

Paul S. Wallace

Hunton Energy

Vice President – Chief Technology Officer

Project Specific Experience

Vice President – Chief Technology Officer (Hunton Energy):

Application of Gasification and related technology for new “green” energy projects. I manage Hunton Energy’s analysis and application of gasification, resid hydroprocessing, and syngas synthesis technologies. These activities have given Hunton Energy a competitive advantage allowing them to develop “green” energy projects more profitably than all other developers and energy companies.

Manager of Gasification (URS): Manager of URS’s gasification team.

I managed a group of senior engineers, gasification technologists and project managers that performed gasification project development activities. These include optimizing feed and products to the local markets, cost and performance estimates, proforma modeling, availability modeling. In addition the team analyzes various gasification and associated technology options, and selects the best project solutions.

Senior Conceptual Design Engineer (GE Energy): Technology and commercial consultant to GE gasification’s strategic planning and technology development group. I have identified several new technology concepts that have significantly increased the market value of the gasification technology. These concepts have the potential to make GE gasification the market leader in IGCC, hydrogen production, coal to liquids, synthetic natural gas, and methanol production. GE acquired the gasification technology from Chevron Texaco in July 2004.

Gasification/Heavy Oil Consultant (Chevron): Worked together with several Chevron Texaco business developers to apply gasification technology to Chevron Texaco’s refineries, heavy oil upgraders, oil sands production, and gas to liquids project. I identified the Richmond refinery as the leading candidate for a gasification project. I designed the gasification project to maximize the refinery’s profitability in terms of both fuel savings and refinery margins. The project was included in Chevron Texaco’s strategic planning process.

Technical and commercial consultant to the project team developing the Citgo Lake Charles IGCC project. My duties included working with the Chevron Texaco and Teco Power Services partners to fully optimize the commercial and technical aspects of the plant design. I was able to identify over \$300 million in net present value savings by reconfiguring the project and commercial deal. Chevron acquired Texaco in November 2001.

Areas of Expertise

Gasification, IGCC, CTL
Refinery Bottoms Processing,
Hydrogen & Syngas

Years of Experience

With URS: 1 Year
With Other Firms: 25 Years

Education

BS/Chemical
Engineering/1980/Rose-Hulman
Institute of Technology
German Technical Translator
Certificate

Business Development Director – North America (Texaco Power and Gasification): Managed a team of 5 project developers who identified potential gasification and power plant projects for further development. The team has developed several successful proposals, which were being commercialized by Texaco prior to its acquisition by Chevron Texaco. I provided both technical and commercial guidance to the developers to ensure that our proposals were responsive, fully optimized application of Texaco's proprietary gasification and power plant technology. I also created a focused development strategy for North America, which increased customer acceptance.

Project Manager: Managed three petroleum coke fueled Integrated Gasification Combine Cycle (IGCC) based power plants. I managed a team of technical and commercial specialists who optimized and evaluated these potential projects. Although these projects were initially attractive the initial development effort revealed fatal flaws in the projects. They were cancelled early in the development phase before significant capital and resources had been expended on the projects. I used the lessons learned from these projects to develop an improved project selection criteria.

Texaco Project Manager: Managed Texaco's technology application for the Exxon Baytown Gasification Project and the Exxon Singapore Gasification/IGCC Project. I was responsible for optimizing the application of Texaco's gasification technology ensuring that Texaco's technology package met all Exxon's needs. Both projects were constructed and are currently in successful commercial operation.

Technology Lead (Texaco Central Engineering): Led the technical design effort, which identified and commercialized the Delaware City IGCC project. I was responsible for ensuring that the application of Texaco's gasification technology was fully optimized for the host Motiva refinery during the feasibility and preliminary engineering phases of the project. The project was constructed and is currently in commercial operation. Several lessons have been learned during the startup phase of this project many of them related to properly controlling feedstock properties.

Led the technical design effort, which identified and commercialized the El Dorado IGCC project. I was responsible for ensuring that the application of Texaco's gasification technology was fully optimized for the host Texaco refinery during the feasibility and preliminary engineering phases of the project. The project was constructed and is currently in successful commercial operation. This was Texaco's first successful commercial demonstration of a fully integrated air separation unit with a combustion turbine.

