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Joint Service Initiative- CONsolidated and Deployable Omni- Recycling (CONDOR) System

Joint Services Environmental Management
Conference
May 21-24, 2007

Mr. John Huston, NDCEE

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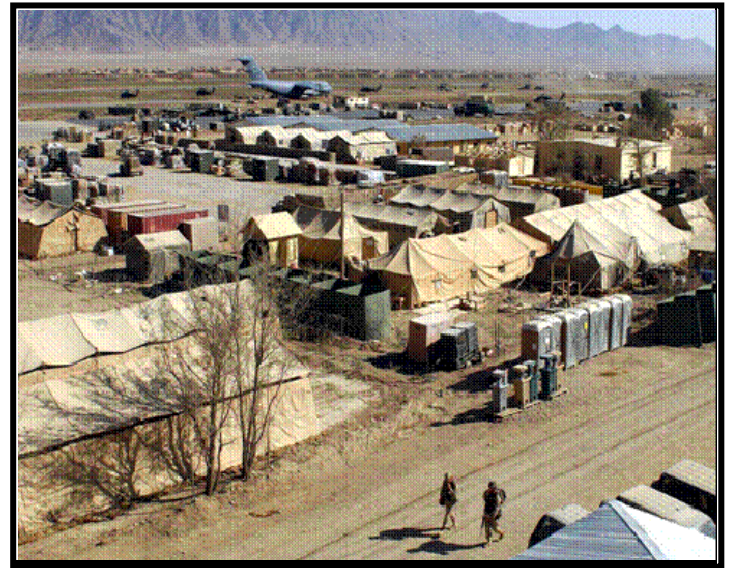
The NDCEE is operated by:  Concurrent Technologies Corporation

Technology Transfer—Supporting DoD Readiness, Sustainability, and Transformation

Report Documentation Page			Form Approved OMB No. 0704-0188		
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1. REPORT DATE MAY 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Joint Service Initiative-CONsolidatedand Deployable Omni-Recycling (CONDOR) System				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense Center for Energy and Environment (NDCEE),Concurrent Technologies Corporation,100 CTC Drive,Johnstown,PA,15904				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 11	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Background

- Deployed airbases at risk
 - Current waste treatment and disposal methods
 - Require a large number of ground support personnel (i.e., convoys)
 - Pose a threat to security and staff of the base because contractors have access to base to remove waste
 - Water is an essential and high volume logistical resource for military operations
 - Self sufficiency is required to minimize logistic burdens of non-weaponry supplies
 - Wastewaters generated from living quarters
 - Must be effectively managed to maintain sanitary conditions at the operations facilities

