Heat Release Supply Voltage Control

International Aircraft Materials
Fire Test Forum Meeting

Savannah, GA

March 2019

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Background

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- Boeing noticed variations in supply voltage over time
- Conducted investigation into effects on heat flux of these variations
- Arranged for a worldwide round robin to determine if other labs had the same issues
- Looked for possible solutions to maintain a stable power setting and heat flux

Heat Release Supply Voltage Control

Voltage Round Robin Status Update

22 Labs Participating:

13 Domestic (USA)

- Jamco-America
- General Plastics
- Zodiac Heath Tecna
- Krueger Testing & Consulting
- Element Materials & Technology
- HAECO Americas Cabin Solutions
- AccuFleet Testing Services
- Skandia
- SEKISUI SPI
- Schneller
- Herb Curry Inc.
- SGS Govmark
- TESTCORP

9 International

- CTA (Centro de Tecnologias Aeronauticas)
- CSIR, MSM, Nonwovens & Composites Laboratory
- Jamco Singapore Pte Ltd
- AIRBUS
- Zodiac Aerospace (SELL)
- RESCOLL
- DGA Techniques Aeronautiques
- Test Center of Civil Aviation Administration of China (CAAC)
- F. List

18 of 22 Labs Complete

- Fluke Model VR170 Voltage recorder supplied by Boeing
- Voltage recorder connected to unit power supply for 10 days
- Recorders returned to Boeing for data extraction, compilation, and analysis
- Results will be shared with FTWG
  - October 2018 preliminary results
  - ~~March~~ **June** 2019 full results

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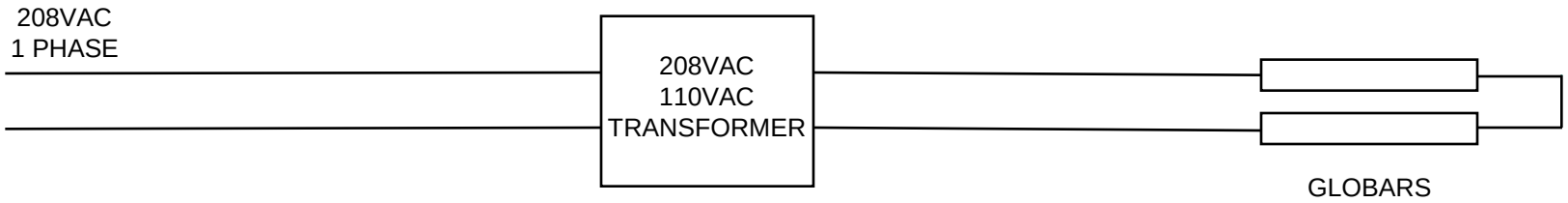
Heat Release Supply Voltage Control Current System



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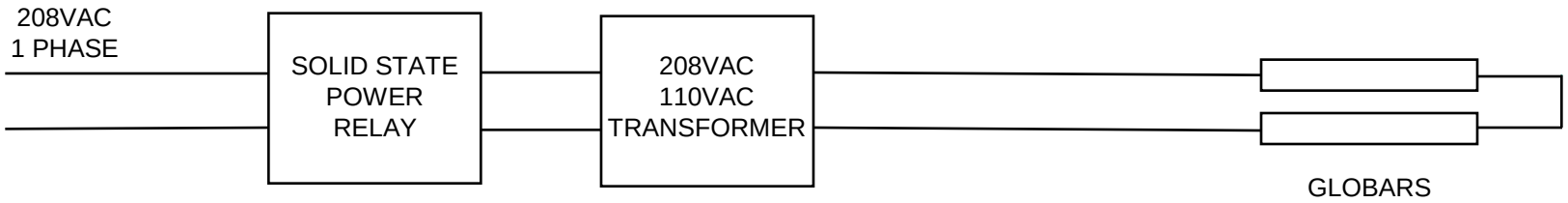

