

PROJECTS IN INDUSTRY PROGRAM AT WEST VIRGINIA UNIVERSITY

DR. KENNETH H. MEANS, P.E.

**PROFESSOR OF MECHANICAL AND AEROSPACE
ENGINEERING**

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WEST VIRGINIA INDUSTRY ASSISTANCE AND BUILDING ENERGY EFFICIENCY CENTER

- **MADE POSSIBLE BY**
THE WEST VIRGINIA DIVISION OF ENERGY
JEFF HERHOLDT , DIRECTOR

MISSION OF THE PWI PROGRAM

- **TO AID AND ASSIST WEST VIRGINIA INDUSTRIES, COMPANIES AND INSTITUTIONS TO BECOME MORE COMPETITIVE AND ENERGY EFFICIENT THROUGH ENGINEERING IN ENERGY EFFICIENCY, MANUFACTURING AND PROCESS IMPROVEMENTS.**

INDUSTRY PROGRAMS

- **MANY WV INDUSTRIES AND INSTITUTIONS HAVE BENEFITED FROM THE PWI PROGRAM**
- **SOLUTIONS TO HIGH ENERGY COSTS**
- **PRODUCTION EFFICIENCY IMPROVEMENTS**
- **METHODS FOR ENERGY RECOVERY**

ELEMENTS OF A PWI PROJECT

- A STUDENT TEAM OF 5-7 MECHANICAL ENGINEERING SENIORS
- AN EXPERIENCED PROFESSOR WHO WILL GUIDE THE TEAM
- 2-3 VISITS TO THE PROJECT SITE
- MID-TERM AND FINAL PRESENTATIONS AND REPORTS
- WORK DONE IS CONFIDENTIAL

PROJECT DIRECTOR

- DR. KENNETH H. MEANS, P.E.
- PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING
- 50 YEARS OF EXPERIENCE IN THE DESIGN OF MECHANICAL, HVAC AND ENERGY SYSTEMS
- TEACHES HVAC AND ENERGY DESIGN CLASSES AT WVU

PARTIAL LIST OF PROJECT SITES

- OHIO COUNTY SCHOOLS- WHEELING
- FCX CORPORATION-MORGANTOWN
- SIMONTON WINDOWS- ST. MARYS, WV
- WHEELING-NISSHIN STEEL- FOLLANSBEE
- WEIRTON LIBRARY
- PRATT & WHITNEY- BRIDGEPORT
- AURORA FLIGHT SCIENCES - BRIDGEPORT

PARTIAL LIST OF COMPANIES

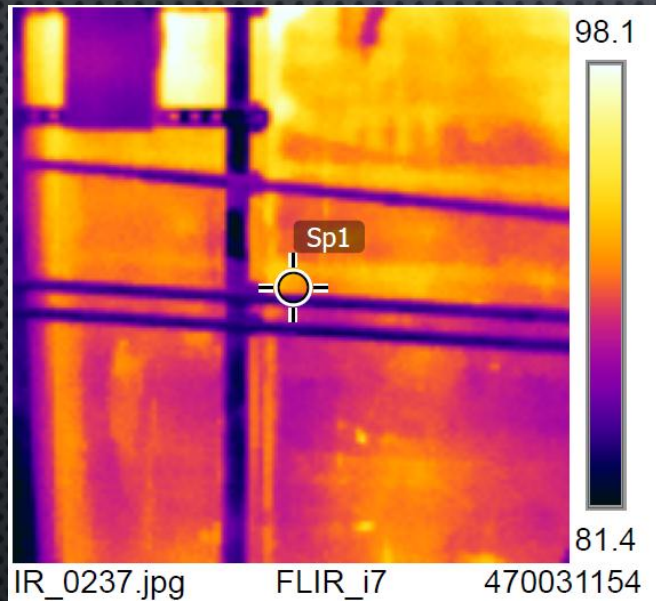
- INTERSTATE HARDWOODS — BARTOW
- BALL CORPORATION — WEIRTON
- B&E AEROSPACE CO.- FENWICK
- AMBIT POWER PLANT- GRANT TOWN
- BURKE, PARSONS, & BOWLBY — SPENCER
- QUAD GRAPHICS- NEW MARTINSVILLE