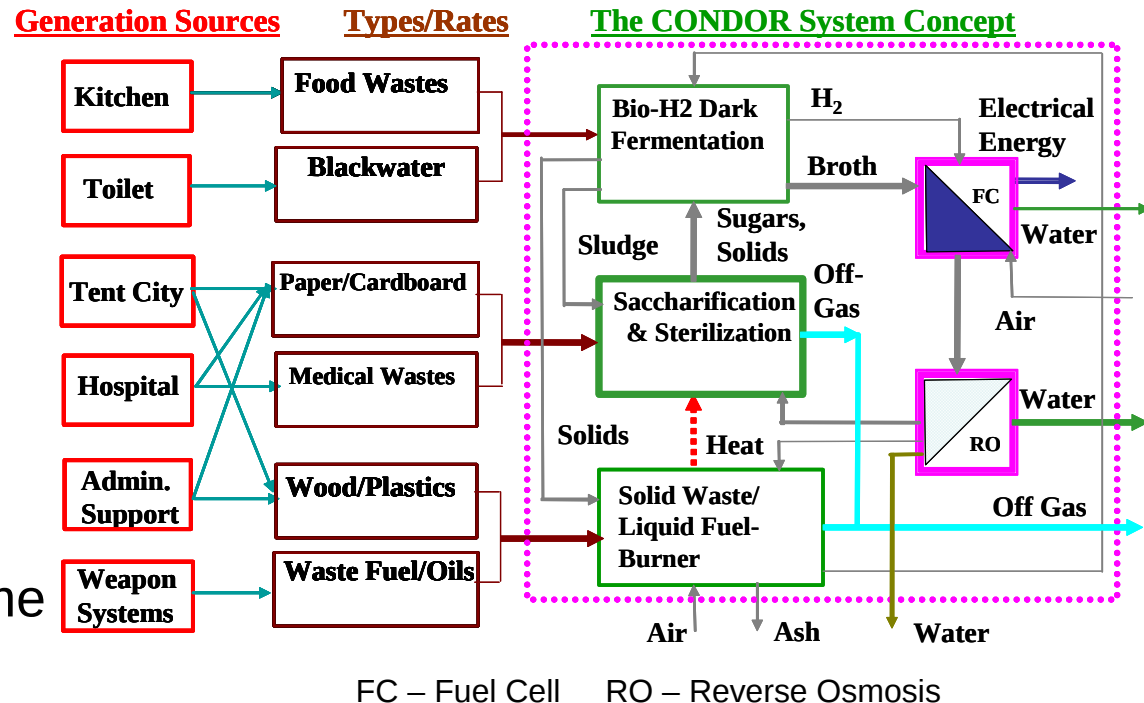


Objectives

- Assist Air Force Research Laboratory (AFRL/MLQ) with:
 - Completion of the engineering design
 - Fabrication of the CONDOR prototype system
- Determine and assess Joint Service interest in the CONDOR system

Technology Overview – Waste to Resource

- AFRL/MLQ concept processes multiple waste streams
- Products include:
 - Filtrate and retentate water
 - Hydrogen gas
 - Non-toxic off-gas
 - Ash
- Significantly reduces volume of solid and liquid wastes
- Unique microbial digestion of liquid waste which produces hydrogen – carbon dioxide (CO_2) gas



CONDOR Concept Schematic

Accomplishments and Results

- Completed Joint Service Interest Investigation
- Completed Engineering Design of Prototype
- Completed Fabrication of Prototype
- Delivered Prototype to AFRL/MLQ Personnel at Tyndall AFB for Optimization Studies

Accomplishments and Results (cont.)

- Integrated process subsystems
- Utilized economical Touch Panel operator interface with integrated Programmable Logic Controller (PLC)



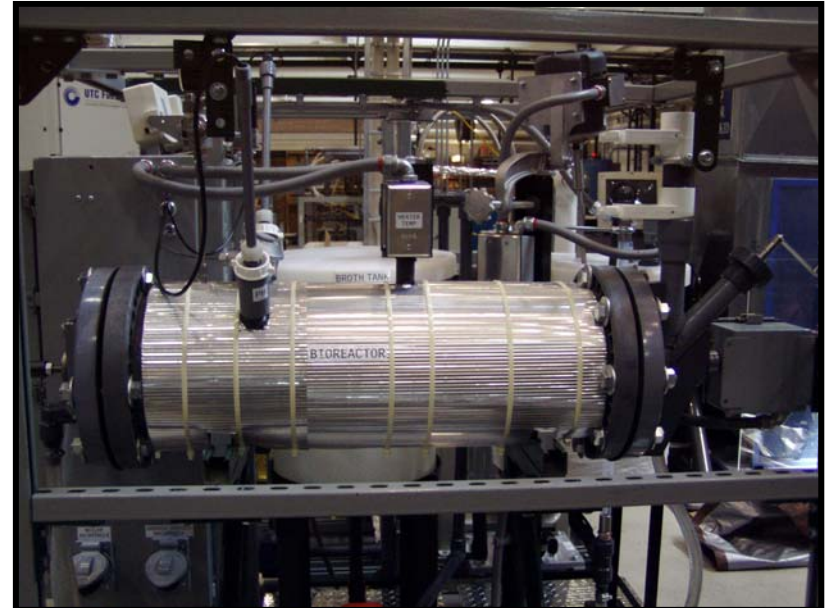
CONDOR Prototype



Hydrothermal Processor

Accomplishments and Results (cont.)

- Custom Bioreactor design enables AFRL/MLQ to test larger volume of waste materials
- AFRL/MLQ will utilize this prototype to evaluate interactions of the integrated subsystems and optimize system operating parameters

