

OBJECTIVES AND FUNCTION

The WESRF at OSU provides research, testing and consulting services related to motors, generators, adjustable speed drives, power electronics, power supplies, power quality, industrial process equipment, power systems and renewables. By using state-of-the-art facilities and the expertise of internationally recognized personnel, we are able to meet the most stringent of industry and utility requirements and testing standards.

Beginning operations in 1996 with donations from a consortium of sponsors, the WESRF soon established a reputation as a leading independent resource to industry. Our services to industry and utility customers continues to increase and now touches virtually every aspect of multi-scale Energy Systems, covering power levels from μW to MW. With a 750kVA independent utility power supply, comprehensive testbeds up to 300hp, and a 120kVA fully programmable AC source, the WESRF has the highest power ratings and is the best equipped Energy Systems laboratory *in any university in the nation*. The result is that we are able to carry out research, testing and analyses on a wider range of equipment in a single facility, and the university environment base provides a rich pool of academic and industrial experience.

The participation of our graduate and undergraduate students in research and in operating an industrial level facility such as the WESRF has enhanced their smooth transition to industry upon graduation. Our industrial clients have often found the WESRF to be an excellent resource for the recruitment of graduates that are well trained and exposed to industry practices.

FOUNDING SPONSORS

Electric Power Research Institute (EPRI)
Bonneville Power Administration (BPA)
US Department of Energy (USDOE)
Pacific Gas & Electric (PG&E)

CAPABILITIES

Research

- Adjustable Speed Drives, Electrical Machine Design, Variable Speed Generation, Power Systems, Renewables/Alternative Energy, Distributed Generation, Power Quality and Harmonic Analysis, Power Supplies.

Education Opportunities and Training

- Provision of Industrial/Utility Hands-on Short Courses and Seminars on Motor and Drive Applications, Power Electronics and Power Quality Interface Issues.

Selected Example Projects

Ocean Wave Energy Extraction, Wind Generation Systems, Hybrid Electric Vehicles, Electric Propulsion Coil Testing, Adjustable Speed Drive Application Issues and Ride-Through, Multi-level Inverters, Magnet Coupling Systems, 841 Motor Qualification Program, Appliance Verification

Testing

- All frame sizes of Motors, Generators, Drives and Controllers up to 300 hp.
- IEEE Standards Testing, e.g. 112A, B & E
- Motor Testing: Full Load, No Load, Transient Response, Locked Rotor, Insulation, Harmonic measurements, Multi-frequency.
- Adjustable Speed Drive (ASD) Interface and Application Issues, Ride through (AC, DC, Multi-level).
- Simulation and Modeling.

PRIMARY STAFF

Director: Annette von Jouanne, Ph.D., P.E., Professor, EECS; Wave Energy, Adjustable Speed Drives, Power Electronics, Power Quality and Utility Interface Issues.

Tel: 541-737-0831 E: avj@eeecs.orst.edu

Co-Director: Ted Brekken, Ph.D., Assistant Professor, EECS; Control, Power Electronics, Electric Drives and Machine Design; Applications of Drives and Machine Technology to Renewable Energy Systems.

Tel: 541-737-2995 E: brekken@eeecs.orst.edu

Associates

Joe Junker and Greg Wheeler; Associate Professors, Industry Assessment Center; Energy Audits, Industrial Site Testing, Power Quality.

OSU faculty in all related disciplines as required; e.g. Electrical, Mechanical, Industrial, Civil etc..

OSU graduate and undergraduate students in all related disciplines as required.

