

## Closed-Loop Advanced Dry Head-End of LWR Spent Fuel

### **Disclosure Number**

200902278

### **Technology Summary**

The present state of the art of head-end for the processing of commercial spent nuclear fuel is fraught with technical difficulties that make it almost prohibitively expensive. For example, the current process results in dissolution of fission-generated technetium, which contaminates the fuel recycling process that follows and must be removed by expensive additional processing. The present invention is an integrated process that will (1) enhance the dry pyrochemical evolution of tritium and radioiodine which are environmental hazards; (2) simplify the off-gas trapping system; (3) eliminate the prolonged dissolution step; (4) reduce the amount of acid and the number of process steps needed for the solvent extraction; and (5) reduce the amount of raffinate waste solution generated. All of these advantages enable major cost reductions.

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