

# Succeeding in the IEEE Future Energy Competition

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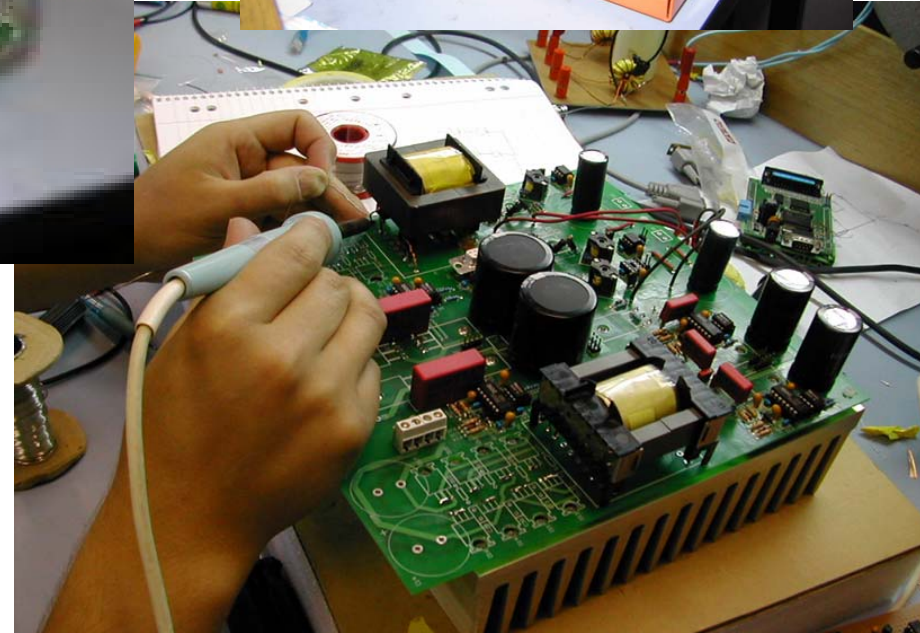
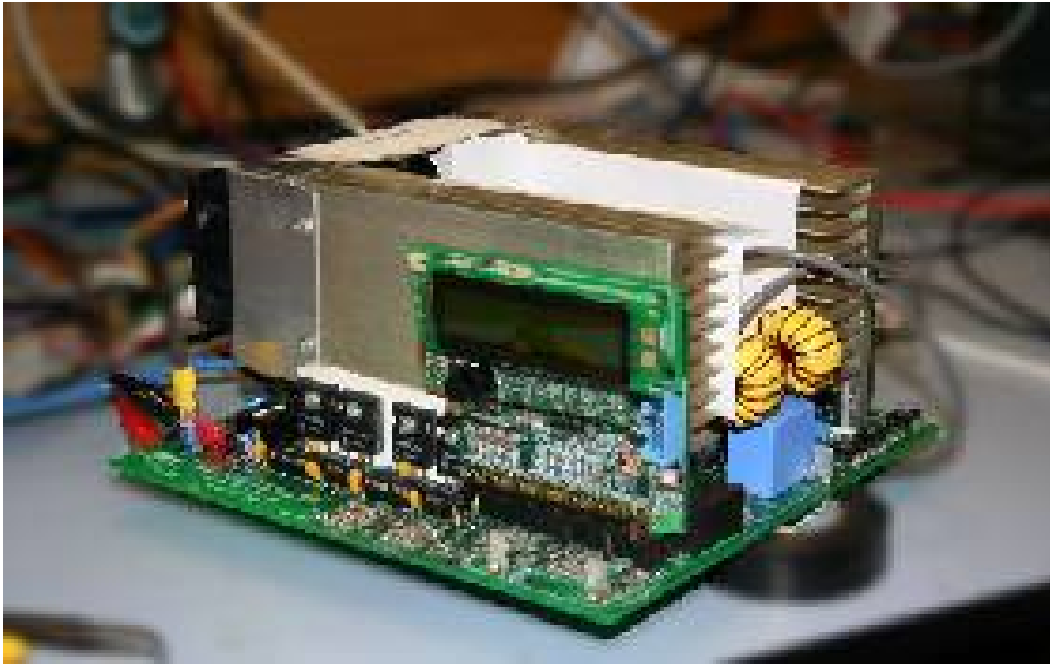


