The **main concept** driving the CONDUCTOR project is to apply the CSH principle for the development of special heating equipment and associated methodology that will constitute the basis of **a next generation bonding repair equipment**, to perform high quality, efficient and cost effective repair curing. This will lead to **an environmentally friendly, low-energy, low-cost and easily interfaced solution for a future operational field bonding equipment, that will achieve better repair quality through minimization of temperature inhomogeneity problems.**

Consequently the **main objectives** of this proposal, through the **application of the CSH principle** for the development of special heating equipment and associated methodology would be:

a. Achievement of **more homogeneous temperature distribution** within repair areas, leading to **improvement of composite repairs quality**.
b. **Increase of overall repair process robustness**, through minimization of elements (cables etc.) exiting vacuum bagging and easier adaptation to 3D geometries.
c. **Reduction of overall power requirements**, as the area to be heated and the overall thermal losses will be significantly lower compared to conventional heating methods.
d. **Increase of repair speed**, through:
    i) Shortening of time to prepare vacuum bag, given the reduction of cabling.
    ii) Possibility to perform steeper temperature increase, if required, given the energy excess provided by the CSH method.
e. **Reduction of overall repair costs**, due to the factors mentioned above.

Increase of range of applicability of bonded composite repairs, by ensuring the **reliable** achievement of specified temperature homogeneity requirements for more complex repair cases, as well as for composite to metal repairs

For the achievement of the above mentioned objectives, there were **4 technical Work packages** in order to perform the research, development and testing activities of this project:

WP1 contains the definition of the main design parameters and repair process constraints that need to be taken into consideration for the preparation of the specifications and the overall design of the new CSH system, leading to a Preliminary Design Review (PDR). As a result, the overall design specifications of the new equipment will be concluded in this WP. A detailed thermal mapping using numerical simulation will be performed, in order to couple CSH to the developed temperature field and specify the foil configuration requirements. Finally, the first prototype of the PS&CU will be developed and the appropriate CSH foils will be selected.

Within **WP2**, the CSH device optimisation activities will be performed in order to achieve the set specifications. Moreover, within this WP the appropriate software will be developed, in order to tailor the system performance to the actual application requirements. The outcome of this Task will be an optimized prototype, the specifications of which will be frozen during the Critical Design Review (CDR) to be performed during the final steps of this WP.

In **WP3**, the first part of the testing of the developed CSH curing tool will take place, in cooperation with the Topic Manager. A reliability and robustness study will be prepared and will be verified against practical results, in order to evaluate the overall performance and robustness of the method. The outcome of this WP, will assist in the preparation of an upgraded CSH heating device to be further tested on curved CFRP structures.

In **WP4**, the second part of the testing of the developed CSH curing tool will take place on curved CFRP structures, in cooperation with the Topic Manager. A reliability and robustness study will be prepared and will be verified against practical results, in order to evaluate the overall performance and robustness of the method. Moreover, within this WP the overall CSH methodology will be structured, to permit direct application of the developed equipment by the ECO ITD.