Industry Short List for Hydrocarbon Accounting — Transactions to Field Operations

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This paper summarizes the results of IDC Energy Insights' analysis on hydrocarbon accounting solutions available on the market for supermajors, large independents, nationals, and LNG and pipeline companies. The paper further highlights the value proposition of Tieto's solutions.

Introduction

The oil and gas industry's ultimate goal of extracting hydrocarbons as cost effectively as possible is being challenged by a framework that can no longer rely on "easy oil". Increasingly, companies are faced with launching projects in more remote locations that are often in difficult physical environments for both conventional and non-conventional projects. These challenges are bringing a renewed focus to many aspects of the business value chain, and in particular, a focus on operational efficiency and production optimization.

In the exploration and production market, hydrocarbon accounting software applications are used to allocate products back to origination based on their disposition. As operational efficiency and production optimization initiatives become more pervasive within the enterprise, there is an increasing focus on application rationalization, and while hydrocarbon accounting and production allocation applications are seen traditionally as a "back office" tool, their critical role in operations is no less diminished. IDC Energy Insights believes that hydrocarbon accounting applications:

- Are no longer just tracking complex owner agreements and managing hydrocarbons from production to sale.
- Are increasingly being tapped to provide significant insight into production operation logistics by determining the quality and quantity of hydrocarbons produced from individual oil and gas wells.
Can employ production accounting data for production optimization as well as for accurate computation of future reserves and production rates through decline curve analysis.

**Methodology**

This analysis is intended to help executives arrive at a short list of IT vendors in the hydrocarbon accounting area that best address the needs of the business. IDC Energy Insights used the Industry Short List methodology to compare technology providers that offer these applications to the energy industry. The Industry Short List tool centers around three principles that IDC Energy Insights believes are critical in today's selection of an IT supplier: fact-based research, industry focus, and evaluation transparency.

Each technology provider is assessed based on how well its product fits market needs and provides confidence in ownership. The fit to market assessment uses criteria that assess the strength of a product in terms of feature/functionality, interoperability, architecture, quality of service and support. The ownership confidence assessment addresses the soundness of a technology vendor's strategy, financials, commitment to an industry, and customer satisfaction.

This report relies on analyst assessment of primary and secondary data on the substance and quality of technology vendors' offerings. The technology provider supplies information about the business, architecture, and features and functionality. Customer satisfaction is determined through phone interviews with reference customers of each provider. IDC Energy Insights conducts secondary research of publicly available research. All of this, plus the background knowledge of the IDC Energy Insights analysts, provides the foundation for the assessment.

**Hydrocarbon Accounting Defined**

In the exploration and production market, hydrocarbon accounting software applications are used to allocate products back to origination based on their disposition (e.g., sales and storage inventory). Hydrocarbon accounting is the process used to track gas and oil ownership from the point of production to the point of sale; or, it tracks agreements between producers, operators, and owners to determine currency equivalents of produced hydrocarbons attributable to the relevant parties.

The volume or energy (in the case of gas) of hydrocarbon that needs to be allocated is based on various measurement points such as those involving custody transfer or storage. The basis to allocate these volumes back to each well completion is usually a theoretical volume that is computed with the aid of various types of well test.

For 2009, IDC Energy Insights estimates worldwide oil and gas IT spending for software to be $9.2 billion, which is 23.9% of total spend in the worldwide IT market, which includes software, hardware, and
IT services. Of software spend, IDC Energy Insights attributes 7.6% or $2.9 billion to exploration and production software. Within exploration and production software, the spend represents areas such as systems that assist the upstream oil and gas industry to find and lift hydrocarbons from reservoirs. IDC Energy Insights estimates that spending on hydrocarbon accounting software amounts to about 17.4% of exploration and production spending (license and maintenance). Among vendors there is significant range in the size of deals, which includes license, software, and implementation fees. Based on customer interviews, deals ranged anywhere from $100,000 to the double-digit millions. The significant range in price is a reflection of the varying size of oil and gas companies.

