Plant balancing of waste-to-energy plants is a key issue in determining plant performance and operating efficiency. Traditionally, plant efficiency is determined only during the acceptance test by the means of an ex-post energy balance. For continuous operation, energy efficiency is estimated on a monthly or yearly basis using the waste throughput and average lower heating value. At Afval Energie Bedrijf in Amsterdam efficiency has to be reported on a monthly basis. Measured data from 83 positions is required to obtain the efficiency of the Hoog Rendement Central block with an ex-post energy balance on a continuous basis. This study investigated the importance of the different sensors. Efficiency calculations were performed after discarding the less important measuring positions. The measured data was replaced by the design value in the calculation. The total average margin of error per year for the efficiency value was found to be only 0.1% when the 23 most significant (instead of 83) measuring points were used, whereas individual values may differ by less than 0.5%. Operators of plants with fewer sensors can monitor their efficiency continuously if they know the most important positions.