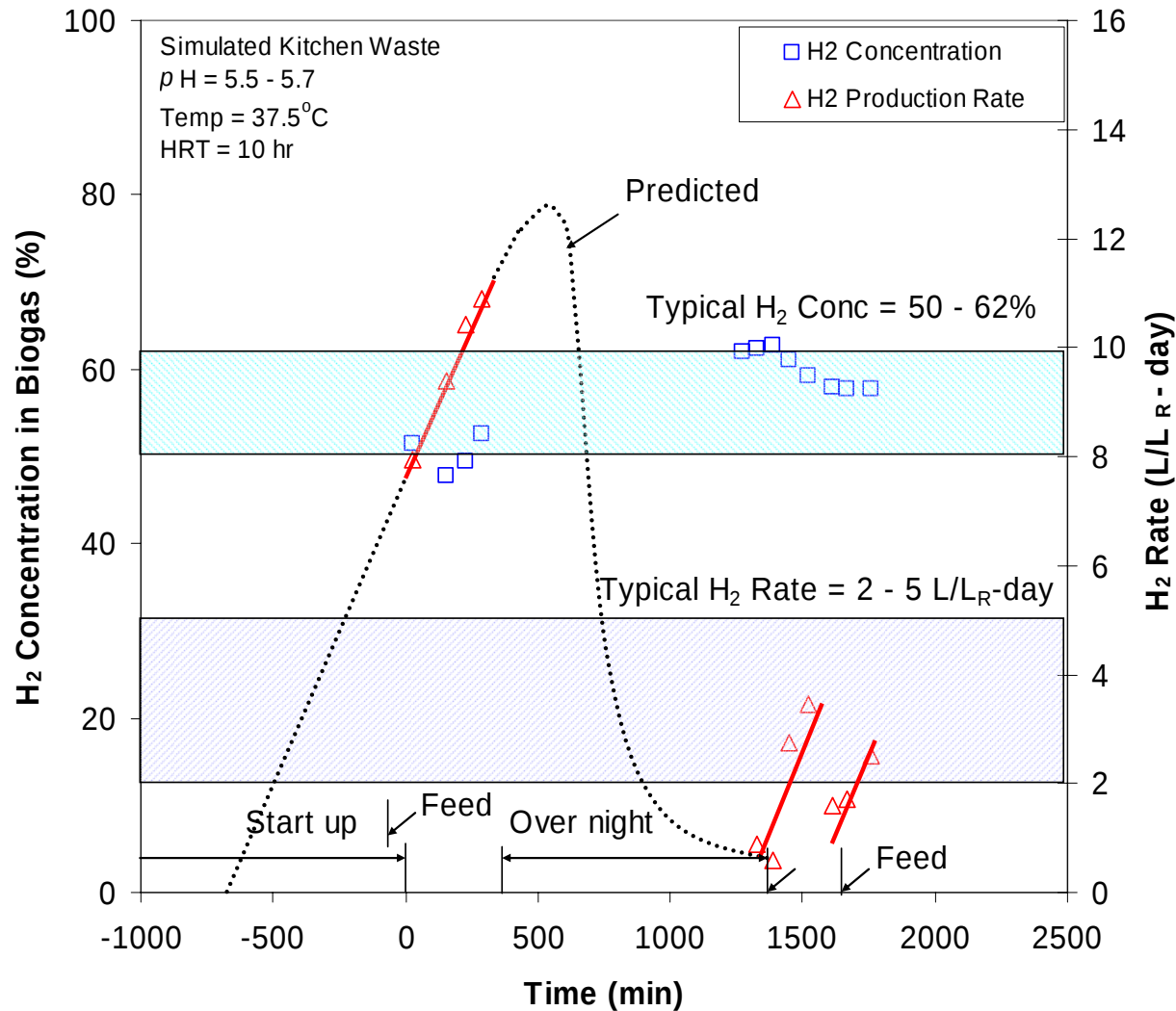


Dark Fermenter / Bioreactor

Path Forward

- Prototype Design and Fabrication Project completed September 28, 2006
- Assist AFRL/MLQ personnel with information dissemination
- Follow-on tasking to evaluate interactions of the integrated subsystems and optimize system operating parameters

Initial Prototype Experiment



AFRL/MLQ FY07 Schedule

- Optimize individual components and software of prototype CONDOR
- Characterize individual component and integrated system performance with simulated waste streams
- Perform process parameter sensitivity studies
- Assess feasibility of operating under real world conditions (i.e. actual wastes, blackwater)
- Complete AFRL S&T effort

Contact Information

NDCEE Technical Monitor

Name: Mr. Michael Henley

Organization: AFRL/MLQ

Email: Michael.Henley@tyndall.af.mil

Phone Number: 850-283-6050

NDCEE Project Manager

Name: Mr. John Huston

Organization: CTC

Email: hustonj@ctc.com

Phone Number: 814-269-6809

This work was funded through the Office of the Assistant Secretary of the Army (Installations and Environment) and conducted under contract W74V8H-04-D-0005 Task N.0429-AF6.