The Business Value of Hydrocarbon Accounting Solutions

For this report, hydrocarbon accounting is a set of processes and applications that exploration and production companies use to allocate products back to origination based on their disposition (e.g., sales, flare, and storage inventory). Additionally, hydrocarbon accounting tracks agreements between producers, operators, and owners to determine currency equivalents of produced hydrocarbons attributable to the relevant parties.

Important functionalities for hydrocarbon accounting solutions include the ability to handle production accounting, revenue accounting, joint venture accounting, production sharing contracts, component allocation, liquefied natural gas (LNG) operations, terminal operations, floating production storage offloading (FPSO) operations, and deepwater operations.

The level of functionality of hydrocarbon accounting/production revenue applications is critical because production measurement is the primary source of revenue determination in the upstream oil and gas industry, which has a direct impact on company profits.

IDC Energy Insights believes that accurate and timely allocation information can provide a number of important benefits:

- Eliminate the errors and bias that can lead to financial loss and costly disputes
- Enable cost-effective decisions to be made in every area of operations, from reservoir management to production scheduling
- Help generate a competitive edge in today's highly competitive oil and gas markets
- Demonstrate a commitment to transparent and auditable corporate governance
**Complex Situations Increasing in a Global Market**

Oil and gas companies are entering into E&P sharing agreements with national oil companies; major oil companies are acquiring large independents; and growing independents are acquiring production assets from both small producers and large producers. Joint collaboration between large producers on risky international E&P projects is becoming common. These mergers and acquisitions (M&As) and joint ventures are driving complexity that oil and gas companies need to address with hydrocarbon accounting applications.

At the same time, production accounting applications feed several different modules, including accounts payable (AP), accounts receivable, and the general ledger.

As liquefied natural gas and gas-to-liquid (GTL) technologies make gas a more global commodity, and as producers increasingly tap into gas reservoirs worldwide, there is a growing need for producers to handle sophisticated gas allocation processes involving molecular-level components.

Meanwhile, regulatory requirements for oil and gas companies are growing as the global regulatory environment drives regional regulations and business needs across the world present different demands for production accounting systems. For instance, the U.S. Sarbanes-Oxley Act 2002 requires that companies provide transparency and full auditability of all data with a financial bearing on the company.

**Changing Environment Requires Increased Transparency From Applications**

Traditionally, hydrocarbon accounting has mostly taken place at the level of individual fields or operating companies. However, changes in the global market around producers of a field, the pursuit of natural gas, and increased regulation are just some of the factors driving oil and gas companies to look for applications that have a more comprehensive view.

However, for hydrocarbon/production accounting applications to achieve their objectives in a cost-effective and efficient manner, these applications have to contend with hydrocarbon/production accounting business practices that vary significantly across oil and gas companies. It certainly is a challenge for software vendors to support different needs and yet maintain a profitable business model.

The software technology for hydrocarbon accounting has been a critical part of oil and gas operations, but these solutions are now being more tightly integrated with production accounting and financial solutions. The increasing integration of the data also influences the way that producers view their current best practices and the role the software needs to play for a company to support its operations.
Oil and gas producers are increasingly charged with the responsibility of maximizing production operation efficiency and production optimization, and hydrocarbon/production accounting applications are a part of the equation.

Assessing the Vendors

Figure 1 shows the results of IDC Energy Insights’ Industry Short List for hydrocarbon accounting.

The y-axis displays position relative to ownership confidence, with the highest confidence being 5. The criteria assessed for ownership confidence included: supplier's market share, supplier's profitability, supplier's R&D investment, customer satisfaction with implementation, and customer satisfaction with ongoing support.

The x-axis displays relative fit to market, with excellent fit being 5. Criteria assessed for fitting the market included: feature/ functionality, scalability: throughput, capacity/storage, platform and architecture support, integration capability, range of services, implementation support, and tools. So, the offerings that are in the upper-right-hand quadrant are those vendors that are the most highly rated, given the assessment criteria.
**Figure 1**

**Industry Short List for Hydrocarbon Accounting: Vendor Comparison**

Note: The IT suppliers that are best positioned are in the upper-right-hand quadrant, which represents a high fit to market needs and a high likelihood of positive ownership experience.

