The aim of this study was to develop a genetic evaluation model to estimate the genetic merit of Piétrain boars for some carcass quality traits. These boars are now evaluated on performances recorded on their crossbred progeny fattened in a central test station. Data provided by the on-farm performance recording system were utilized in this study. Traits analysed were backfat thickness (BF) and lean meat percentage (%meat). The data file contains 60,546 records measured on pigs between 150 and 300 days of age. Model developed was a multitrait animal model. Fixed effects were sex, contemporary groups and heterosis, modeled as regression on heterozygosity. Random effects were additive genetic and permanent environment, modeled by random regressions using linear splines, and residual. Variance components were estimated by restricted maximum likelihood (REML) method on random samples of the total dataset and then confirmed by a Gibbs sampling algorithm on the total dataset. Fit of the model was tested by computing residuals from a BLUP (Best Linear Unbiased Prediction) evaluation. BF and %meat have a high heritability that increase with age. These two traits are also highly genetically correlated. Mean residuals are not significantly different from zero for both traits. Given that BF and %meat had high heritability, genetic improvement of carcass quality is possible by selection on these two traits. Like residuals are close to zero for both traits, it seems that model developed explain a great proportion the variance in each traits.