

LIFE CYCLE ASSESSMENT (LCA) UNTUK ANALISIS ENERGI DAN EMISI PADA PEMBUATAN DAN PENGALENGAN GUDEG
(Studi Kasus di UKM Bu Tjitro Yogyakarta yang Bekerjasama dengan UPT BPPTK LIPI Gunung Kidul)

INTISARI

Oleh:

ISNANI SETYAWATI
08/272925/TP/09342

Proses pengawetan makanan dengan cara pengalengan kini telah merambah pada jenis makanan tradisional, salah satunya adalah gudeg yaitu makanan tradisional dari kota Yogyakarta yang terbuat dari nangka muda. Salah satu metode yang dapat dilakukan dalam usaha pengendalian energi dan emisi pada proses pengalengan gudeg adalah dengan diterapkannya metode *Life Cycle Assessment (LCA)* pada proses produksi. Metode ini berfungsi untuk menganalisis penggunaan bahan dan energi selama proses, menganalisis emisi gas buang dan limbah yang dihasilkan, serta menganalisis potensi dampak yang ditimbulkan terhadap lingkungan.

Penelitian yang dilakukan ini bertujuan untuk menganalisis upaya penerapan *Life Cycle Assessment (LCA)* pada proses pembuatan dan pengalengan gudeg BuTjitro yang bekerjasama dengan UPT BPPTK LIPI Gunung Kidul. Berdasarkan hasil penelitian, energi yang digunakan dalam proses produksi berasal dari beberapa sumber energi antara lain: energi bensin sebesar 11%, energi solar sebesar 5%, energi arang kayu sebesar 37%, energi listrik sebesar 10%, energi gas LPG sebesar 32%, dan energi manusia sebesar 5%. Emisi yang dihasilkan selama proses produksi berdasarkan ruang lingkup penelitian terdiri dari: emisi gas CO₂ sebesar 933.084,07 gram/ton produksi, emisi gas NO_x sebesar 2.275,085 gram/ton produksi, dan emisi gas SO₂ sebesar 313,366 gram/ton produksi.

Secara umum emisi yang dihasilkan dari proses produksi lebih berpotensi pada dampak *Acidification* karena nilai NO_x yang masuk ke dalam kategori tinggi. Walaupun gas CO₂ merupakan emisi tertinggi yang dihasilkan selama proses produksi, dampak terhadap *green house effect* (efek rumah kaca) masih dalam kategori aman. Emisi gas SO₂ juga masih termasuk dalam kategori aman terhadap dampak *Eutrophication*.

Kata Kunci : *Life Cycle Assessment*, pengalengan, gudeg, energi, emisi

**LIFE CYCLE ASSESSMENT FOR ENERGY AND EMISSION ANALYSIS
ON “GUDEG” PRODUCTION AND CANNING
(A CASE STUDY RESEARCH AT A MEDIUM-SIZED ENTERPRISE
NAMED “GUDEG BU TJITRO YOGYAKARTA” WHICH IS IN A
COOPERATION WITH UPT BPPTK LIPI GUNUNG KIDUL)**

ABSTRACT

By:

ISNANI SETYAWATI
08/272925/TP/09342

Food preservation process by canning method at the present time has been able to be applied on traditional cuisines, one of its kind is *Gudeg*, a traditional cuisine from Yogyakarta which is made from young unripe jack fruit. Initial observations on the stages of canned gudeg production process indicate the possibility of inefficiency in energy utilization and suspicious quantity of emission. *Life Cycle Assessment* method has feasibility to be implemented in attempt to control energy consumption and also to measure the amount of emission during food production process. This method aims to inspect the usage of materials and energy during the production process, examine gas emission as well as waste that caused by production process, and moreover to discover the potential environmental impact of emission.

This case study research intends to analyze the applicational effort of Life Cycle Assessment (LCA) during canned gudeg production by a medium-sized enterprise named *Bu Tjitro Yogyakarta* which has a collaboration with UPT BPPTK LIPI Gunung Kidul. Observation result of this research reveals that the energy for the production process was originated from various power source : 11% gasoline power, 5% diesel fuel power, 37% wood charcoal power, 10% electrical power, 32% Liquid Petroleum Gas power, and 5% man power. Furthermore, based on scope of research, gasses emission during production process consisted of CO₂ emission for about 933.084,07 gram/tonne of production, NO_x emission for about 2.275,085 gram/tonne of production, and SO₂ emission for about 313,366 gram/tonne of production.

Generally, discovered emission during production process is more likely to provoke Acidification effect due to high NO_x gas level. Although CO₂ is the highest generated emission gas during the production process, the impact on green house effect is insignificant. SO₂ gas emission is also inclusively on safe level toward Eutrophication effect.

Keywords : Life Cycle Assessment, canning, gudeg, energy, emission