PT. SMART Tbk is a company which produce palm oil, for resulting palm oil they used CPO (Crude Palm Oil) for basic ingredients. To increase the temperature of CPO, they used heater. There are some heater in PT. SMART, the one is heater 2. Heater 2 in PT. SMART Tbk which placed in refinery plant have a function to increase CPO temperature of CPO from 72° C to 98° C. To increase the temperature they used steam from boiler which used coal for it is fuel. Along this process, heater 2 result condensate water from condensation process. On this research, condensate water is used to make up water in high pressure boiler which placed in refinery plant. Previously, the high pressure boiler uses mineral water periodically. Condensate water and aquadest should be tested in laboratorium test, then the result of condensate water is calculated and the saving fuel is also calculated. The economic validity of using condensate water instead of using aquadest is calculated using benefit cost analysis. From this calculation it can be accumulated or known that the use of condensate water is valid or can be accepted in economic side. The result of calculation using condensate water by heater 2 is known as 531.4 liters/hour. Then the result of calculation of reduction in energy cost LNG for 24 hour is about 3.5 m³ or Rp 126.00 daily, while the resulted of using condensate water by using benefit cost analysis is about 9.67, so it is properly used from economic side in economic side, because benefit ≥ cost.