

## ABSTRAK

Produk garam halus beryodium PT. XYZ masih mengalami kecacatan, dengan *blackspot* sebagai jenis cacat dominan sebesar 732.000 kg atau 68% dari total kecacatan selama 30 hari pengamatan. Penelitian ini bertujuan mengidentifikasi akar penyebab cacat *blackspot* dan merumuskan perbaikan menggunakan metode Six Sigma dengan pendekatan DMAIC (*Define, Measure, Analyze, Improve, Control*). Analisis dilakukan menggunakan diagram Pareto untuk menentukan prioritas jenis cacat, peta kendali *np* untuk mengevaluasi kestabilan proses, serta diagram *fishbone* untuk mengidentifikasi akar penyebab. Hasil analisis *fishbone* mengidentifikasi lima faktor penyebab, yaitu manusia, metode, mesin, material, dan lingkungan. Usulan perbaikan disusun menggunakan kerangka 5W+1H pada tahap *improve*, kemudian diterapkan dan dipantau pada tahap *control*. Hasil implementasi menunjukkan total cacat *blackspot* menurun dari 732.000 kg menjadi 230.800 kg, sedangkan biaya kegagalan internal turun dari Rp2.635.200.000 menjadi Rp830.880.000 atau berkurang sebesar 68%. Peta kendali *np* setelah perbaikan menunjukkan proses berada dalam batas kendali. Hasil tersebut membuktikan bahwa pendekatan DMAIC efektif menurunkan kecacatan dan biaya kegagalan internal serta meningkatkan stabilitas proses produksi. Penelitian ini juga mendukung pencapaian *Sustainable Development Goals* (SDGs), khususnya tujuan 12 melalui pengurangan produk cacat dan pemborosan sumber daya, serta tujuan 17 melalui kolaborasi akademisi dan industri dalam peningkatan kualitas proses produksi.

**Kata kunci:** *Six Sigma*, DMAIC, *blackspot*, pengendalian kualitas, garam beryodium

## **ABSTRACT**

*The fine iodized salt product of PT. XYZ still experiences defects, with blackspot as the dominant defect type, accounting for 732,000 kg or 68% of total defects during a 30-day observation period. This study aims to identify the root causes of blackspot defects and formulate improvements using the Six Sigma method with the DMAIC (Define, Measure, Analyze, Improve, Control) approach. The analysis was conducted using a Pareto diagram to determine defect priorities, an np control chart to evaluate process stability, and a fishbone diagram to identify root causes. The fishbone analysis identified five contributing factors: man, method, machine, material, and environment. Improvement proposals were formulated using the 5W+1H framework in the improve phase, then implemented and monitored in the control phase. Implementation results showed that total blackspot defects decreased from 732,000 kg to 230,800 kg, while internal failure costs dropped from IDR 2,635,200,000 to IDR 830,880,000, a reduction of 68%. The np control chart after improvement showed the process was within control limits. These results demonstrate that the DMAIC approach effectively reduces defect levels and internal failure costs while improving production process stability. This study also supports the achievement of the Sustainable Development Goals (SDGs), particularly Goal 12 through the reduction of defective products and resource waste, and Goal 17 through collaboration between academia and industry in improving production process quality.*

**Keywords:** Six Sigma, DMAIC, blackspot, quality control, iodized salt