

Power Assembly Complete Solutions



powerful ^{}ideas at work*



Power Assembly Complete Solutions

Dynex Semiconductor in Lincoln has 40 years experience in power electronics

Dynex Semiconductor (Dynex) is one of the foremost suppliers of power semiconductor components and sub-systems. Our products are used in a wide range of applications including railway traction drives and auxiliary equipment, industrial motor drives, marine propulsion, power transmission and distribution, induction heating and renewable energy sources. We have over forty years of experience helping system designers make efficient use of electrical power.

An independent source of silicon

The Dynex product family includes IGBT and FRD die and modules, a comprehensive choice of phase control thyristors, rectifier diodes, fast turn-off thyristors, GTO thyristors and custom heatsink power assemblies.

Expertise in component specification, design and manufacture

All Dynex power semiconductor products are designed, developed, manufactured and tested in the Lincoln factory. Dynex Semiconductor offers a truly independent source of power bipolar and IGBT wafer technology. We are proud to have this capability and are happy to allow potential customers to visit our facilities.



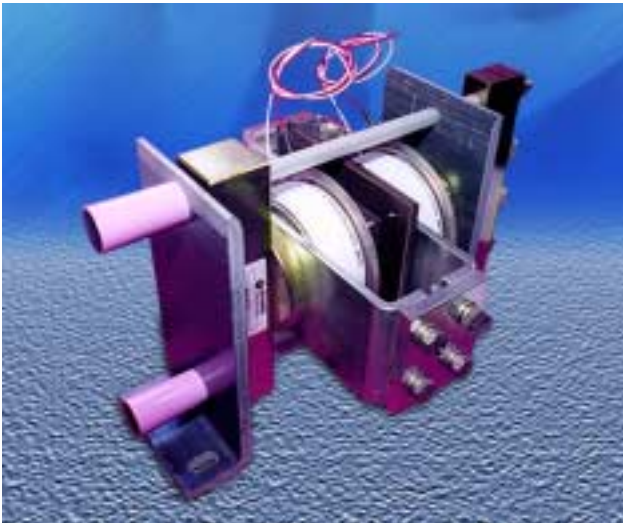
Liquid cooled thyristor assembly incorporating gate firing circuitry

As part of extensive product line we offer a design, build and refurbishment service for power assemblies through our Power Assembly Complete Solutions (PACS) group. The PACS group provides support for those customers requiring more than the basic semiconductor and utilises the skills of our power electronics, mechanical and electronic engineers. The team has direct access to the company's application, test and product design personnel to bring you the optimum solution for your needs.

Dynex have developed a flexible range of air and liquid cooled heatsink / clamping systems in line with advances in the voltage and current capability of our semiconductors and covering the full range of circuit designs in general use today.

Typical applications for Dynex power assemblies include:

- High power rectification
- Pulse power
- Inverters
- Soft starts
- Battery chargers
- Magnet supplies
- Resistance welding switches
- Variable speed drives
- GTO gate drive units
- Static compensation



'Stick Stack' thyristor assembly utilising Dynex clamps

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Assemblies and AC Switches

Assemblies

Dynex power electronics, mechanical and electronic engineers are experts in designing high quality and high reliability power assemblies for applications where optimised performance is required in the harshest of environments.

Many factors that need to be taken into consideration to maximise semiconductor performance in an assembly. Typically these are; type of heatsink, transient conditions, overloads, ambient temperature, surface finish (e.g. black anodised), and the method of cooling on which the application relies, (air, liquid or phase change). With a wealth of experience behind them and using CAD software and the vast range of bipolar and IGBT power semiconductor devices and components available, the PACS design team are able to provide customers with a solution which best suits their needs.

When water or oil are acceptable as cooling media, single phase and 3-phase bridge assemblies can be made much more compact using our 'stick stack' units. These offer a more effective way of providing low voltage high current rectifiers. (e.g. for the electro chemical industry).

For air cooled assemblies the dual benefit of improving thermal

performance and protecting against oxidation can be gained by specifying aluminium fin with a black anodised finish.

Specialist applications such as pulsed power, where assemblies are required for use at high voltages, high di/dt and very fast turn on, (e.g., magnet power supplies, crowbar ignitron replacements etc. where many thousands of amps flow for microseconds) are also catered for.

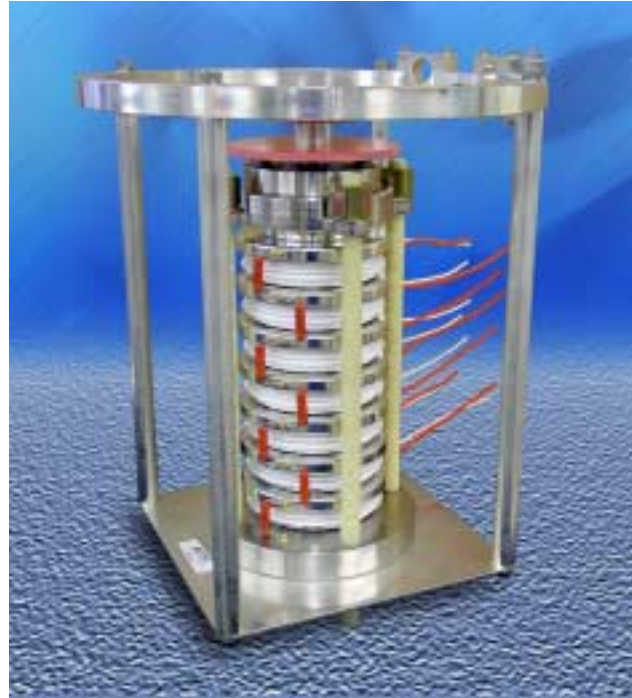
A.C. Switches

Dynex offer a comprehensive range of standard water and air cooled A.C. switch assemblies. This includes isolated heatsink types and modules with an integral water cooled base plate. (Details are given in our Thyristor and Diode Modules brochure or on <http://www.dynexsemi.com>).

