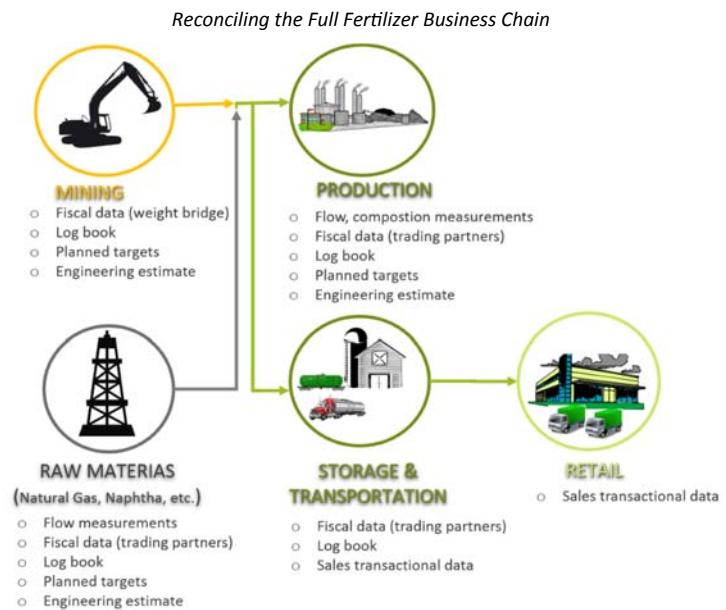
- **PPPI**: post reconciled figures of Productions, Consumptions & Losses versus Planned/Business figures
- **SD**: download from SAP inbound raw material receipts & outbound final product shipments
- **WM/MM:** align SAP/Sigmafine inventories
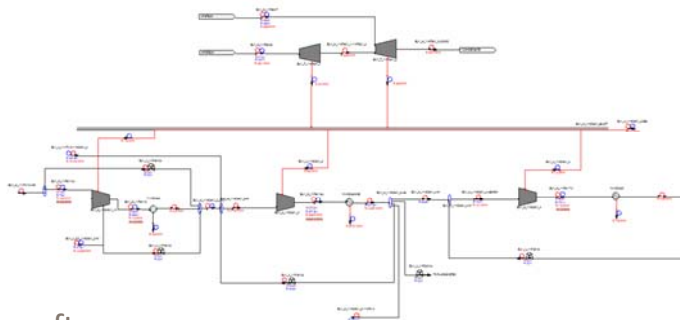
Component Balancing

Sigmafine Component analysis balances components, like Nitrogen, Potassium, or Sulphur content, of materials stocked in inventories or fed to process units. Such balances can reveal environmental losses and provide validated estimates for emissions reporting.

Harmonize Inter-company Material Exchanges

In situations where materials are produced and consumed among the plants, such as in large sites or long value chains with many processes/ owners, achieving one set of production and consumption figures accepted by all parties can be difficult. Sigmafine reconciles data to remove errors, encouraging a transparent and auditable reconciliation process to support inter-company trading from raw material sourcing to retailing.

Reconciling the Full Fertilizer Business Chain

MINING
- ○ Fiscal data (weight bridge)
- ○ Log book
- ○ Planned targets
- ○ Engineering estimate

PRODUCTION
- ○ Flow, compostion measurements
- ○ Fiscal data (trading partners)
- ○ Log book
- ○ Planned targets
- ○ Engineering estimate

RAW MATERIAS
(Natural Gas, Naphtha, etc.)
- ○ Flow measurements
- ○ Fiscal data (trading partners)
- ○ Log book
- ○ Planned targets
- ○ Engineering estimate

STORAGE & TRANSPORTATION
- ○ Fiscal data (trading partners)
- ○ Log book
- ○ Sales transactional data

RETAIL
- ○ Sales transactional data

Performance Monitoring of the Synthesis Gas Compressor

Category: SF_Compressor		
Compression_Ratio	1.75	Compression ratio of the compressor
Efficiency	63.95 %	Compressor polytropic efficiency
Efficiency_Isoentropic	60.8 %	Compressor isoentropic efficiency
Inlet_Pressure	95.9 bar(g)	Pressure at the inlet of the compre...
Inlet_Temperature	7.88 °C	Temperature at the inlet of the co...
k_average	1.442	Average specific heat ratio
Outlet_Pressure	177.4 bar(g)	Pressure at the outlet of the compr...
Outlet_Temperature	97.9 °C	Temperature at the outler of the co...
Polytropic_exp	1.921	Polytropic exponent
Work	6.43 MW	Compressor wrork

Model-based Performance Monitoring

Whether you have an ammonia network, inventories, methane reformer, compressor, an ammonia converter, or complete fertilizer production plant, Sigmafine can provide detailed modeling of your facility with performance KPI's, such as efficiencies, process duty, energy consumption, heat losses, emission losses, and more.

Configuring a mass and energy balance to run on a regular basis (hourly or more frequently) provides operators and maintenance engineers with validated KPI's to react quickly and improve process operations.

Discover how Sigmafine has improved business for our Customers by visiting our website **sigmafine.pimsoftinc.com** and contact our Sales team.

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