

CCEFP: TRANSFORMING THE FLUID POWER INDUSTRY THROUGH INNOVATION

The Center for Compact and Efficient Fluid Power (CCEFP) was established in 2006 to transform fluid power into an industry that is Compact, Efficient and Effective, and in 2009, the organization is still going strong with new faculty hires, new test beds, and a new vision for the future.

NEW FACULTY

The Center welcomed the following new members into its growing faculty: June Ueda (Georgia Tech), Ashlie Martini (Purdue University), Zongliang Jiang (NCAT), Zong Xuan Sun (Minnesota), and Robert J. Webster, III (Vanderbilt).

MOBILE HYDRAULICS

One way the organization is transforming fluid power is through a focus on Mobile Hydraulics. Four test beds have been created to achieve this mission:

1. Mobile Heavy Equipment - High Efficiency Excavator (TB1), which will double fluid power system efficiency,
2. Highway Vehicles - Hydraulic Hybrid Passenger Vehicle (TB3), which will increase fluid power energy storage density by an order of magnitude,
3. Mobile Human Scale Equipment - Fluid Power Rescue Robot (TB4), which will invent new fluid power supplies that are one to two orders of magnitude smaller than currently available, and
4. Human Assist Devices - Fluid Power Assisted Orthosis (TB6), which will create next-generation miniature components and systems for small-scale applications.

It is believed that this research will translate directly into other fluid power applications, including factory automation, polymer processing, marine,

metal forming, aerospace, civil infrastructure, and dock loading. The test beds demonstrate all required important attributes, such as compact power supplies, compact energy storage, efficient components, and miniaturization.

EQUIPMENT/FACILITIES HIGHLIGHTS

- High-tech treadmill, which helps researchers develop fluid powered orthotic braces at UIUC
- Hydraulic dynamometer with electrical regeneration capabilities at Milwaukee School of Engineering
- Experimental set-up for fluid power noise evaluation at Georgia Tech
- High-bandwidth engine and hybrid power train dynamometer for full economy and emissions research at Minnesota
- Maha fluid power research center upgrade at Purdue University
- Human-machine virtualization interaction and integration system laboratory at NC A&T State University

OTHER HIGHLIGHTS

The Center not only has a textbook chapter on fluid power but also fluid power courses and area of specialty at Purdue University. Outreach highlights include a partnership with Project Lead The Way, a hydraulic hybrid vehicle exhibit, a partnership with Science Museum of Minnesota (SMM) and a Youth Science Team.

An exciting development is the creation of Fluid Power

Videos, which are being aired on Twin Cities Public Television. You can also find the videos on the CCEFP website.

With these new developments, as well as more on the way, CCEFP is well on its way to transforming the future of Fluid Power. *For more information, visit www.ccefp.org.*

