____GROUP3_____ -TEK Engineering
Estimated Financial Scenario

Start-up Costs

Personnel	Five Engineers @ $55K/yr + President @ $75K/yr + Admin. Asst. @ $25K/yr = $ 325K
Fringe Benefit (FB)	A fringe benefit is a form of pay for the performance of services. For example, you provide an employee with a fringe benefit when you allow the employee to use a business vehicle to commute to and from work. Assume Fringe Benefit Package @ 36% (incl. employee's SS tax, vacation, holidays, medical, retirement (401K), dental, life insurance, relocation, unemployment insurances, etc): (5 x $55,000 + $75,000 + $25,000) x 0.36 = $ 135K *Note: Federal Insurance Contributions Act (FICA) tax (Social Security and Medicare) is imposed by the federal government on both employees and employers. The entire FICA percentage of 15.3%* • *Employee's pay 6.2% for SS and 1.45% for the Medicare (this is not included in your cost)* • *The employer is liable for 6.2% Social Security and 1.45% Medicare taxes=7.65%*
Building	Initially rent a suite of offices with 2 engineers/office (12' x 14'), an office/conference room for President (12' x 20'), and a reception/office area of 16' x 20'. (5 cubicles) x (12' x 14'/cubicle) + President office of (12'x 20') + Reception/office area of (16' x 20') = 1,400 sq ft Use nominal figure for office space in industrial park sectors of` Clemson area, $9.50/sq ft/mo. Then the lease rate for office space will be $0.79/sq ft/mo x 1,400 sq ft = $1,106 /mo. = $13,272 /yr. In CLT: $1.50/sq ft/mo x 1,400 sq ft = $1,106 /mo. = $25,200 /yr.
Furniture	Rental of a desk, chair, credenza set will run about $60/mo. Need seven sets for a total monthly expenditure of $420/mo = $5040/yr The remaining equipment, furniture and software expenses are estimated to be about Seven computers @ $1500/computer $10,500 Seven sets of general software @ $1000/set $1,000 Specialized software $18,000 Copier, printer $4,000 Table and chairs for conference room $3,888 Seven telephones @ $35/ea $245

	Total $48,673
Phone and Internet	According to Bell South, the cost of a combined voice/data line, is $70.00/mo for operation. For Seven telephones the total cost will be $5,880 /year. Assume that long distance calls add another 40% to this to get a total estimated annual phone cost of $8,232
Travel	Another cost item which will be important is travel. There will have to be continual contact with potential clients, attendance at selected technical conferences and workshops, and visits to plants or other locations where potential clients might be. Assume (modestly) that this will that the cost per local trip is $200 and the cost per out-of-state trip is $2,000 there will be 2 of each trip each month $4,400/mo for the first year, or an annual total of $52,800.
Interest	Capital (i.e. money) is needed to fund these initial purchases as well as to underwrite operating expenses until a revenue stream is established by selling engineering services to customers. Assume that through personal contacts a credit line of $800,000 has been established. This is to be repaid over the period of a year with 11 equal payments starting 1 month after the loan date. The negotiated interest rate is 5% per year. The monthly payment M is calculated from = $74,726 Where P is the principal amount ($800,000), I is the interest rate (5%), and q is the number of payments to be made (11). From this, Debt Service = Total interest paid in year = 11 x M - P = $21,983.

Cost Estimate

Salaries	$325,000
FB @ 36%	$135,000
Building	$25,200
Furniture	$48,673
Debt service	$21,983
Travel	$52,800
Internet and Phone Service	$8,232
Total Costs	$ 666,888

Overhead Calculation

Now we will estimate the Overhead (Indirect Technical Expense) we must charge to recover our costs. This cannot be too large, or else we will price ourselves out of business. On the other hand, we must be realistic, or else we will go broke, and therefore out of business.

Assume that the first year, the five engineers will be at least 75% "sold", i.e., 75% of their total time can be charged to customers. Then we can bill

Five engineers @ 75% sold (salaries billable to clients)	$206,250
FB @ 36% (FB billable to clients)	$74,250
Total Billable to Clients	$280,500

The remaining salary dollars and FB's must be charged to overhead.
Total Expenses = Total Costs - Total Billable to Clients = $386,388 (Overhead Number)

This implies an Overhead rate of

OH rate = ($386,388/$280,500) x 100% = 137.75%
= (Overhead Number / Total Billable to Clients) x 100%

This implies that every labor dollar (at the "loaded" rate, i.e. with FB's) must be increased by a factor of 2.42 (1+ (OH rate/100%) + (5% profit/100%)) in order to recover the costs of doing business and make a profit (assuming a 5% profit). This is the figure that you will use when estimating the cost of a contract to a customer in a proposal. An overhead rate of 150% means that for each $1.00 of direct labor budgeted for a project; $1.50 needs to be budgeted for overhead costs.

Using the Overhead Number

You estimate that a project will take 1 week (40 hours) of your time, i.e. what does it cost for one week of an engineer's time. How much do you bill your client for this time?

Bill to Client

$$= \left[\frac{1 \text{ week work}}{52 \text{ weeks per year}} \bullet \left(\frac{\text{salary} = \$55\text{K}}{\text{year}} + \frac{\text{FB} = 0.36 \$55\text{K}}{\text{year}} \right) \bullet \left(1 + \frac{\text{overhead rate}}{100\%} + \frac{\text{profit} = 5\%}{100\%} \right) \right]$$

= $\underline{3481.08}$