



BGPA INDUSTRY / MANUFACTURE PARTNERSHIP

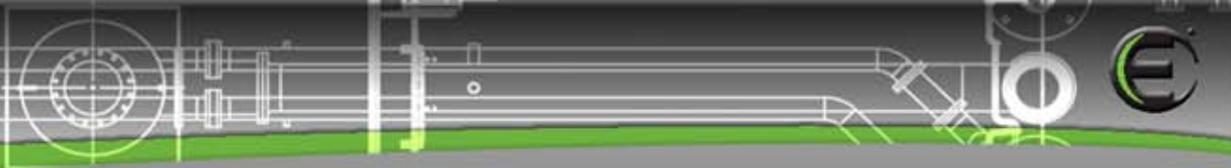
Benny Benson, PE
ENERGYneering Solutions, Inc

Steve King
PNGC Power

Patrick Barrett
Caterpillar Corporate

LMOP

(LANDFILL METHANE OUTREACH PROGRAM CONFERENCE)
JANUARY 20, 2011, BALTIMORE, MD



MISSION

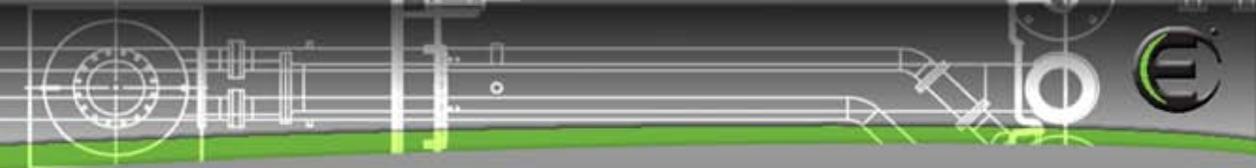
DEVELOP A COOPERATIVE INDUSTRY WORKING GROUP

- ✓ **INCREASE OPERATIONAL EFFICIENCY**
- ✓ **MAXIMIZE OPERATIONAL CAPACITY**
- ✓ **ENHANCE COMMUNICATION**
- ✓ **IMPROVE O & M COST**



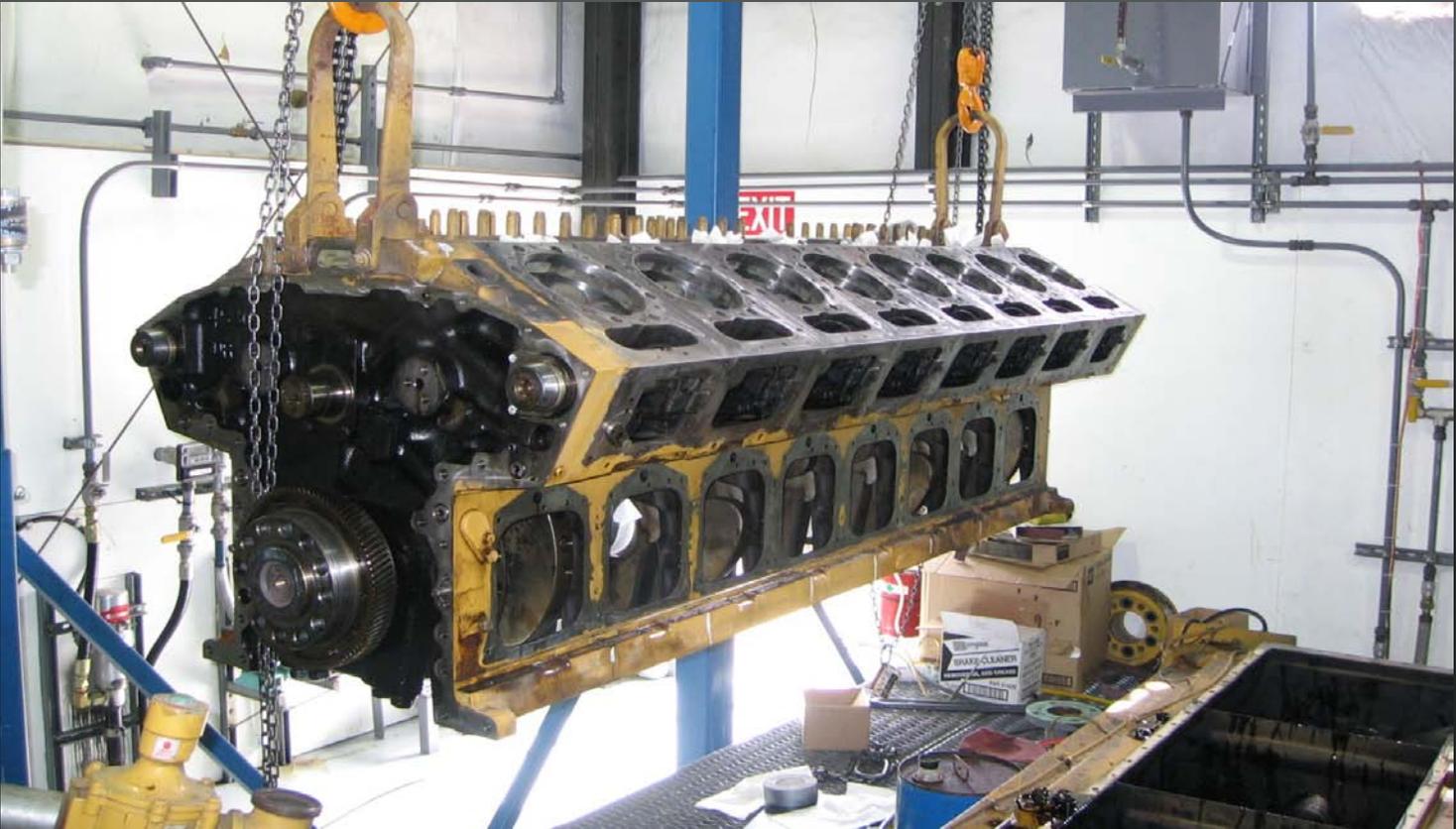
CATERPILLAR

- ✓ **USDOE ARES PROGRAM**
(Advanced Reciprocating Engine Systems)
- ✓ **DEVELOPMENT OF RECIPROCATING ENGINES**
 - **HIGHER EFFICIENCY**
 - **LOWER EMISSIONS**
 - **LOWER \$/KWH MAINTENANCE COST**