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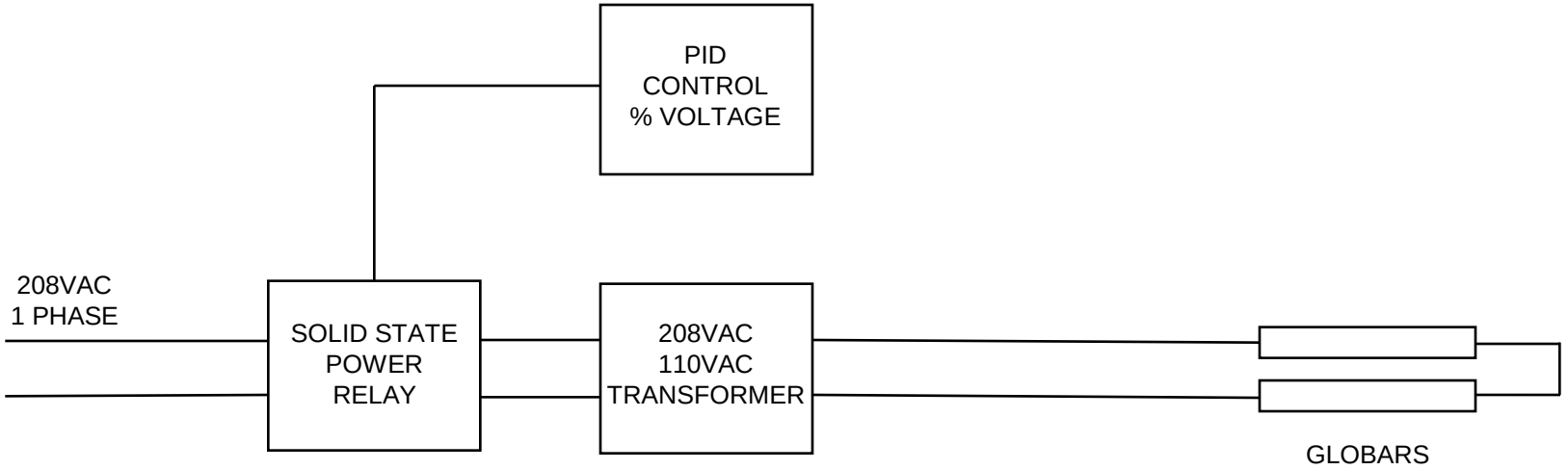

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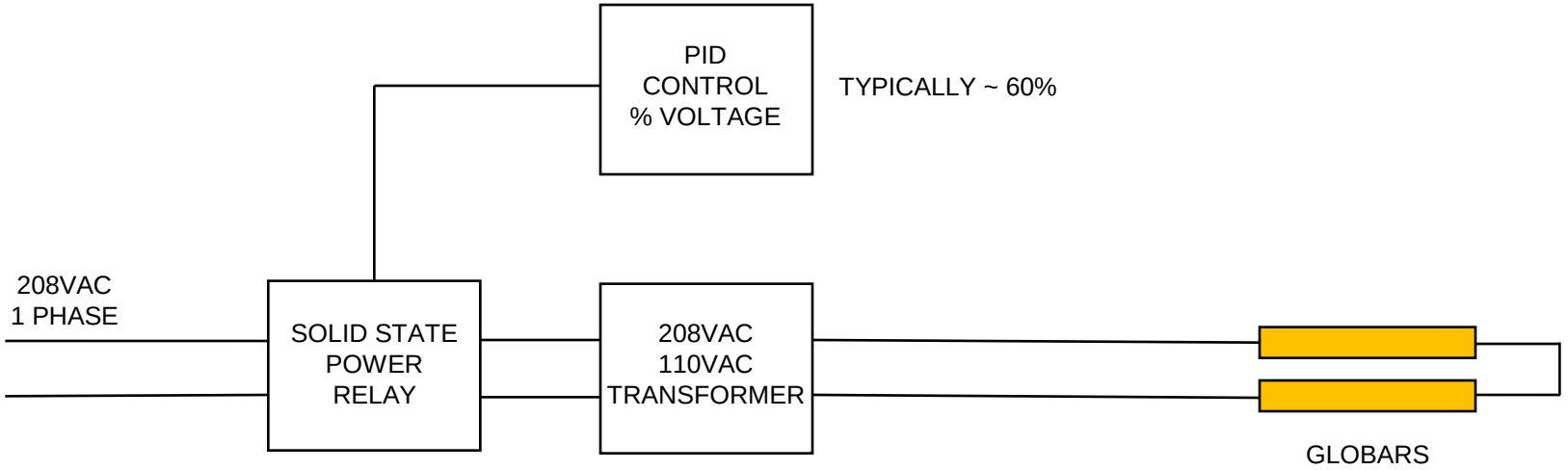

