



Why Cooltron Heat Sinks?

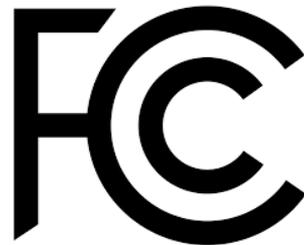
By Steven Chiang

<http://cooltron-thermal.com>

Worldwide Business Partners



Cooltron Quality Assurance & Compliances



Cooltron Focused Heat Sink Application Markets



3 Telecom & Networking



#2 LED Grow Lighting



#1 Commercial LED Lighting



#4 Data Center / IT Server

Cooltron Focused LED Lighting Heat Sink Markets



#1 Commercial LED Lighting



#3 Agricultural LED Grow Light



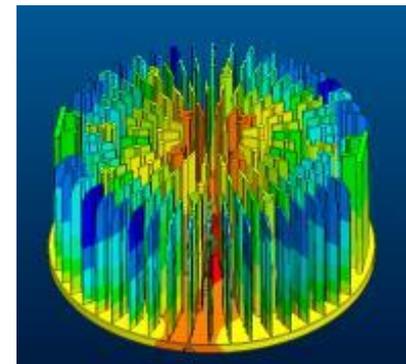
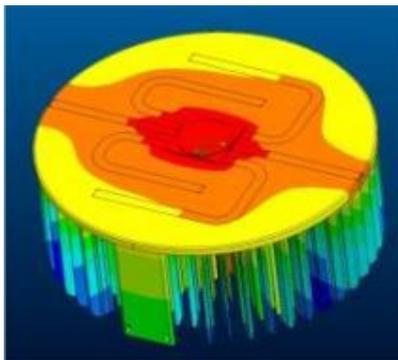
#4 Automotive LED Lighting



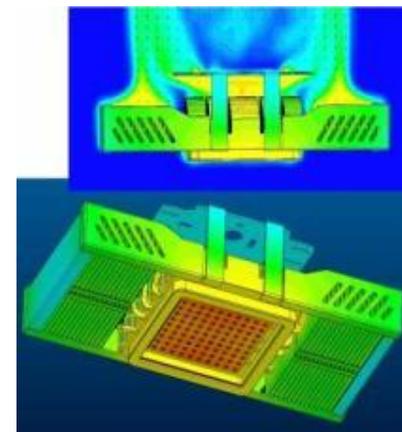
#2 High Power Outdoors LED Lighting



Why Cooltron? One-Stop Shopping from Custom Design, CFD Simulation till Production



100W COB LED High Bay Light Heat Pipes Module (Cold-Forged Heat Sink + Heat Pipes)



**600W SMD LED Grow Light Heat Sink Assembly
(Heat Pipes + Extrusion Heat Sinks + Zipped Stamping Heat Sinks)**

Why Cooltron? – Industry-leading Patented Heat Pipes Technologies

- Over **150 Heat Pipes Patents** registered in USA, Germany, Japan, Taiwan, and China
- Patented **Flat & Tight Heat Pipes Embedding, Riveting, Engaging** Technologies Reduce Thermal Resistance to Minimum for Best Heat Dissipation Effects
(Heat Pipes Absolute Surface Flatness < 0.1mm)



Telecom VGA Graphic



COB LED Light



Server CPU Cooler

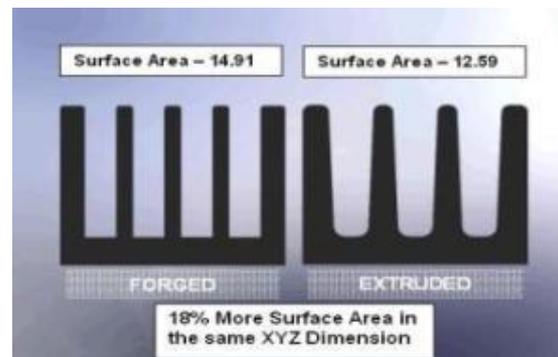
Patented Flat & Tight Heat Pipes Embedding Technologies

Why Cooltron?

– Cooltron Industry-Leading Cold-Forging Technologies

- Cold-Forged AL1070 Aluminum Heat Sinks Benefits:
- **More Fins Ambient Contact Surface Area than Extrusion:** Cold-Forged Fins 18% more Surface Area than Extruded Fins for Better Hot Air Convection Efficiency
- **Better Fins Thermal Function than Stamping:** Better than other Stamped Fins or Folded Fins for its Integral Part with the Heat Sink Base
- **Better Thermally Conductive Cold-Forging AL1070 than Extrusion AL6030:** Cold-Forged AL1070 with More Pure Aluminum (Pure AL > 99%) and Denser Grain Structure Enables Much Faster Heat Conduction than Extrusion AL6030 (Pure AL > 97%)
- **Down Size & Less Weight:** The heat sink grain structure by Cold-Forging process will become **denser** and more thermal conductive as a result, and allow **Fins Height Reduction** and the whole lighting **Down Size and Less Weight to Save Inventory, Warehousing, and Shipping Costs**

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Why Cooltron?