Source: IDC Energy Insights, 2010

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**Considering Tieto**

Tieto's Energy Components is committed to a complete and integrated solution from reservoir to cash. Energy Components (EC) is a significant global solution capable of handling complex networks, production sharing contracts, LNG requirements, FPSO, and terminal system requirements. EC is configurable but comes with predefined configurations for the typical production and transport setups.

Energy Components has the ability to handle all sorts of complex allocations without any limitations. This is a major strength of EC, and some of the largest oil and gas companies in the world are using these capabilities for their most complex allocation requirements. EC provides complete functionality for importing and validating all relevant transactional data so that data is quality checked and validated.
before running allocations. This is fully configurable in EC through EC check rules and EC validation concepts. Any frequency can be set up to process production allocations, but there are built-in standard daily and monthly production allocations.

EC is already deployed and in operation in almost all regulatory regimes worldwide. This is fully integrated, not just interface. EC is truly integrated at database level with full sharing of master data. However, access is strictly controlled by the EC security model, preventing unauthorized access to such data.

The graphical front-end, to aid with the creation and processing of allocation networks, handles all sorts of allocations without limitations, as well as large networks with perhaps thousands of wells. The tool is a real database-integrated tool, so everything modeled in the graphical front-end is directly reflected in the database as the actual configuration of such allocation networks and/or related business rules.

EC has full field data capture functionality. The module to handle this is highly flexible/configurable, allowing all sorts of relevant field data to be transferred.

EC is fully Web-services–enabled, so that all data in EC can be accessed through Web services. EC also provides a Web-services framework that can be used by anyone building their own services.

Tieto is focused on continuing standardization and global expansion with its existing client base, as well as meeting the needs of the mid-tier market with preconfigured solutions. It is committed to offering complete and integrated business solutions for all parts of the upstream industry.

Future Outlook

Vendors serving the largest customers are running out of new customers and looking to add more mid-tier players with their offerings. As a result, the need to meet scale from a global supermajor, to national oil companies and to a mid-tier United States–based company is critically important to some of the largest vendors as they try to capture the market and as the largest vendors attempt to expand their bases and reach new profile customers.

The rate of vendor growth is a consideration as customer references cited that vendors going through hyper growth were short staffed and had slower response times for issue resolution. Larger companies cited the need to fully implement and release a version over a period that allowed the entire company to "get up to speed". A measured pace was preferred by all customers.

Another thing to consider is that the lines are really blurring between the concept of hydrocarbon accounting and production allocation. The overall trend in the upstream market for increased integration of
information is impacting the hydrocarbon accounting space as well. In fact, the ultimate trend is playing out, with vendors reporting that companies are even using it as way to manage field operations. For oil and gas companies, they need to reconcile the measured hydrocarbon production with estimated production from the associated wells. This process, known as allocation, is critical because it requires the accounting of field production to owners, governments, field surveillance, and volumetric input to reservoir simulators.

Production accounting plays a pivotal role in facilitating these digital oil field endeavors by:

- Providing operational management with hydrocarbon production logistics of each individual well completion from which oil and gas originate. (This trend analysis of production data allows production operations to optimize wellhead production by minimizing downtime and embarking on enhanced recovery efforts.)

- Providing 360-degree production quantity and quality feedback to reservoir modeling and reservoir simulation applications (real-time incorporation of production data into geological and geophysical applications renders a more accurate picture of potential hydrocarbon reserves and of future production rates [decline curve analysis].)

- Improving the efficiency of managing oil and gas company financials by streamlining the flow of the currency equivalent of produced oil and gas into accounts payable, accounts receivable, and general ledger modules of financial applications

- Providing oil and gas companies with a solid foundation for being audit ready through accurate and chronological tracking of hydrocarbon production across the entire producing asset base (fields and reservoirs)

Although client/server production accounting applications are still very prevalent in the industry, there is an increase in adoption of tiered Internet-based applications to serve the growing need for anyone to be able to see the data anytime and at anyplace. This allows for a shrinking workforce to maximize productivity by collaborating globally on E&P projects.
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