# 2005 – Grid Connected Inverter

1st Place - Monash University



# 2005 – Grid Connected Inverter



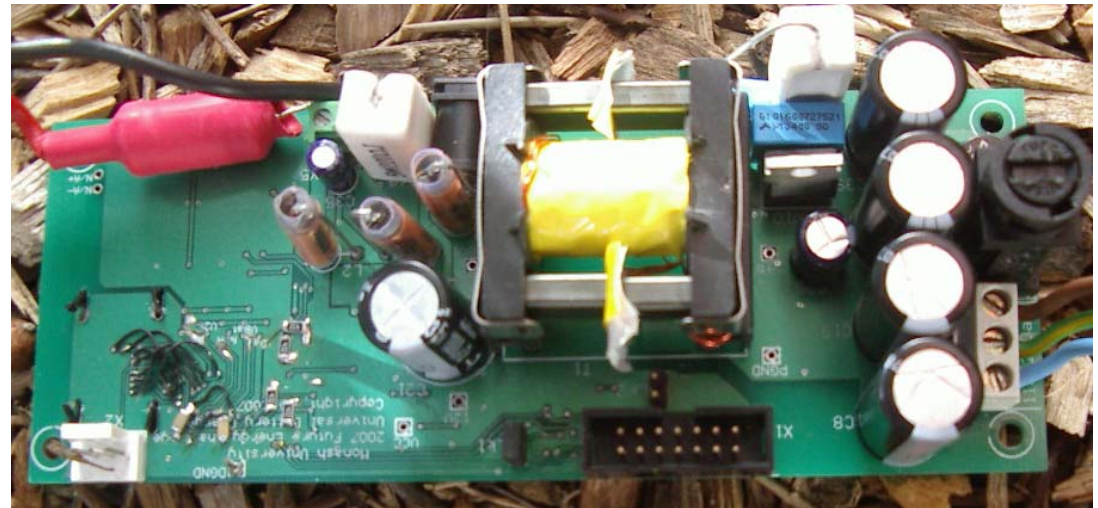
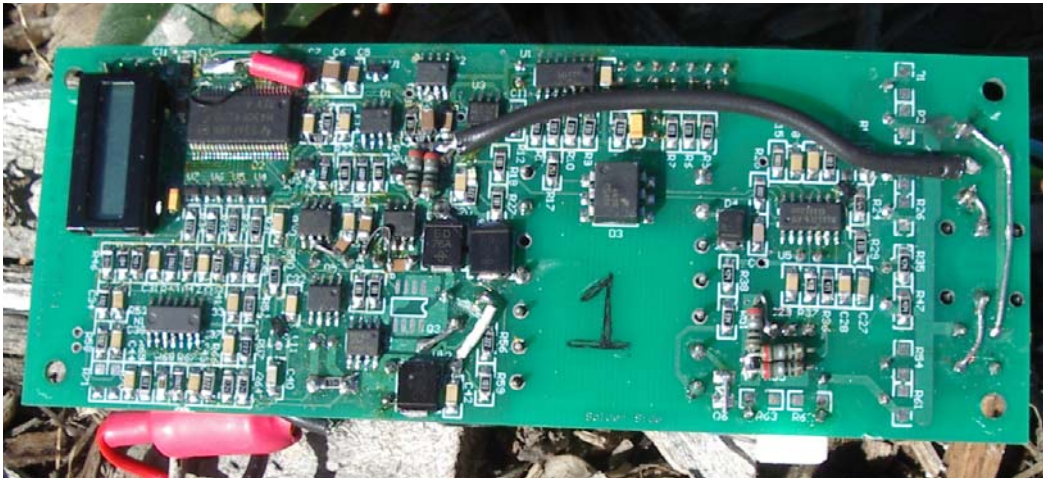
# 2007 – Universal Battery Charger

2<sup>nd</sup> Place - Monash University





# 2007 – Universal Battery Charger



# KEY FACTORS

- Determine the Important Elements in the Specification
- Team Organisation and Management
- Development Sequence – Design, Prototype, Recycle, Final build.
- Leave enough time for things to go WRONG
- Keep it SIMPLE
- Polished and good looking product beats technical merit every time
- IF IT DOES NOT WORK, YOU WILL **NOT** WIN
- AND A LITTLE BIT OF LUCK !!!!!!!!!!!