CATERPILLAR

- ✓ CATERPILLAR 3500 SERIES
- ✓ LONG STANDING FIELD PROVEN SUCCESS IN LFG APPLICATIONS W/ 3516



BACKGROUND

- ✓ CATERPILLAR 3520 - COMMERCIAL 2002
- ✓ DEVELOPED SPECIFICALLY FOR BIOGAS APPLICATIONS





BREAKING GROUND

- ✓ **2005-2007: RECOGNIZED COMMON SITE CHALLENGES – REGIONAL AND NATIONAL**

- ✓ **OBSERVATIONS NOTED IN COMMON**
 - **DEVELOPER LIMITATIONS**
 - ❖ **KNOWLEDGE BASE**
 - ❖ **CONSUMABLES BUYING POWER**

 - **CAT DEALERSHIP PRODUCT SUPPORT**
 - ❖ **LARGE vs SMALL DEVELOPERS**
 - ❖ **LIMITED EXPERIENCE w/ LFG and 3520**

- ✓ **REVIEW OF 3516 EARLY IMPLEMENTATION AND WORKING GROUPS (w/ Steve King, PNGC Power)**



FORMATION

- ✓ **DECEMBER 2007 – WORKING GROUP**
 - **PNGC Power**
 - **Peterson CAT**
 - **Mobile Lubricants**
 - **ENERGYneering Solutions**

- ✓ **APPROACHED SWANA LFG UTILIZATION COMMITTEE (Ed Wheless) TO ASSEMBLE A 3520 USER GROUP**

- ✓ **APPROACHED CATERPILLAR CORPORATE TO PARTICIPATE (Patrick Barrett, CAT)**

- ✓ **MARCH 2008 – 3520 USER GROUP, SWANA LFG SYMPOSIUM**
 - **FOCUSED ON COMMON CHALLENGES**
 - **LARGE AND SMALL DEVELOPERS**
 - **DEVELOPED WILLINGNESS TO WORK TOGETHER**
 - **CATERPILLAR WILLING TO HOST WORKING GROUP WITH DEALERS AND ENGINEERS**



EVOLUTION

✓ PRIMARY NEED - COMMUNICATION !!

- OPERATORS W/ DEALERS
- OPERATORS W/ OPERATORS
- DEALERS W/ EXPERIENCED DEALERS
- DEALERS W/ CAT CORPORATE
- CORPORATE / DEALERS / OWNERS / OPERATORS



PROGRESSION

- ✓ **JUNE 2008 – USER GROUP MEETING, CATERPILLAR HOSTED, LAFAYETTE**
 - **WEB BASED USER GROUP FORUM**
 - **OWNER / OPERATOR NETWORKING**
 - **OWNER / OPERATOR DIRECT INPUT TO CAT CORPORATE**

- ✓ **JULY 2009 – USER GROUP MEETING, LAFAYETTE**
 - **IMPROVED DEALER PARTICIPATION**
 - **ASSEMBLED INDUSTRY LOBBY**

- ✓ **SEPTEMBER 2010 – CATERPILLAR, LAFAYETTE**
 - **OPPORTUNITY TO REVIEW AND PROVIDE INPUT TO FUTURE PRODUCT DEVELOPEMENT**

CHANGE

With a Crackle Like Frying Eggs

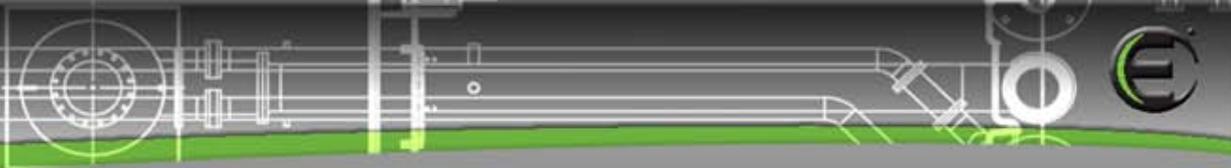




FUTURE

- ✓ FORMED BIOGAS POWER ASSOCIATION
- ✓ CONTINUE CAT 3520 USER GROUP
- ✓ PROVIDE MODEL / EXAMPLE TO OTHER MANUFACTURES
- ✓ EXPAND:
 - FUEL UTILIZATION (LFG, WDG, ADG)
 - LOBBY CAPABILITY
 - BIOGAS OWNER / OPERATOR NETWORK
 - VENDOR SUPPLY AND COMMUNICATION





SUMMARY

- ✓ **EXTENSIVE EXPERIENCE IN LFGTE**
- ✓ **WILLINGNESS TO WORK TOGETHER AMONGST OPERATORS**
- ✓ **WHY REPEAT PROBLEMS**

- ✓ **RECOMMENDATION**
 - **DISCUSS WITH SUPPLIER**
 - **SUPPORT LMOP**
 - **SUPPORT SWANA LFG UTILIZATION TECHNICAL COMMITTEE'S**



CONTACT

THANK YOU

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