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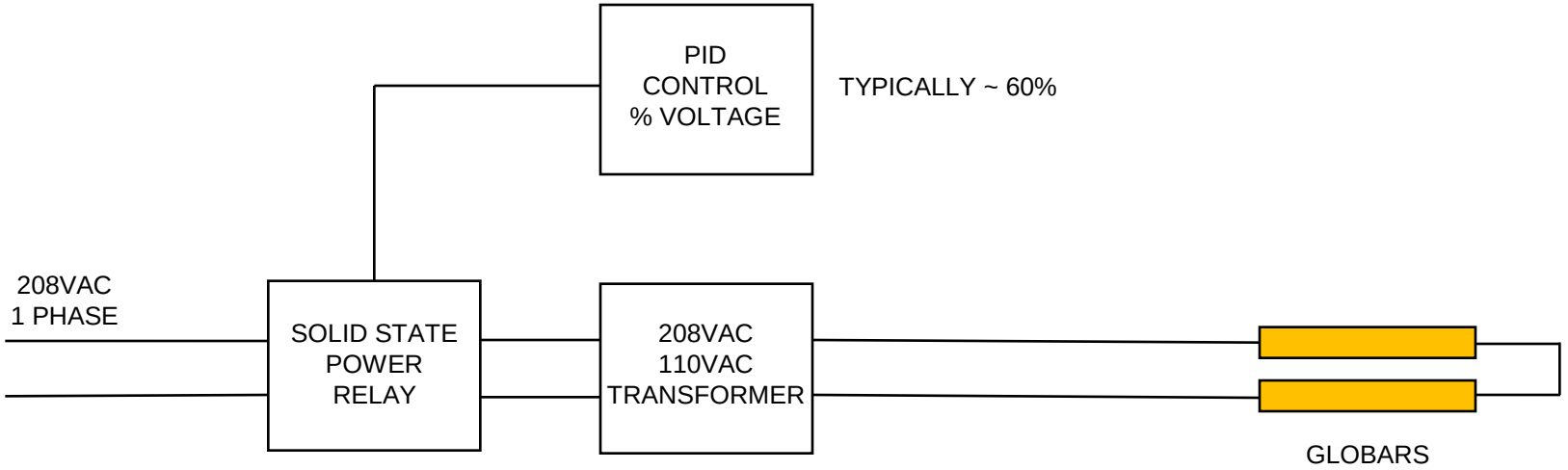

+/-1.7% VARIATION IN INPUT VOLTAGE (APPROX. +/- 3.5VAC) RESULTS IN +/- 0.05W/CM^2 VARIATION IN HEAT FLUX

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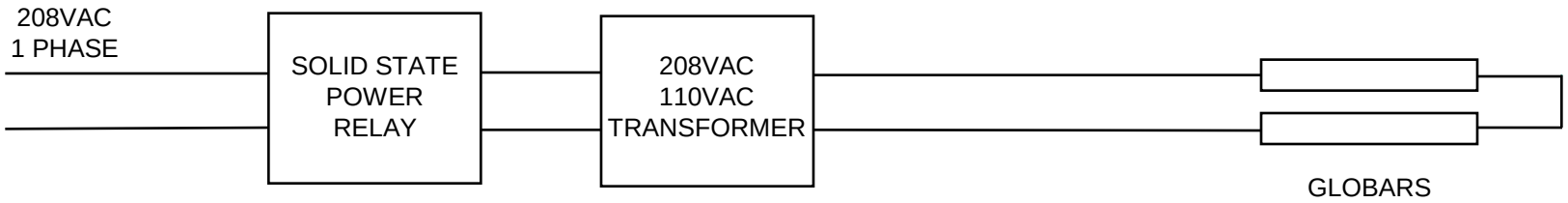
Proposed System



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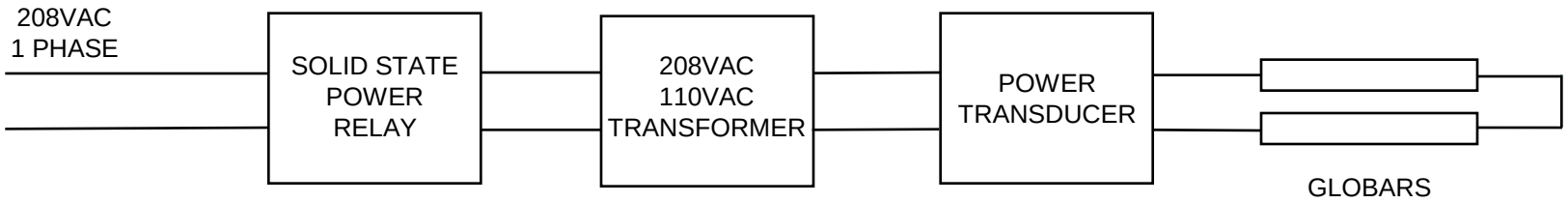