Lead Process Engineer: Lead process engineer for Texaco's technology package prepared for the Tampa Electric IGCC project. I was responsible for the conceptual design of the syngas cooling system and the integration of the power block with the gasification block. I was able

to optimize the design so that all available waste heat and mass were used to maximize plan1 output. The project was constructed and is currently in successful commercial operation.

Process Engineer: Worked as a senior process engineer in Texaco's Central Engineering Department. I was a member of several feasibility study and design package teams applying Texaco's gasification technology. During this period I played a leading role in developing the integration concepts that were later included in the commercial IGCC plant designs.

Licensing Representative (Texaco Development Corporation): Worked as a technology licensing representative in Texaco process licensing division. I met with customers and was responsible for developing gasification licensing agreements, and directing the development of the gasification design packages.

Assistant to the Cool Water Project Director (Texaco Alternate Energy): Worked as the assistant to the Project Director for the Cool Water project the first IGCC project. I was a member of several troubleshooting teams that improved the operation of the plant.

Texaco Representative at RAG/RCH Demo Plant: Onsite representative at the Ruhrkohle/Ruhrchemie gasification demonstration plant in Oberhausen, Germany. I was responsible for gathering, analyzing and reporting the gasification plant data. I was also a member of several troubleshooting teams that improved the operation of the plant.

Texaco Research: Worked at the gasification pilot unit located in Montebello California. I was the lead pilot unit-operating engineer for several test runs. These included South African coal, Illinois coal, petroleum coke, and coal liquefaction residue.

Patents

Over 30 patents in gasification, IGCC, hydrogen production, Fischer-Tropsch

Languages

German - fluent

Specialized Training

PROII, GATE/Cycle

Security Clearance

None

Publications

Ultra-heavy Oil Production and Upgrading with Gasification; Oct 2004
Gasification Technology Conference; Oct 2004

Enhancing Refinery Profitability by Gasification, Hydroprocessing and Power Generation; Oct 1999 Gasification Technology Conference

Heavy Oil Upgrading by the Separation and Gasification of Asphaltenes; Oct 1998 Gasification Technology Conference

Chronology

07/2006 – Present	URS Corporation, Houston, TX
07/2004 – 07/2006	GE Energy, Houston, TX
11/2001 – 07/2004	Gasification Consultant, Houston, TX
02/1996 – 11/2001	Texaco Power and Gasification, Houston, TX
06/1988 – 02/1996	Texaco Central Engineering, Houston, TX
01/1986 – 06/1988	Texaco Development Corp, White Plains, NY
11/1982 – 01/1986	Texaco Alternate Energy, Oberhausen, Germany
07/1980 – 11/1982	Texaco Research, Montebello, CA

Project Experience

Time	Project	Role
5/2003 – 1/2004	Richmond Bottoms Gasification Project	System Designer
11/2001 – 1/2003	Alberta Oil Sands Project Bottoms Gasification	System Designer
1/2001 – 11/2001	CITGO Lake Charles Coke IGCC	System Designer
3/2000 – 8/2001	Shell Deer Park Coke IGCC	Project Director
3/1999 – 3/2000	CITGO Corpus Coke IGCC	Project Director
3/1998 - 3/1999	IMC Coke IGCC	Project Director
3/1997 – 3/1998	Exxon Singapore Bottoms IGCC	Technology Lead
3/1996 – 3/1997	Exxon Baytown Bottoms Gasification	Technology Lead
11/1993 – 2/1996	Delaware City Coke IGCC	Technology Lead
1/1992 – 11/1993	El Dorado Coke IGCC	Technology Lead
6/1988 - 8/1990	Tampa Electric Coal/Coke IGCC	Lead Process Engineer
8/1984 – 1/1986	Cool Water Coal IGCC	Asst to Project Director
11/1982 – 9/1984	RAG/RCH Coal Gasification Plant	Operations Engineer