– Cooltron Integral High Power Applications Thermal Solutions

- **Telecom: Cellular Phone Tower Power Amplifier Chassis & Thermal Solution**
 - ~ Extruded Chassis + Heat Pipes + Extruded Fins
 - + Chassis Fans

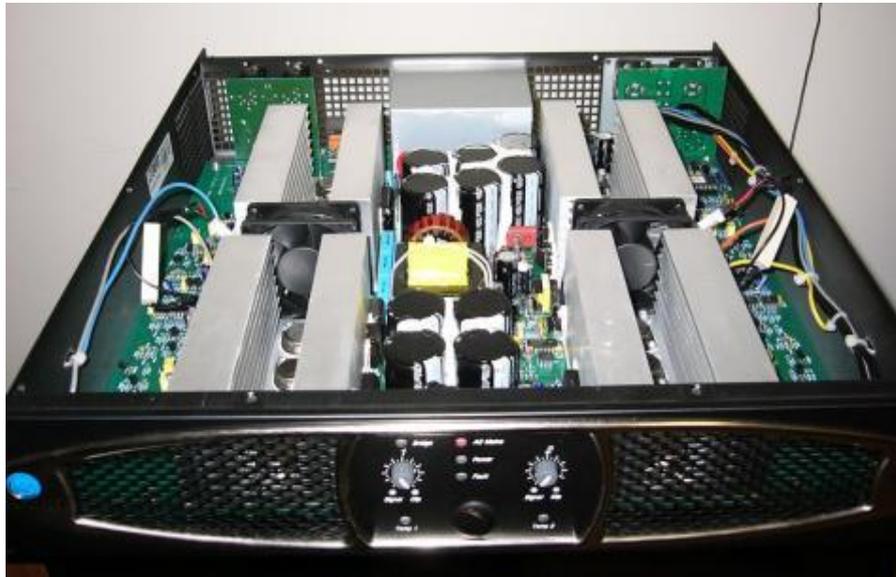


Why Cooltron?

– Cooltron Integral High Power Applications Thermal Solutions



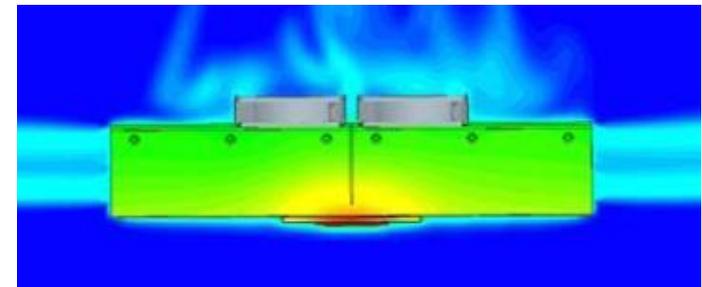
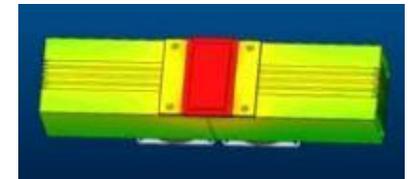
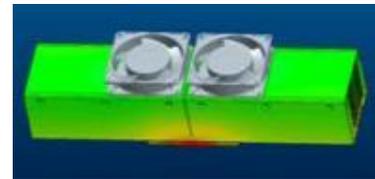
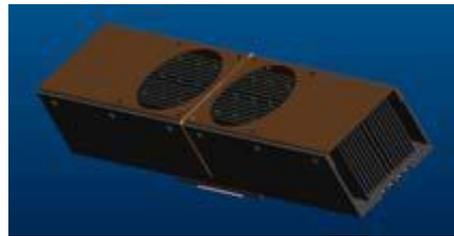
- **Audio Power Amplifier Thermal Solutions:
Chassis Fans + Inverter Heat Sink Modules**



Why Cooltron? – Best High Power LED Lighting Heat Sinks



- **2400W COB Hollywood Video Shooting Light**
- **Substantial COB Case Temp. (T_c) Drop from over 100C to 82C**
- **Lower Temperature for Better LED Lighting Output Quality & Longer Life Time**
- **Thermal Solution: Heat Pipes + Extrusion AL6063 + Fans**

