

The following is a list of exterior or exposed surf

#3 Ref w/ky Regent CMS  
@well Inset. Force = .485Kg  
1.067 lbs

sent cigarette from the

#### Design Parameters :

- #4 2058104233  
+ 8 safety = 402  
1.5 lbs
1. Must conform
  2. Must have co
  3. The insertion *Recommended Target cig. strength*
  4. The extraction *After burn = 2.1 lbs*
  5. The heating e *IP assumption is 502 factor*
  6. The heating e *1.0 lbs by lighter is good*
  7. The heated ar
  8. The element/heater tensile, compressive and torsional strengths should allow for some consumer tampering or cleaning. (10 Lbf tensile & compressive, 5 In-Lbf torsional).
  9. The materials to construct the heater must be R&D approved.
  10. The time to temperature must occur within 0.8 seconds.
  11. The unloaded temperature of the element must be 800 to 900°C.
  12. The power expended to heat the element must be equal to or less than 25 Joules.
  13. The element resistance must be 0.6 to 1.2 Ohm with a 0.1 Ohm Std. Dev. between individual elements and heaters.
  14. The cycle uses before failure should be at least 5000.
  15. Catastrophic failure of the element should occur if the circuitry malfunctions and stays switched on (thereby opening the circuit and stopping the battery drain).
  16. The airflow must be radial into the cigarette cavity.
  17. There should be virtually no airflow through the back flow filter.
  18. Must be designed for manufacture with reasonable cost and ROI.
- odor. greater than 1.5 Lbf. be greater than 1.0 Lbf. rette. rette.*
- ... should be approximately 15 to 24 mm<sup>2</sup> per puff.*

The following pages summarize four approaches to developing a heater assembly - Serpentine, Induction, Tubular and Ceramic. The Serpentine concept will never address all of the design parameters listed above; the Tubular and Ceramic heater concept may address all of the design parameters with possibly some condensation problems (#2) and the Induction heater concept should meet all of the parameters but with axial air flow Vs. radial. The total 1994 expense funding and manpower is summarized below :

#### Funding : 1994 Expense - \$ 849,500

030 - \$ 22,000  
078 - \$ 347,500  
472 - \$ 180,000  
632 - \$ 150,000  
691 - \$ 150,000

#### Manpower requirements :

|                             |            |
|-----------------------------|------------|
| 1 Senior EE (Gr. 10)        | 1 manyr.   |
| 1 Technical Lab Assistant   | 1 manyr.   |
| 1 Staff Mechanical Designer | 1.7 manyr. |
| 1 Technical Lab Assistant   | 1 manyr.   |
| 1 Materials Scientist       | 0.9 manyr. |
| 1 Modeling expert           | 0.6 manyr. |

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