BRAE 2025 Facility Vision Input

Andy Holtz

Mark Zohns

Function: Product Development

- Teaming/Brainstorming
- Student collaborative meetings
- Web conferencing
- Product Design
- Project Management
- Rapid Design Review
- Rapid Prototyping workspace
- Product Fabrication
- Project Assembly
- Project Testing

Industries Served

- Agricultural Equipment Design
- Food Processing
- Material Handling
- Producing Ag/Farming
- Machinery Management
- Construction
- Advanced Mobile Systems
- UAV/vehicle technology
- Project-related fields

Resources/Equipment

- Open office work area (student team use)
- White boards
- Teleconference/Web conference equip
- Projector/big screen TVs
- Dedicated CAD/CAM/FEA workstations (project use)
- GIS/CAD teaching lab (class use)
- Gantry Crane(s)
• CNC Mills
• CNC Lathe
• CNC Press Brake
• Hi-def plasma
• Water Jet cutter
• Laser Cutter
• Pressure testing bench
• Closed-circuit hydraulic system test benches (mobile)
• System maintenance steam wash rack (with zero emission water treatment system)
• Acorn fixturing tables (6’x16’)
• Equipment Test cell with noise-abatement/vehicle exhaust fans/dynomometer
• Paint/powder-coat spray booth/ oven
• Plus1 mobile equipment test stands
• UAV test fleet

**Facility**
• Project Planning/ Design Laboratory
• Product Development Lab
• Manufacturing laboratory – Machining/CNC
• Manufacturing laboratory – Heavy Fabrication/plasma/weld/form
• Manufacturing laboratory – Closed-circuit hydraulics
• Flexible Project Construction Laboratory w/ dedicated individual bays
• Clear Outdoor Concrete Pad
  o project staging
  o assembly
  o testing
  o materials delivery/truck access
• Indoor Ag UAV flight lab
• Ag-mechatronics lab
• Instrumentation/vision/microprocessor development lab
BRAE 2025 Facility Vision Input

Faculty/Staff Name  Art MacCarley – Alternative Energy and Vehicle Laboratory

Function:
• Education, research and development to prepare students to follow future opportunities in an environment of high-cost oil, increased environmental regulation, and the need for practical solutions to reduce anthropogenic climate change.
• Advanced vehicle and energy system design and electronic control systems.

Industries Served:
• Ag mechanized machinery manufacturers and consumers – any potential energy user
• Entrepreneurial opportunities the become viable as oil costs increase.

Resources/Equipment:
• Chassis dynamometer with drive cycle controls ($200K)
• 5-gas emissions analysis (CVS) equipment ($150K)
• Exhaust extraction system ($20K)
• Secure fuel storage cabinets ($5k)
• Small-scale thermochemical lab demonstration apparatus: gasifier, cooler, catalyst, distillation column, controls) $125K)
• Specialized safety equipment, including flammable gas detector, fume hood, chemical spill containment kit, drench shower, protective clothing ($50k)
• Variable electrical load bank, for solar or wind power absorption ($10K)
• Stationary battery bank with charger for electric propulsion and variable speed drive experiments and development work ($15K)
• Electrical instrumentation – 8 DMMs, 8 OBD diagnostic systems, high current non-contact DC, solar insolation ($25K)

• Total equipment est: $600K

Facility:
• Approximately 2,000 ft^2, enclosed.
  o Total floorspace: 2000 ft^2, secure area
BRAE 2025 Facility Vision Input

Tom Mastin

Function:
• Student Education
• Demonstration of Equipment
• Field Measurement
• Mapping
• Geospatial Management
• Integration of technologies

Industries Served:
• Agriculture Production
• Water Districts
• Civil Engineering
• Farm Management
• Precision Agriculture

Resources/Equipment:
• 12 Units - GNSS RTK Systems capable of working with Modernization of GPS
• 1 Unit – Base Station GNSS RTK system
• 12 Units – Imaging Total Stations
• 1 Unit Robotic Imaging Total Station
• 12 units – Digital Levels
• 12 units – Digital Level Rods
• 12 units – Blue tooth Data collectors
• 31 licenses Surface from Motion / Imaging Software
• 31 licenses Static GNSS processing Software
• 31 units Remote Sensing / Photogrammetry Hardware & Software
• 31 licenses GIS & Farm Management Software
• 31 licenses CAD Software
Facility:

• 40’ x 40’ lecture room
  o Large enough for Demonstrations
  o Perform some lab work within room
  o Have terminals for downloading data

• Equipment Room attached to lecture room
  o Able to securely store first 7 items listed under Resources/Equipment
  o Able to store associated tools and supplies
  o Workbench for testing and repairing equipment

• Outdoor field approximately 800’ x 300’
  o Vertical change of 20-40 feet
  o Within walking distance from lecture room
    ▪ May require lecture room to be separate from main building

• Technology Lab with 30 student workstations and one instructors workstation
  o Dual Screen workstations
  o Layout tables separate from workstations.
BRAE 2025 Facility Vision Input

Faculty/Staff Name

Greg Lampman

Function:

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Industries Served:

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Resources/Equipment:

- Dust collection for all wood working equipment in lab 1. Dust control
- Sanding table with dust collection in lab 1
- Panel saw. This will make cutting plywood very safe
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Facility:

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