**SOLAR CAR CHALLENGE WORKSHOP AGENDA**

**Friday, January 27, 2023**

7:30 PM ***Reception Honoring Teachers and Team Advisers***

**Hosted by ParkMyFleet.** San Marcos/Pecos Room, DFW Marriott

This is a great opportunity to meet teachers, team advisers, judges, and staff taking part in the the workshop.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Saturday, January 28, 2023**

9:00 AM ***Welcome, and Overview of the 2023 Solar Car Challenge***

Dr. Lehman Marks, Race Director & Founder, Solar Car Challenge Foundation

9:45 AM ***How to Start Your Solar Car Team and Promote Your Project***

Brent Dragoo, PhD, Team Advisor to the Liberty Christian Solar Car Team

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10:15 AM ***Building Solar Cars [Materials Technology]***

***Where to find materials for the Solar Car Project***

Joel Pitts, Team Advisor to the Greenville High School Solar Car Team, Texas

**Coffee Break**

*See the Iron Lions Electric-Solar Powered Car and meet their team*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11:00 AM ***“So you Built a Solar Car and Passed Scrutineering! Now What?”***

Lucas Kiowski, Adviser to the Greenville High School Solar Car Team

Culinary Arts Coordinator, Greenville High School

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11:45 AM ***The Importance of Reliable Mechanical Diagrams and Schematics:***

Brian Coleman, Team Adviser to the Somerset High Solar Car Team, Kentucky

Classic Team Division Winner in the Siemens Mechanical Drawing Competition

**Lunch Break**

1:30 PM ***The Importance of Information Technology and Telemetry in Solar Cars***

Eric Andrechek, Former Captain of the Okemos Solar Car Team, Michigan

Race Technology Director, 2023 Solar Car Challenge

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2:15 PM ***Being an Intern/Judge in the Solar Car Challenge***

Aldayr Flores and Liam Hubbard, Intern/Judges in the 2022 Solar Car Challenge

2:30 PM ***Aerodynamics***

Mark Westlake, Team Adviser, St. Thomas Academy Experimental Vehicle Team

Go farther on less!   
 Simple ideas that make your care more efficient:   
 Rolling resistance (tires and bearings)   
 Reducing the weight of your car with composite materials   
 Simple body aerodynamics (fairings and coverings)   
 Complex body aerodynamics (full-size bodies)

3:30 PM ***The Importance of Sharing your project with the Community***

Charlene Olson, Team Adviser, Winston Solar Cr Team

**Meet the Winston Solar Car Team**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Coffee Break**

4:00 PM ***The Importance of Solar Car Project Management***

William Shih, Deputy Race Director, Solar Car Challenge Foundation

**Dinner Break**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EVENING CONCURRENT SESSIONS**

7:15 PM ***How to Develop Great Mechanical Drawings***

Muhammad Sajjad, Siemens Digital Software

A practical workshop designed to help students with CAD Drawings

[Just for students]

7:15 PM ***Scrutineering Demonstration***

A practical workshop showing what teams go through during Scrutineering

[Just for teachers] Coordinated by Will Jones, 2022 Race Judge

8:30 PM ***Question & Answer Session***

An opportunity to discuss anything with Race Officials

Coordinated by Christian Negratti, Solar Car Challenge Race Ambassador

­­

**Sunday, January 29, 2022**

9:00 AM **KEYNOTE SPEECH: *The Excitement of Being an Engineer***

Austin Flickinger, Engineer at Lockheed Martin

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9:30 AM ***Building the Vehicle Frame*** - ***Mechanical***

Chris Jones, Chief Race Judge, Solar Car Challenge Foundation

Materials   
    Roll bar, crush zones, safety cell   
    Wheels and Brakes

Frame Design & Steering

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

10:30 AM ***Meet the Prosper High School Solar Car Team & See their Solar Car***

Team Advisers: Enrique Elias and Steve Maves

Coffee Break

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11:15 AM ***Powering the Solar Car - Electrical***

William Shih, Deputy Race Director, Solar Car Challenge Foundation

**Photovoltaic Array**

How much energy do you need?

