



PRODUCTION
TECHNOLOGIES.
FULL SERVICE.

CHEMWATCHER

Integrated chemical management software



Schlumberger

MANAGEMENT SERVICES

ChemWatcher* integrated chemical management software provides a data management platform that presents complex information in an intuitive way to support day-to-day operation and decision making.

ChemWatcher software offers a visualization of your operation to quickly identify issues that require attention through surveillance and analytics, enabling proactive management of all key aspects of the production chemical treatment process.

Key performance indicators (KPIs) provide invaluable insights into the health of your operation. Further enhancement with SMART indicators enables your key personnel to take a management-by-exception approach, focusing decisions on the aspects of your operation that require immediate attention.



CHEMWATCHER

Schlumberger ChemWatcher software, powered by the Avocet* production operations software platform, enables informed, real-time decisions that directly impact operational efficiency, safety, and performance.

This software solution integrates with market-proven tools such as PIPESIM* steady-state multiphase flow simulator, OLGA* dynamic multiphase flow simulator, and dbrHydrate* fluid analysis software to manage the workflow related to chemical applications, injections, and production processes.

ChemWatcher software provides executive, operational, and analytical dashboards with status and trending analysis using visual indicators and graphics to instantly highlight areas that require attention and action. Interactivity enables data drilldown for further root-cause analysis, facilitating informed and preventive decisions to drive production chemical operations effective, safer, and better performance.

ChemWatcher software incorporates data acquisition features in the Avocet platform that enables easy

connection to any SCADA-enabled sources using open-platform communications, web services, telemetry, and more.

Automatic data capture, when combined with observations acquired from the field during treatment application, and in conjunction with laboratory reporting (sample analysis, etc.), ensures that all data is considered in context.

With such powerful data acquisition features in combination with contextual reporting, ChemWatcher software is an invaluable source of critical information. The result is a unique and flexible solution where all measured indicators are more digestible and actionable, delivering, for example, financial analysis of total chemical cost of operation (TCCO), inventory management, product performance analysis, flow assurance, integrity management, and more.



Avocet platform

Schlumberger's Avocet production operations software platform has been continuously improved for over a decade and has provided customers worldwide with solutions for asset management, production allocation, and optimization.

ChemWatcher software extends the features of the Avocet platform with full flow assurance and chemical management capabilities.

Designed by production chemists with production operations in mind, ChemWatcher software enhances the decision-making process.

DATA MANAGEMENT

Reliable, accurate, and timely information, evaluated in context, is the key tenet of effective decision making.

Data source

ChemWatcher software can receive and process data from virtually any source, whether via manual data collection (in field), automated data capture, or laboratory reporting.

- Spreadsheet data capture (via designed templates)
- SCADA
- Remote sensors
- Mobile data input
- Laboratory database infrastructure

Data management

ChemWatcher software data management workflows have been configured based on years of experience with chemical management data, both from the field and the laboratory. The results are KPI-driven reporting processes that enable instantaneous information analysis in support of day-to-day decisions.

Reporting

ChemWatcher software effortlessly combines all data sources (automated sensors, laboratories, manually collected data, etc.) to deliver customized reports and dashboards tailored to your field operating requirements.

110.28	14.23	920.03	318.7
121.51	15.85	911.06	317.1
132.34	17.08	911.09	314
143.32	18.50	913.12	311
154.40	19.92	944.15	31
163.50	21.10	958.25	
163.50	21.10	958.25	
163.50	21.10	958.25	

SPREADSHEET



SCADA



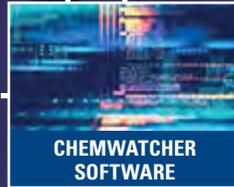
SENSORS



MOBILE



LAB



CHEMWATCHER
SOFTWARE



SMART DASHBOARD

REPORTING

ChemWatcher software draws from multiple complex data sources to deliver salient information via fully customizable reports and dashboards. It ensures that you obtain the information you require to monitor the health of your operation and highlight areas that require immediate attention.

Executive, operational, and analytical dashboards

- Key figures on asset status, spend, and performance for strategic decisions
- Operation status and trends for day-to-day operational decisions
- Drilldown analysis for root-cause analysis for preventative actions
- Launchpad to drill down for detailed root-cause analysis

Field treatment cost analysis

- View of production rates, chemical injection rates, and spend rates
- Tree or heat map that provides a visual aid to identify well or location treatment cost and root-cause analysis
- Track budget expenditure (per well, program, location, etc.)