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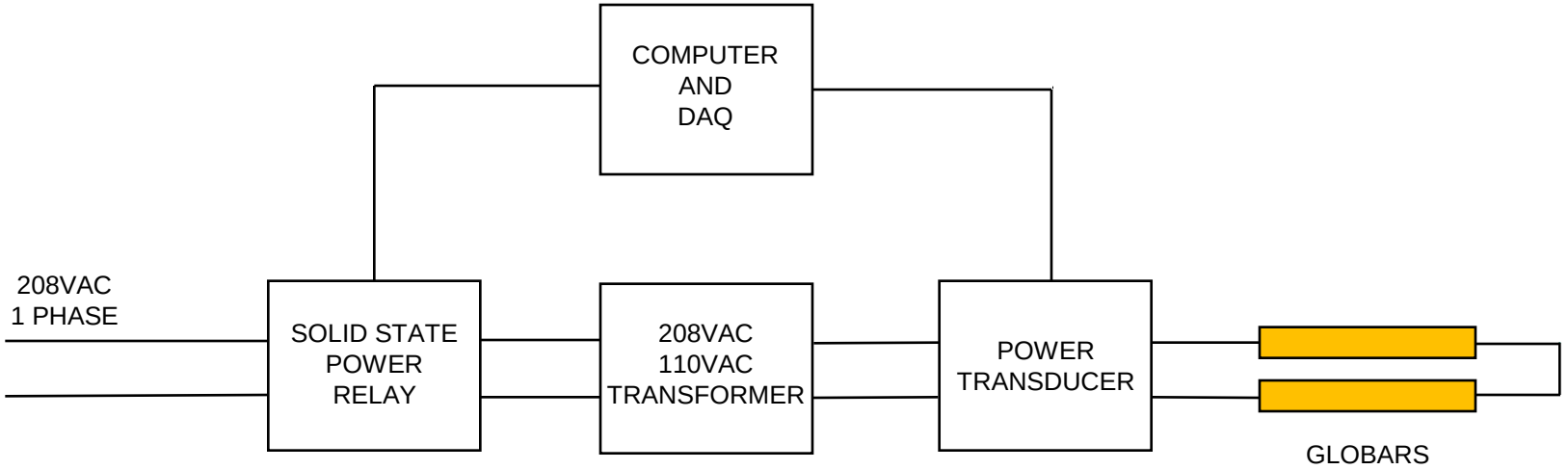

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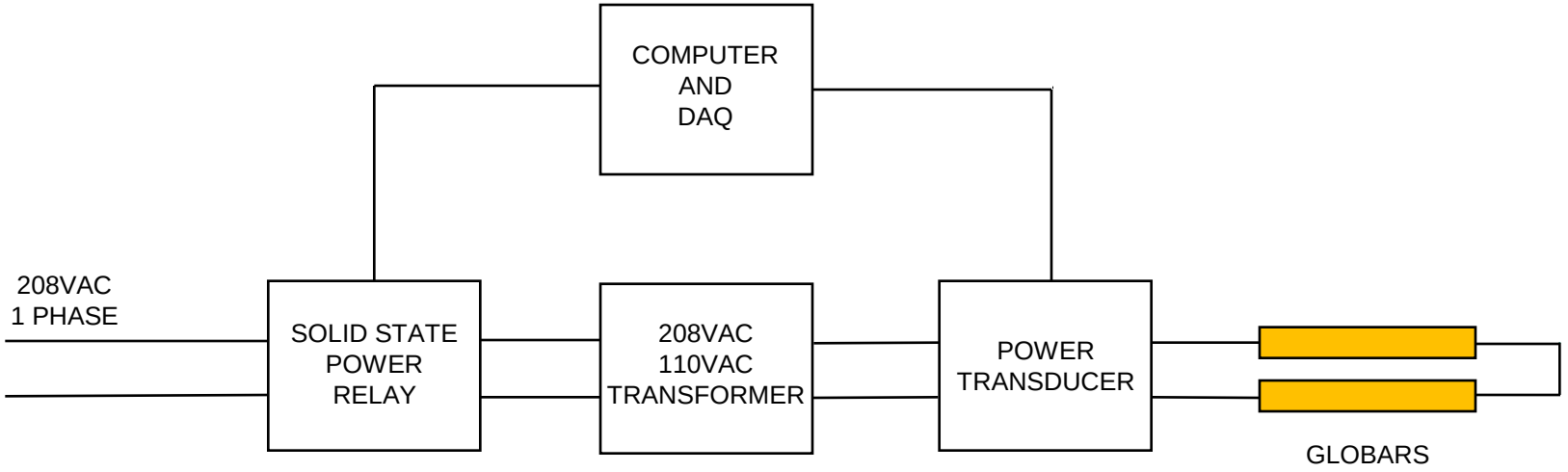

DEMONSTRATED THAT POWER CAN BE HELD TO +/-0.5% AND RETURN TO STABLE SETTING WITHIN 10 SECONDS