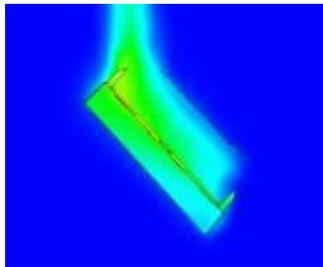
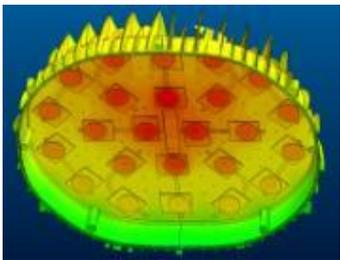
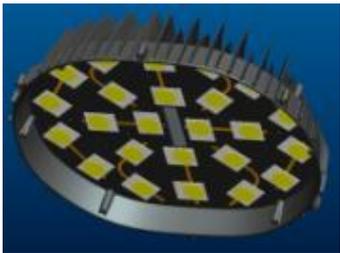


Substantial T_c Drop from over 100C to 82C

Why Cooltron? – Best High Power LED Sports Light Heat Sinks

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- **600W/1200W COB Sports Light**
- **Substantial 1200W COB Case Temp. (Tc) Drop from over 130C to 85C**
- **Lower Temperature for Better Lighting Output Quality & Longer Life Time**
- **Thermal Solutions: Advanced Cold-Forging AL1070 and Modularized Heat Sinks**



<https://www.youtube.com/watch?v=eMqM8YAsw8Y>

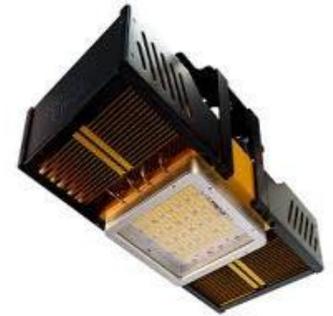
Substantial Tc Drop from over 130C to 85C

Why Cooltron?

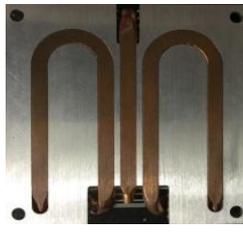
– Best High Power LED Grow Light Heat Sinks

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- **600W SMD LED Grow Light**
- **Substantial Tpcb Temperature Drop from over 100C (other brands') to 85C**
- Cooltron's **150+ Patented Absolute Flat & Tight Heat Pipes Embedding, Riveting, Engaging Technologies** Reduce Thermal Resistance to Minimum for Best Heat Dissipation Effects (**Heat Pipes Surface Flatness < 0.1mm**)
- **Thermal Solution: Heat Pipes + Extrusion AL6063 + Stamping Heat Sinks**



600W Tpcb = 85C @ 25C Ambient



Heat Pipes Surface Flatness < 0.1mm)



Cooltron 600W Grow Light Tpcb 15C Lower than Other Brands

Why Cooltron? – Best Linear LED Grow Light Heat Sinks

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- **400W Linear LED Grow Light Cold-Forging Heat Sinks (AL1070)**
- Cold-Forging for Smaller Size and Lighter Weight due to Better Thermal Conductivity
- Slim Type & Low Profile Designs for **Shadow-less Lighting Coverage** and Best for Vertical Farming
- Friction Welding Secures 400W (200W x 2) Grow Light Coverage Area Extension



400W Tpcb = 83C @ 35C Ambient



Cooltron 400W Slim & Low Profile Designs Best for Vertical Farming

Why Cooltron? – Best Linear LED Grow Light Heat Sinks

- **100W Linear LED SMD Grow Light Bar Extrusion Heat Sinks (AL6061)**
- Linear Style for Flexible Combination of Individual 100W Lighting Bar for **100W/300W/600W** Grow Lighting Coverage
- Foldable Pivotal Hinges Design for Less Shipping and Storage Spaces & Costs

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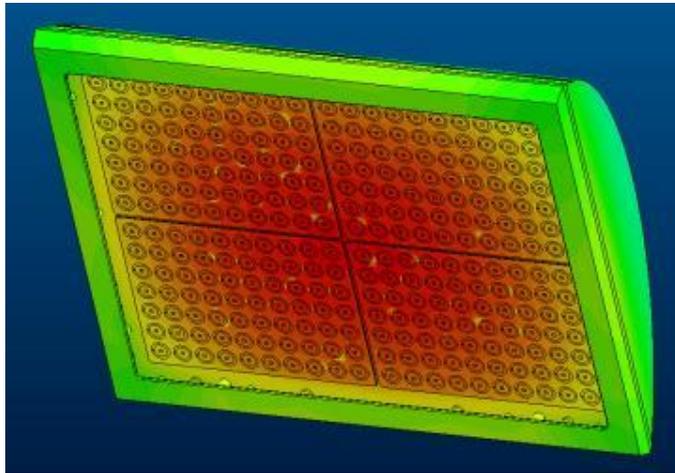
Cooltron 100W Linear Lighting Bar for 100W/300W/600W Combination

Why Cooltron?

