UniChlor® Technology encompasses the complete chain of chlorine production facilities for plants of up to 150 to 200 tons of NaOH per day. The core of the technology is a small chlorine plant that produces sodium hypochlorite and other commodity chemicals downstream of the chlorine/caustic generation process. These plants, which use salt and electricity to make chlorine and caustic soda on site, are an attractive alternative to making bleach from chlorine and caustic purchased on the open market and can provide significant economies that impact directly on the bottom line.

Powell will work with US customers to demonstrate the feasibility of UniChlor® Technology to produce sodium hypochlorite and chlorine-associated derivatives. As the initial steps in the process to determine if this is a viable option for a specific application, Powell will provide the tools to prepare a preliminary cost analysis.

In order for a cost analysis to be started, a simple secrecy agreement will be requested to protect both the customer and Powell during information transfer. This agreement is intended to protect the customer by ensuring the confidentiality of the information provided to Powell for analysis. Likewise, it protects Powell relative to free transfer of spreadsheets and other information provided to the customer to analyze the feasibility of the project.

Customer commodity requirements are not necessary for cash flow analysis. To complete the initial cash flow analysis, Powell does not need to know production volumes of the chlorine, sodium hydroxide, or hydrochloric acid to be produced by the proposed plant. Powell will provide a spreadsheet, along with budget numbers for power, salt, and capital investment, to allow the customer to input these amounts and determine their own cash flow for the project.

The following is an overview of the typical process from initial interest through issuance of purchase order.

**Step One - Provide General Information**
Following a preliminary determination that the application is likely to be feasible, the first step of the process is intended to educate the prospective customer on the advantages and potential of the chlorine plant technology as well as the areas of expertise of the major players. The following will be sent or e-mailed:

- Information on the Chlorine Plant technology
- Powell General Information and Sales Literature
- Information on Uhdenora and Uhde

**Step Two - Obtain Signed Secrecy Agreement**
If the prospective customer maintains an appropriate level of interest to pursue a project - and it appears that the project may be viable - a Secrecy Agreement will be sent or e-mailed to the customer. The customer will sign two copies and return both copies to Powell. Upon countersigning, Powell will keep a signed copy and return a signed copy to the prospective customer.

**Step Three - Evaluate Current Cost of Raw Materials**
The cost currently paid for chlorine and caustic will be a significant determinant in the viability of a chlorine plant. As the cost of these raw materials escalates, the feasibility of the project rises proportionately. For a caustic/HCl user or distributor, the customer should analyze predicted purchase costs of these commodities from the supplier. If bleach is to be produced, Powell has prepared a spreadsheet titled Bleach Material Balance to assist in this step of the analysis. This spreadsheet will help to determine the cost of the chlorine and caustic used to make a gallon of bleach. The spreadsheet is provided with values that represent typical data; the user can input current costs.
Step Four - Evaluate Effect of Power and Salt Costs, Production Volumes, and Other Factors on Potential Earnings

The cost of electricity, cost of salt, and the production capacity of the plant each play a dynamic role in determining the additional cash flow that may be achieved with the use of UniChlor® Technology. In order to help establish the relationship between these factors, Powell has prepared an interactive visual tool, which is posted on the Powell website at http://www.powellfab.com/products/chloralkali/UniChlor_Justified.html. The customer will input approximate costs for power and salt, as well as values for the desired production of short tons per year of caustic, and the purchase price of an ECU unit. The interactive tool will illustrate how the price of salt, cost of electricity, and plant capacity affect the Variable Cost, Fixed Cost, Total Cost, Savings, and Additional Annual Cash Flow values to help establish the interactions between these factors as well as their impact on the returns from a chlorine plant. The interactive tool will also provide an idea of earnings before taxes and depreciation.

Step Five - Telephone Conference
Customer will initiate a telephone conference call with Powell and Uhdenora to discuss project and arrange a visit by Powell and Uhdenora to customer facility.

Step Six - Review Possible Cash Flow and Internal Rate of Return for Project
Powell has prepared a spreadsheet titled Chlor-Alkali Spreadsheet to help the customer review the projects potential cash flow and rate of return. Data appropriate to a specific project can be input. Powell will assist in determining appropriate data including an estimated budget price of the plant.

Step Seven - Budget Proposal
A budget proposal will be prepared for the project.

Step Eight - Prepare Financial/Business Plan
Powell can offer a packaged financial/business plan to assist in obtaining financing.

Step Nine - Engage Services of Consultant
If the project appears to be feasible, and the customer wishes to pursue, the services of a consultant should be retained to assist in evaluation and design process. Powell can provide options for consultants.

Step Ten - Select Plant Site
When a site has been selected, an approximate plant size has been determined, and tentative financing achieved, the UniChlor® Team, along with the consultant and key owner’s representatives, should review engineering drawings, photos and plot plan for the prospective site.

Step Eleven - Finalize Details
With help of a consultant or company project engineer appointed by the customer, the following details must be determined in order to generate final design of the plant and pricing for the project.

- Salt supplier, price, and delivery method
- Power supplier, voltage, and price
- Location of plant and utility service available
- Maximum daily output in short tons of caustic or short tons of chlorine
- Type of commodity produced, 32% caustic or 50% caustic, concentrate HCl, anhydrous HCl, chlorine gas (wet or dry) chlorine liquid, sodium hypochlorite, ferric chloride, calcium hypochlorite, or other chlorine derivatives.

Step Twelve - Develop Business Plan
Customer will develop a business plan and input hard data developed from step eight.

Step Thirteen - Request Design Proposal and Plant Quotation
If the project is justifiable and a firm price is desired at this point, customer will issue a letter of intent and contact the UniChlor® Team to request that they prepare a proposal for the cost to design and quote the plant. When customer accepts the proposal, the UniChlor™ Team will prepare a design and quote a firm price for the design and construction of the plant. This process will take approximately 3 months.

Step Fourteen - Issue Purchase Order for Plant and Assign Project Manager
When customer has accepted the UniChlor® quotation for the design and construction of the plant, customer will issue a purchase order and assign a full-time company project manager/project engineer.