# KEY FACTORS

- Determine the Important Elements in the Specification

## 2005 Competition Goals

- Lightweight
- Small in size
- Highly efficient
- Low cost
- Simple to manufacture

## 2007 Competition Goals

- Charge: Lead-Acid, Nickel Cadmium, Nickel-Metal-Hydride, Lithium Ion & Alkaline batteries
- Input range: 95V – 270V at 48 – 440 Hz
- Efficiency > 50%
- Max 2A charging current
- Cost < US\$10

## 2009 Competition Goals

- ??????????????????



# KEY FACTORS

- Team Organisation and Management

Decide WHO does WHAT, and make sure they do it

TEAM LEADER is critical

Make TIMELINES and STICK to them

Meet regularly, no matter what other pressures exist

Non technical work is as important as technical



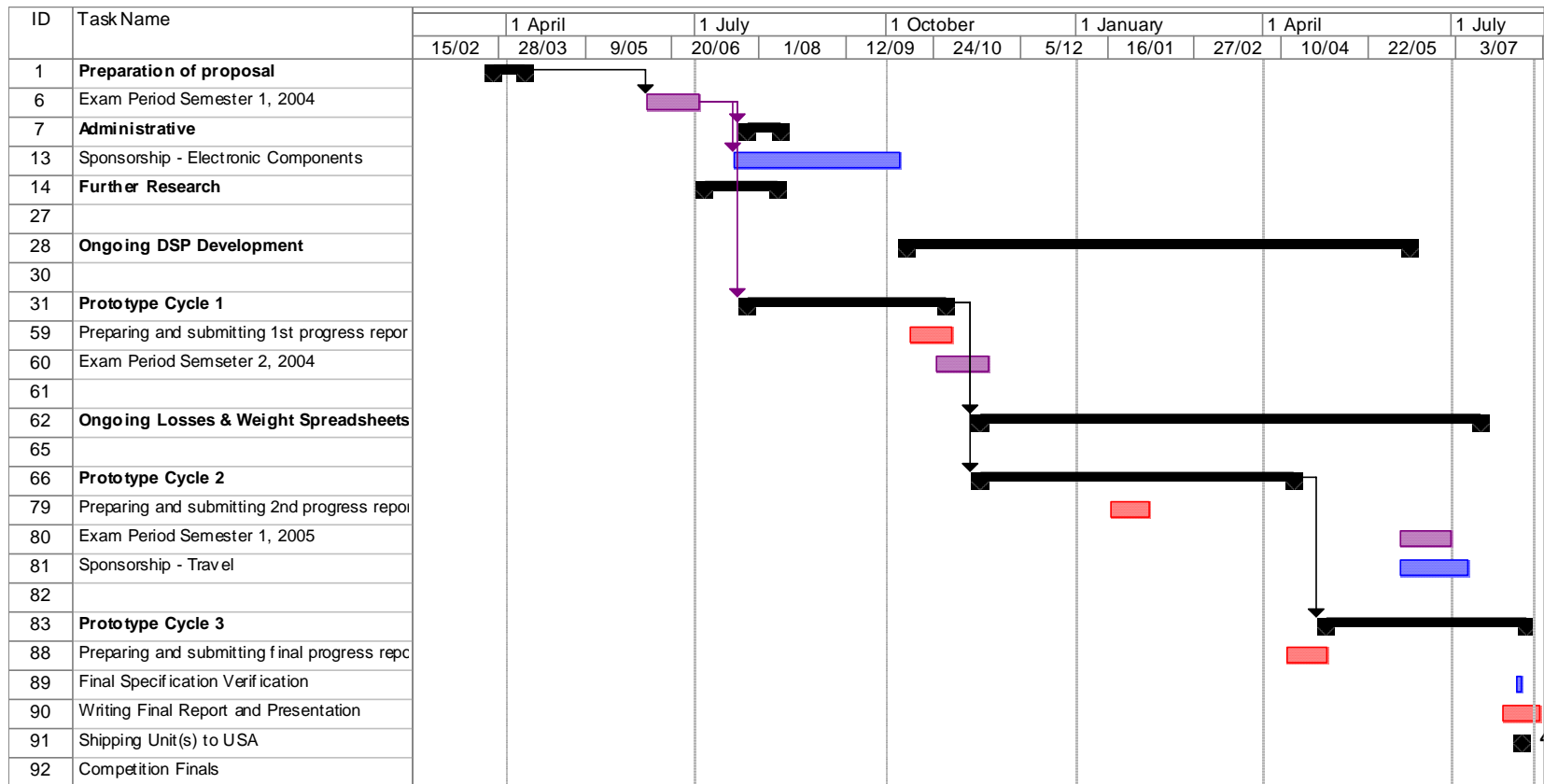


The International  
Future Energy Challenge 2005  
Monash University Team





- **Prototype development (3 prototype cycles)**

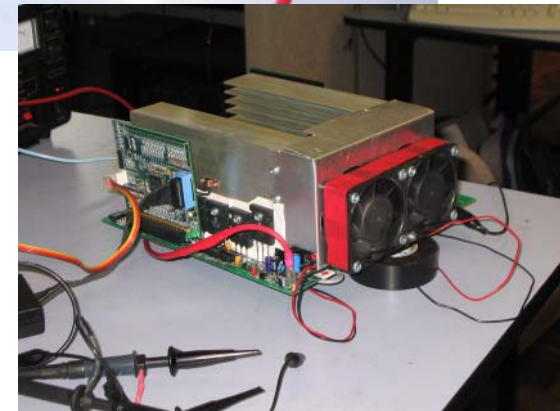
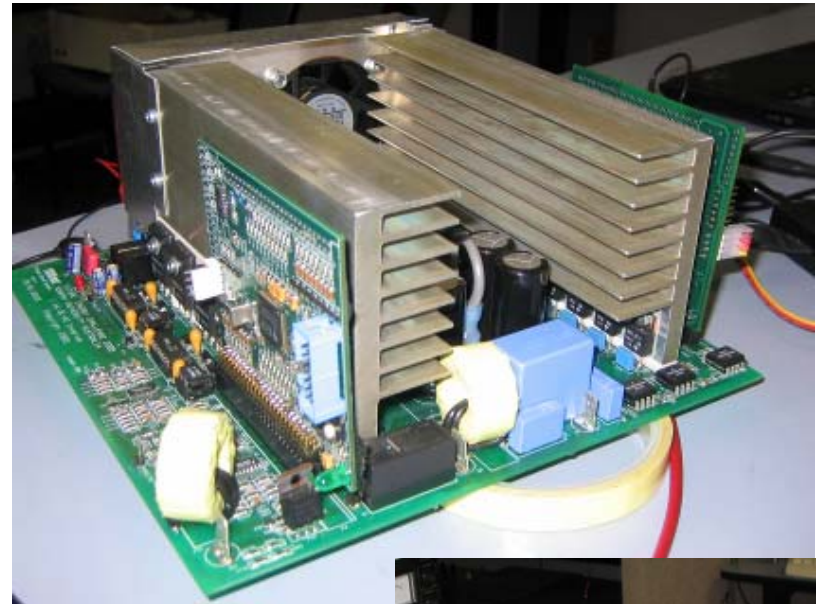
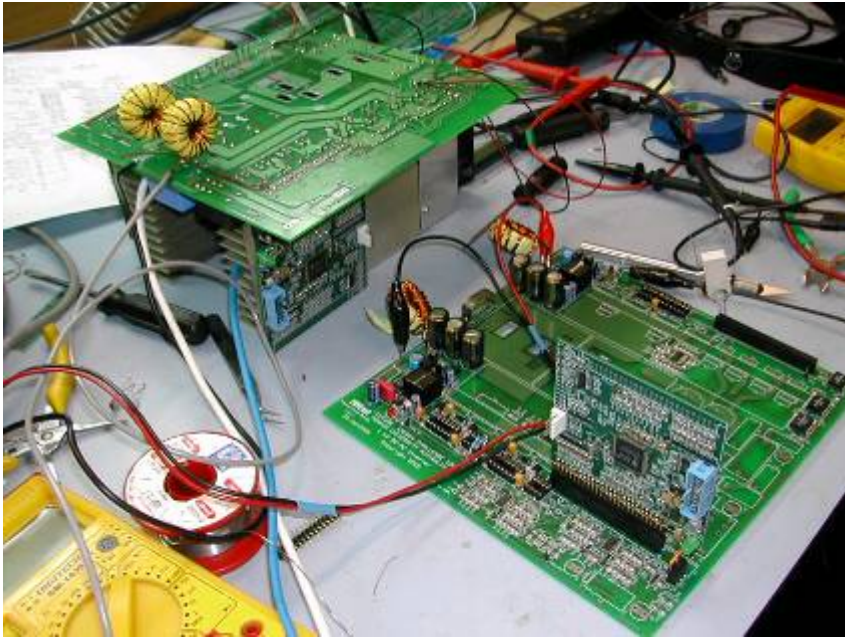