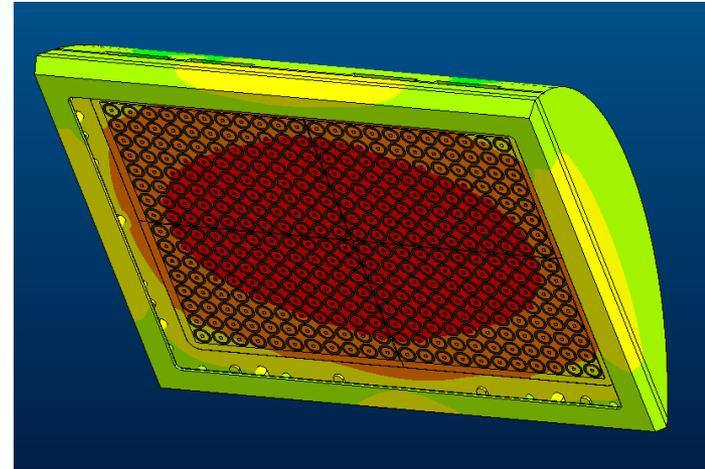
- Best High Power LED Flood Light Heat Sinks

- **600W/500W/400W Flood Light Cold-Forged Heat Sink Assembly**
- Replacing Customer's Existing Poor Thermal Performance Die-Casted Heat Sink with Much Better Thermal Performance Cold-Forged Heat Sink and Upgrade the Whole Flood Light Series from 500W (Max) to 600W (Max)

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Customer Die-Casted Heat Sink
 $T_{pcb}=126C$ @ $T_a=25C$



Cooltron Cold-Forged Heat Sink
 $T_{pcb}=115C$ @ $T_a=40C$

Cooltron Cold-Forged Heat Sinks Enable Customer to Upgrade Flood Lights Output

Why Cooltron?

– Best 2"/3"/4"/6" COB LED Down Light Heat Sinks



- Cold-Forging AL1070 for Much Better Thermal Performance than Extrusion and Die-Casting; Much Shorter Fins Height for Low Profile Designs; Down Size; Less Weight
- Cooltron's Down Light Heat Sinks Fit Great Variety of Top COB Chip Brands and Outperform Other Brands Heat Sinks in Down Light Class
- Cooltron Provides Standard and Custom Heat Sink Modules for Full Line 2"/3"/4"/6" COB LED Down Lights



Cooltron **2"** Heat Sink (**15W**)
Cree CXB1816 Tc=82.5C



Cooltron **3"** Heat Sink (**25W**)
Cree CXB2530 Tc=81.8C



Cooltron **4"** Heat Sink (**30W**)
Cree CXB2530 Tc=83C



Cooltron **6"** Heat Sink (**50W**)
Cree CXB3050 Tc=82.5C

Cooltron Down Light Heat Sinks Outperform Other Brands

Why Cooltron? – Full Lines LED Lighting Heat Sink Assembly

- High Power LED Lighting Heat Sink Assembly for
- **2400W** COB LED Hollywood Video Shooting Light
- **1200W/600W** COB LED Sports Light
- **600W/400W/100W** SMD LED Grow Light
- **600W/500W/400W** SMD LED Flood Light
- **200W** Modular SMD LED Street Light/Area Light

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Cold-Forging / Heat Pipes Heat Sink Assembly

Why Cooltron? – Full Lines LED Lighting Heat Sink Assembly

- High Bay Lights: 100W/200W/250W SMD & COB
- Down Light: 50W/100W SMD & COB
- Recessed Down Light: 2”/3”/4”/6” COB (10W~70W)

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Cold-Forging / Heat Pipes Heat Sink Assembly

Why Cooltron?

– Industry's Most Complete Heat Sink Manufacturing Facilities



Extrusion



Progressive Stamping



Forging Machines (300 tons ~ 5000 tons)



Skiving Machines

Why Cooltron? – Industry's Most Complete Heat Sink Manufacturing Facilities



CNC Machines



Bonding Machine



Surface Treatment



Thermal Resistance Tester

Why Cooltron?

– Industry's Most Complete Heat Sink Measurement & Testing Instruments



3D Measurement



Measurement Projector



Hardness Tester



RoHS Tester



+ You = *Success*



Let's achieve win-win!