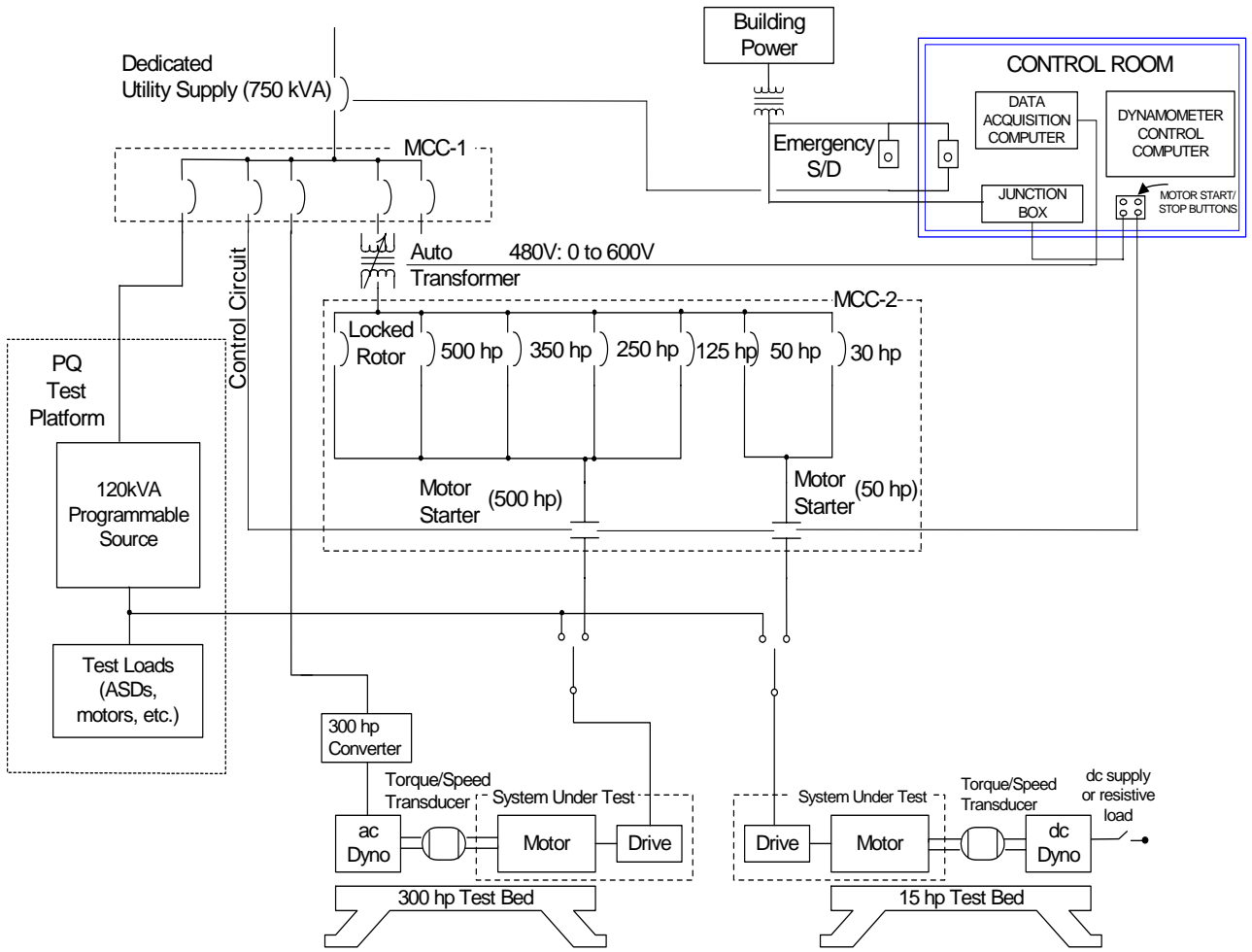
Technical

Manfred Dittrich; Mechanical Support, Vibration Analysis.

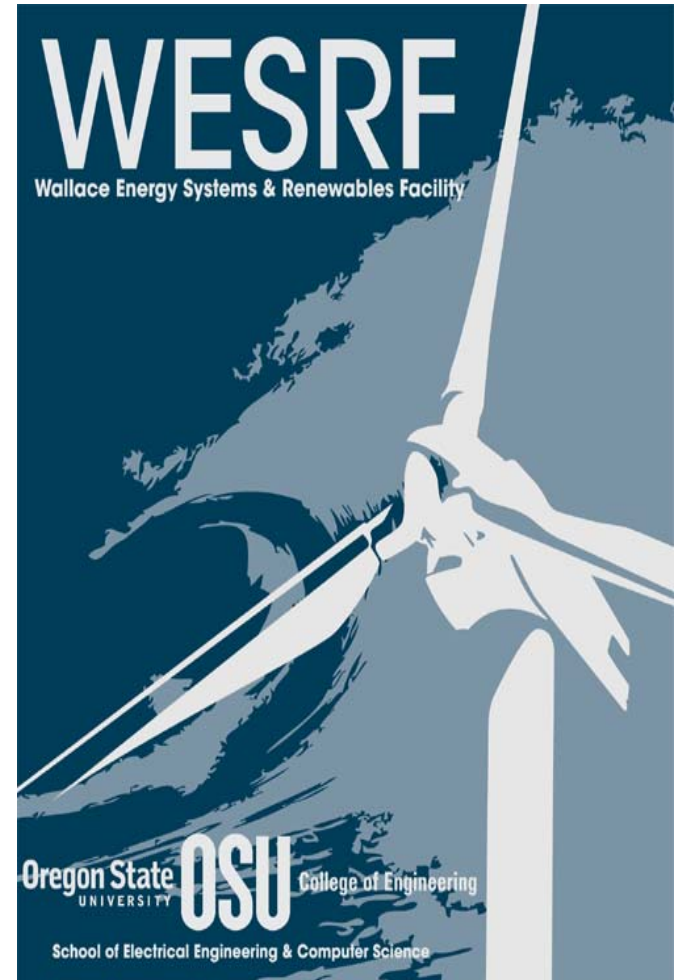
EQUIPMENT

- 750 kVA Dedicated Power Supply
- 300hp Motor/Generator Test bed (upgradeable to 1000hp), Regenerative
- 120 kVA Fully Programmable Source with Arbitrary Waveform Generator
- 15 hp and Fractional Horsepower Motor Test Stations
- Four Quadrant Dynamometer Converter with programmable Torque & Speed modes, Vector Control for full load testing over the full speed range (0-4000 rpm, bi-directional)
- Remote Data Acquisition & Recording, Instantaneous & RMS values using a Virtual Instrumentation System.
- Local Data Acquisition for transient detection and analysis
- Electrical and Mechanical Measurements, e.g. Power, Torque, Speed, Efficiency, Losses, PF, THD, Thermal, Vibration
- High Precision Measuring Instruments, Power Analyzers and Calibration sets

Schematic of Wallace Energy Systems & Renewables Facility (WESRF)



School of Electrical Engineering and Computer Science, Oregon State University
 Corvallis, OR 97331-5501, Phone: 541-737-1867 Fax: 541-737-1300
<http://eecs.oregonstate.edu/wesrf>



School of Electrical Engineering & Computer Science
 Oregon State University
 Corvallis, OR 97331-5501
 WESRF Phone: 541-737-1867
 Fax: 541-737-1300
<http://eecs.oregonstate.edu/wesrf>