AMBIT POWER PLANT- FAIRMONT



- **AMBIT POWER PLANT- REDUCTION IN AMMONIA INJECTION FOR NOX EMISSION CONTROL**

NOVELIS ALUMINUM- FAIRMONT



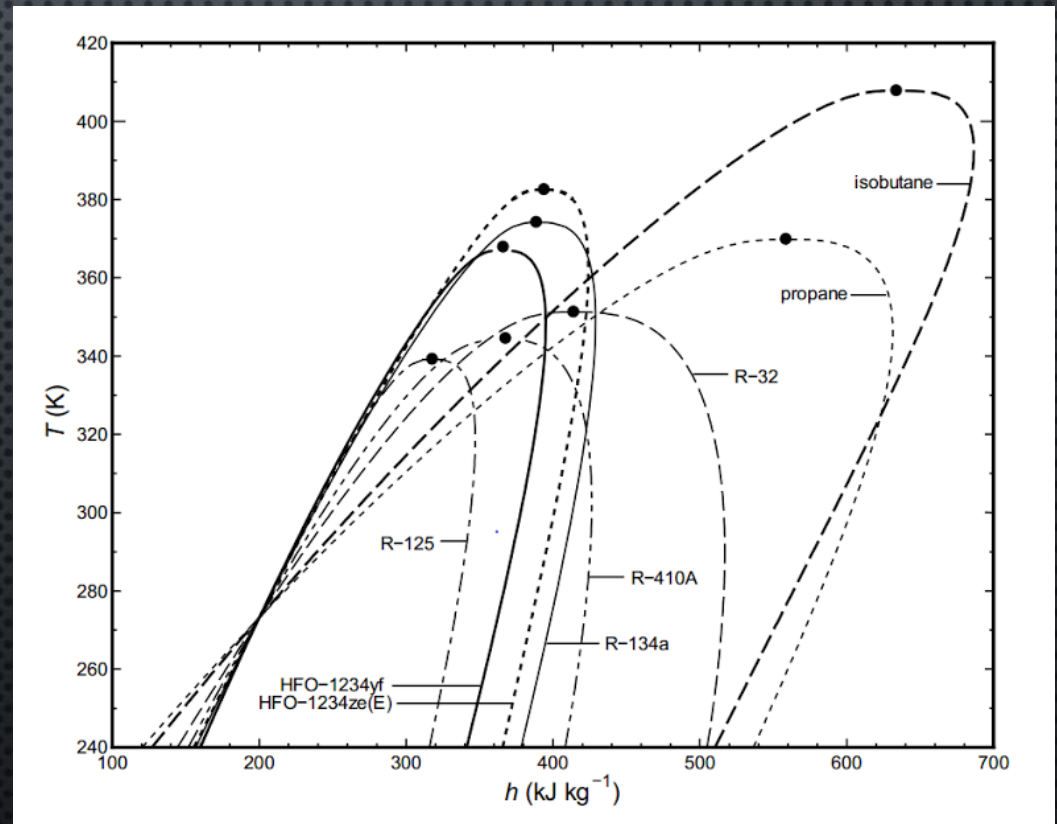
Infrared furnace image

- ENERGY EFFICIENCY OF ANNEALING FURNACES



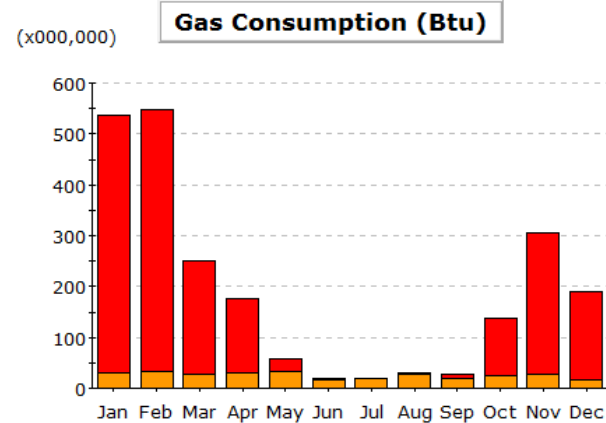
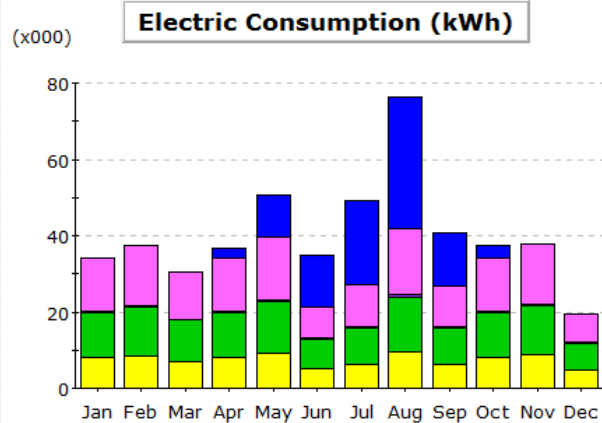
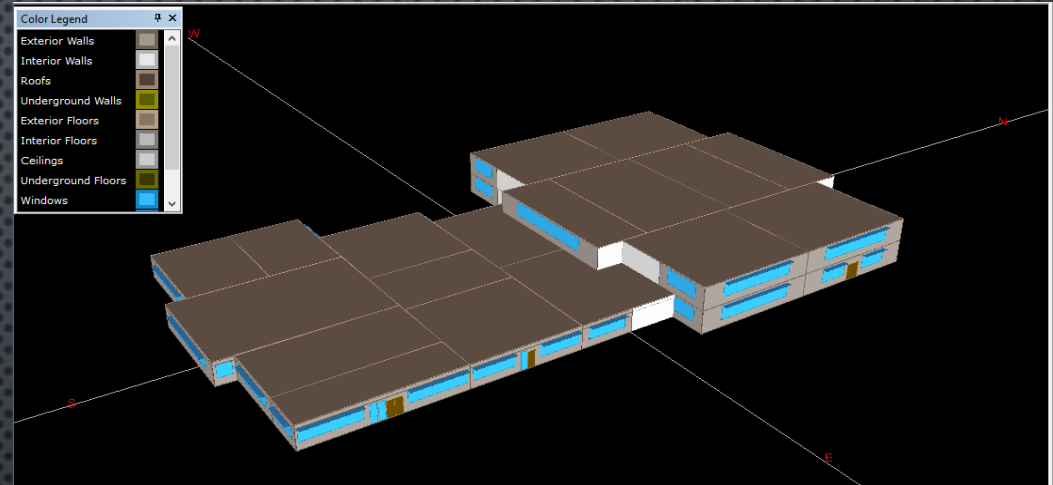
Project Team with Officials

AMS VENDING MACHINE CO.- MARTINSBURG



ALTERNATE REFRIGERANT STUDY

WHEELING WOODSDALE ELEMENTARY SCHOOL



■ Area Lighting
■ Task Lighting
■ Misc. Equipment
■ Exterior Usage
■ Pumps & Aux.
■ Ventilation Fans

■ Water Heating
■ Ht Pump Supp.
■ Space Heating
■ Refrigeration
■ Heat Rejection
■ Space Cooling

RAINBOW FARMS HYDRO POWER PROJECT- SUGAR GROVE



Hydro Flow Path



Pelton Turbine

RUBBERLITE CORP.- HUNTINGTON



**Finding Uses for Waste Foam
Material**



Redefining limits

CLARKSBURG



- VENTILATION AND HYDRAULIC SYSTEM IMPROVEMENTS FOR THE MANUFACTURE OF CARBON PRODUCTS