Chemical injection and inventory surveillance

- Display of actual versus target for both injection and dosage rates
- View of injection rate and dosage trend
- View of tank inventories (dynamically update based on usages)
- Real-time chemical spend monitoring via remote tank level sensor data

Transport tank tracking

- Optimization of tank use
- Improved turnaround and reduced rental cost
- Tracking tank certification and alert on recertification

Well scale and corrosion surveillance

- Full-field view of wells by KPI status, highlighting at risk wells (map view that rapidly identifies high-risk areas)
- Analysis of trends versus target and drilldown for detail evaluation

Mobile dashboards

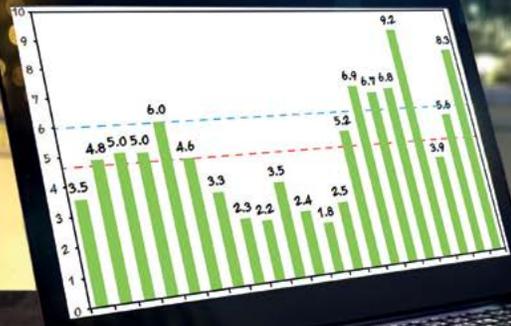
- Access to operations status from anywhere
- Dashboard display on mobile devices
- Automatic warnings and alerts





```
elif_operation == "MIRROR_Y":  
    mirror_mod.use_x = False  
    mirror_mod.use_y = True  
    mirror_mod.use_z = False  
elif_operation == "MIRROR_Z":  
    mirror_mod.use_x = False  
    mirror_mod.use_y = False  
    mirror_mod.use_z = True  
  
#selection at the end -add back the deselected  
mirror_ob.select= 1  
modifier_ob.select=1  
bpy.context.scene.objects.active = modifier_ob  
print("Selected" + str(modifier_ob)) # modifier ob  
mirror_ob.select = 0  
bpy.context.scene.objects.active = mirror_ob
```

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CASE STUDY

TRANSFORMATION IN DATA MANAGEMENT EFFICIENCY AND CORROSION MONITORING

CHALLENGE

A light crude basin field cluster, comprising five field sectors, is in a densely populated urban area, so well and pipeline integrity, control, treatment, and corrosion monitoring were crucial. The existing database could no longer accommodate the evolving requirements for flexible data management and improved reporting.

SOLUTION

The introduction of ChemWatcher software provided a flexible solution that included production data management, a customizable interface, data modeling, and powerful visualization. The operator made reporting accessible through an interactive web-based dashboard, making it easier to identify well risk and KPI deviations.

The solution included

- creating product delivery schedules, which were e-mailed daily to the truck manager
- generating financial reports for treatments
- simplifying additional well batch chemical treatment usage based on schedules
- analyzing data load from templates
- developing five different print reports and two interactive status dashboards with ChemWatcher software dashboard reporter.

RESULTS

ChemWatcher software reduced reporting time from an average of 3 days to 15 minutes for more than 700 well reports.

In addition, introducing indicators and dashboard reporting for rapid identification of low-performance treatments and wells enabled quicker, more informed, and effective decision making.

Data management and day-to-day operations were also simplified and improved; for example, product delivery schedules and treatment programs were received every morning rather than after hours spent collecting and printing schedules.

GET THE COMPLETE PICTURE

Through combining multiple data sources and formats to deliver a cohesive operational situation analysis, ChemWatcher software facilitates full proactive management of all production chemical field activity, analytics and spend.

Key benefits

- Production chemical operations transparency
- Proactive management of chemical applications
- Production and product performance
- Real-time KPI performance tracking
- Chemical spend optimization
- Flow assurance and integrity management
- Inventory management and commercial performance
- Laboratory data and trend analysis
- Cloud-based solution affording internet (and therefore fully mobile) access





UNLOCK POTENTIAL **OPTIMIZE PRODUCTION**

A full service offering to maintain and restore full production.

Schlumberger production technology specialists deliver targeted, integrated strategies that help to remediate production issues such as deposit formation and naturally occurring gases, enabling customers to restore and improve flow performance and revenue while avoiding costly repairs and shutdowns.

Schlumberger has a full service offering that integrates chemical and process solutions, equipment, and software with technical expertise.

Working with the world's largest oilfield services provider, customers benefit from a combination of technological capabilities and experienced understanding of how to successfully address production challenges in an increasingly competitive marketplace.

The team's global footprint and extensive suite of technologies helps customers to reliably increase safety and maximize production—regardless of system complexities or geography.

**MAXIMIZE PRODUCTION
FROM RESERVOIR TO REFINERY**



UNLOCK POTENTIAL

OPTIMIZE PRODUCTION



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