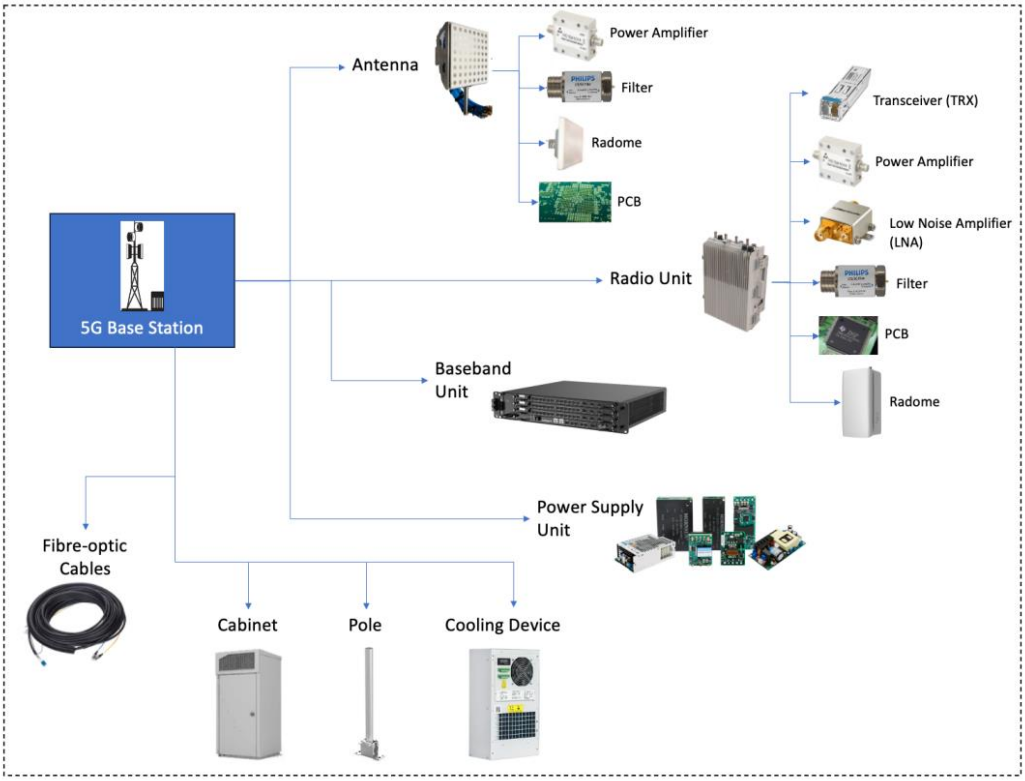
Life Cycle Analysis of Millimetre-Wave 5G Base Stations



Millimetre-wave 5G is a specific frequency band within the 5G spectrum, which has not yet been rolled out in France, and which has the potential to deliver significantly higher data rates than current 5G, in very specific configurations.

In France, millimetre-wave 5G operates at 26 GHz. At these frequencies, all the functional blocks of a base station must meet particularly demanding requirements, notably the need to use a very large number of antennas (massive MIMO). The roll-out of this new band therefore requires the installation of new base stations, and depending on the technology used, these installations will incur costs – both economic and environmental – of varying degrees.

The aim of this project will be to apply a Life Cycle Assessment (LCA) approach to reference architectures for the front-end components of millimetre-wave base stations in order to identify trends and, in particular, the parameters that have the greatest impact on the choice of these systems.

Supervision : Guillaume Villemaud, Jules-Henri Pâques

Tools : OpenLCA, Ecoinvent