The water cooled A.C. controllers (discrete device type) range from 300A to 3200A rms welding rating. (Water 40°C, 4.5 ltrs./min., 5% duty cycle, 20 cycles.)

Natural air cooled types range from 400A to 3270A rms. ($T_{amb.}$ 45°C, 5% duty cycle, 10 cycles.)

Ignitron replacement solid state assemblies are also within this product group and are easily fitted as a direct substitute for a pair of ignitrons.



Pulsed power low inductance co-axial assembly for single shot duty D.C. voltage sharing resistors are fitted between each level

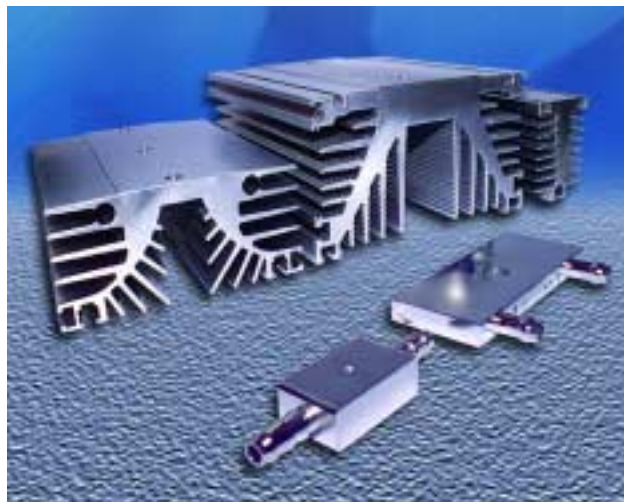
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Heatsinks, Clamps and Sub-contract Partnership

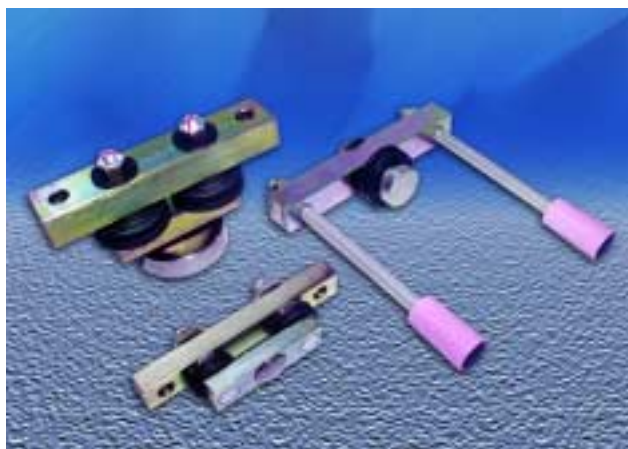
Heatsinks

Dynex has its own proprietary range of extruded aluminium heatsinks designed to optimise the performance of our semiconductors. We also have access to a vast range of aluminium extrusions from independent manufacturers giving our design team the best options available.

Water cooled heatsinks (coolers) are available and are compatible with devices up to 100mm silicon diameter. They are designed for use in high current, high power assemblies such as single, three or six phase bridges or A.C. controllers. Complete bridges of up to six devices may be constructed and two coolers per device may be used for double side cooling.



Air cooled and water cooled (cooler) heatsinks for simple and complex assembly designs



Bar and cube clamps are available to fit all Dynex bipolar products. Bar clamps are suitable for single or double side cooling arrangements

Device Clamps

A line of pre-loaded clamps is offered, from cube clamps for single side cooling up to 30mm discs and bar clamps up to 83kN for our 100mm disc devices. Bar clamps are suitable for single and double side cooling, with high insulation versions available for high voltage assemblies.

Clamps can also be supplied separately as a kit of parts.

Sub-Contract Partnership

Our experienced engineers and assemblers have worked closely with customers throughout the world to manufacture assemblies to their requirements. Typically this work has included marine propulsion, rail traction and power utility

applications. The PACS group has encouraged the philosophy of joint design and build to customer's specifications.

In addition to new design and build work Dynex also undertake refurbishment of assemblies. This process involves the stripping down on an existing assembly into its component parts

and cleaning, replacing, rebuilding and testing the assembly before it is handed back to the customer. This service has proved especially beneficial to railway traction operating companies who do not have the facilities or the skilled engineering staff to undertake this type of work.

Call our team who are ready to discuss 'partnership' projects with you.

Power Assembly Complete Solutions

Technical Enquiry Form

Please fax this form to the PACs Design Team at + 44 (0)1522 500 020	
Name	
Company	
Address	
Tel	
Fax	
E-mail	
Application	
Assembly Type	
Method of Cooling	
Ambient or Liquid Inlet Temperature	
I/P Line v RMS	
O/P D.C. V	
O/P Current	
Overload	
Fusing	
Duty Cycle	
Any Waveforms (If available)	(Please send with enquiry form)
Snubber	
Additional Information	
Office Use Only Received by (Date/Time)	Enquiry No.

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(See Dynex website Contact Us section for details).



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