- **MORGANTOWN PLANT**
- **HVAC SYSTEMS FOR IMPROVED PLANT OPERATIONS**



DUPONT CORP. –WASHINGTON, WV

- MATERIAL HANDLING PROJECTS FOR NYLON BRISTLE PRODUCTS
- VENTILATION SYSTEM FOR INJECTION MOLDING
- TEFLON WASTE HANDLING SYSTEM

PROGRAM RECOGNITION

- **THE PROJECTS WITH INDUSTRY PROGRAM AT WEST VIRGINIA UNIVERSITY WAS RECOGNIZED AS ONE OF THE TOP 28 PROGRAMS IN THE NATION BY THE NATIONAL ACADEMY OF ENGINEERING FOR INTRODUCING REAL WORLD ENGINEERING INTO THE CURRICULUM.**

PROJECT REQUIREMENTS

- BE WILLING TO PROVIDE A CONTACT PERSON
- BE WILLING TO PROVIDE INFORMATION TO THE TEAMS
- THERE IS NO CHARGE FOR THIS PROGRAM
- A WIDE RANGE OF PROJECTS ARE POSSIBLE FROM ENERGY CONSERVATION AND RECOVERY TO MECHANICAL DESIGN

SUMMARY

- PROFESSOR KEN MEANS AT THA WVU ENGINEERING TEAM CAN VISIT YOUR COMPANY OR INSTITUTION
- CONTACT E WVU MECHANICAL AND AEROSPACE ENGINEERING DEPARTMENT -304-293-3141
- KEN.MEANS@MAIL.WVU.EDU
- OR CONTACT JEFF HERHOLDT AT THE WEST VIRGINIA DIVISION OF ENERGY -304-957-2027