Prefabricated commercial panels vs. custom order panels

Raw Cells and lamination

Do-it-Yourself arrays

Getting energy to the batteries

Power trackers

**Electric Motors**

Brushed motors and their controllers

Brushless motors and their controllers

Hub motors and their controllers

**Batteries**

Figuring out the kW/h total

Battery Testing

**Wheels & Tires**

Tire Selection

Gearing

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lunch Break**

1:15 AM ***Power Management – How to get the most out of your Solar Car***

William Shih, Deputy Race Director, Solar Car Challenge

*Input v. Output – what you really get from your panel vs. what you will use going down the road. The importance of communications with your solar car driver.*

2:00 PM ***The Importance of Battery Connections in the Solar Car Battery Box***

William Shih, Deputy Race Director, California

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2:30 PM ***Rules for the 2023 Solar Car Challenge – How the Race will Operate!***

William Shih, Deputy Race Director, Solar Car Challenge Foundation

***The Importance of the Team Oral Presentation Video and the Scrapbook***

Dr. Lehman Marks, Race Director

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3:30 PM ***How to Drive the 2023 Cross-Country Race***

Dr. Lehman Marks, Race Director

**Details of the 2023 Solar Car Challenge Race Route**



**Workshop Presenters**

**Austin Flickinger**

Keynote Speaker

Engineer, Lockheed Martin

Fort Worth, Texas

**Dr. Lehman Marks**

Race Director and Founder, Solar Car Challenge Foundation

Former Advisor to the Winston Solar Car Team

Plano, Texas

**William Shih**

Deputy Race Director

Solar Car Challenge Board Member, Raytheon

Former Advisor to the Walnut Solar Car Team

Lakewood, California

**Chris Jones**

Chief Race Judge

Solar Car Challenge Board Member, Northrup Grumman

Covina, California

**Joel Pitts**

Faculty Advisor, Greenville High School Solar Car Team

Solar Car Challenge Foundation Adviser

Greenville, Texas

**Mark Westlake**

Faculty Adviser, St. Thomas Academy Experimental Vehicle Team

Former Team Adviser to the St. Thomas Academy Solar Car Team

Minneapolis, Minnesota

**Brent Dragoo, PhD**

Faculty Adviser, Liberty Christian Academy Solar Car Team

Argyle, Texas

**Shannon Caraway**

Team Adviser, Covenant Christian Academy Solar Car team

Colleyville, Texas

**Lucas Kiowski**

Team Adviser, Greenville High School Solar Car Team

Greenville, Texas

**Brian Coleman**

Faculty Advisor, Somerset High School Solar Car Team, Kentucky

Winner of the Siemens Mechanical Diagram Competition

Somerset, Kentucky

**Charlene Olson**

Faculty Adviser, Winston Solar Car Team

Head of the Winston School Solar Academy

Dallas, Texas

**Muhammad Sajjad**

Siemens Digital Software

Plano, Texas

**Christian Negratti**

Solar Car Challenge Race Ambassador

Electric Solar Powered Division Rule Specialist

Edmond, Oklahoma

**Will Jones**

2022 Race Judge and Staff Coordinator

University of Michigan Solar Car Project Coordinator

Okemos, Michigan

**Eric Andrechek**

Race Technology Director

Former Okemos Solar Car Team Captain, Michigan

Okemos, Michigan

**Aldayr Flores**

Intern/Judge in the 2022 Solar Car Challenge

Wylie, Texas

**Liam Hubbard**

Intern/Judge in the 2022 Solar Car Challenge

Chief Electrical Judge in the 2023 Solar Car Challenge

Coppell, Texas

**Eric Andrechek**

Race Technology Director

Former Okemos Solar Car Team Captain, Michigan

Okemos, Michigan

**Aldayr Flores**

Intern/Judge in the 2022 Solar Car Challenge

Wylie, Texas

**Liam Hubbard**

Intern/Judge in the 2022 Solar Car Challenge

Chief Electrical Judge in the 2023 Solar Car Challenge

Coppell, Texas