# KEY FACTORS

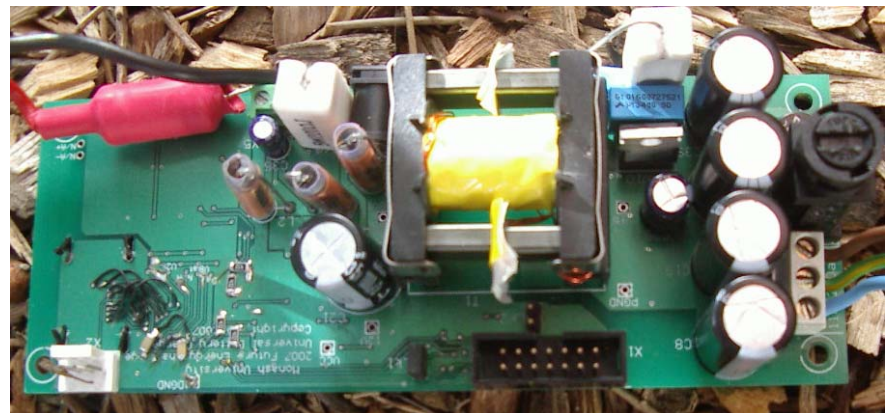
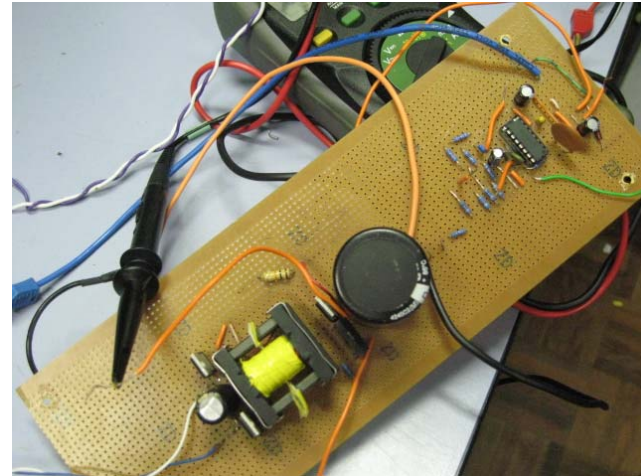
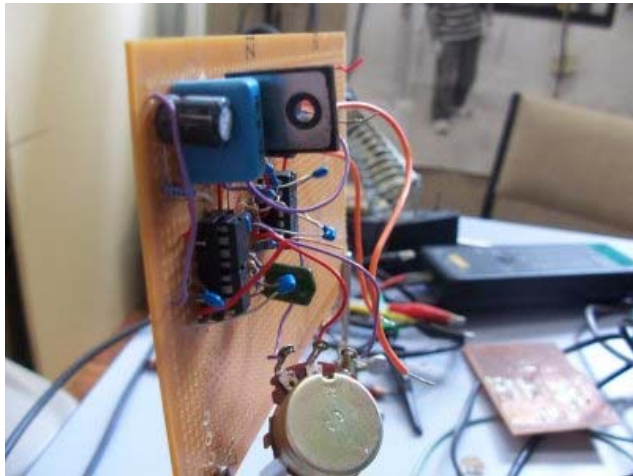
- Development Sequence – Design, Prototype, Recycle, Final build



Do not UNDERESTIMATE how long things take to build !

# KEY FACTORS

- Development Sequence – Design, Prototype, Recycle, Final build





# KEY FACTORS

- Leave enough time for things to go WRONG

Developing hardware is often a process of lurching from one disaster to the next



# KEY FACTORS

- Keep it SIMPLE

It is hard enough to get a simple design concept built and tested

Aiming for more sophisticated solutions just adds to the pressure!

# KEY FACTORS

- Polished and good looking product beats technical merit every time



# 2005 – Grid Connected Inverter

## Winning Inverters

Monash  
University



South Korea University of  
Technology



University of Illinois



# KEY FACTORS

- IF IT DOES NOT WORK, YOU WILL **NOT** WIN

Be ready to DEFEND your design in the finals  
(assuming it works of course!!)





# KEY FACTORS

- AND A LITTLE BIT OF LUCK !!!!!

**GOOD LUCK WITH YOUR  
EFFORTS FOR THE  
NEXT 6 MONTHS**

