



Fig. 1.4, Overlay plot produced by Graphical Optimization.

Graphical Optimization presents the area of feasible response values in the factor space. Through the graph, a visual search is carried out in search for the best compromise. Yellow region is the area that satisfies the constraint evaluated; on the other hand, gray region is the area which does not meet the required criteria. The flag 'pointed' in Figure 1.4 depicts the area of feasible response for the model in accordance to the optimum settings evaluated in Figure 1.3.

1.8. Conclusion

With the aid of Design Expert Software, optimization is carried to discover a range of optimum setting for secondary zone 1st, 2nd and 3rd sector water flow rate. By using the range of optimum settings generated by Design Expert Software, it is known that there's a slight decrease in the numbers of billets rejected from 359 to 321 billets (reduction of 8.5%) and from 321 to 311 billets (reduction of 3.1%).

1.9. References

- [1] Hans F. Schrewe, Continuous Casting of Steel-Fundamentals Principles and Practice, 1987, Stahleisen.
- [2] F.R. Camisani-Calzolari, I.K. Craig, P.C. Pistorius, "Control strategies for the secondary cooling zone in continuous casting", IEEE, 1999.
- [3] I.V. Samarasekera and J.K. Brimcombe, "The influence of Mold Behaviour on the production of Continuously Cast Steel Billets," Metallurgical Transaction B, Vol. 13B (1), 1982, 105-116.
- [4] V.P. Perminov, N.M. Lapotyshkin, V.E. Girskii, A.I. Chizhikov, "Prevention of Distortion in A Continuously-Cast Square Alloy Steel Billet", Stal. In English, Vol.7, 1968, 560-563.

- [5] H. Mori, "Causes and Prevention of Defects in Continuous Casting. Pt.1" Tetsu-to-Hagane (J. Iron Steel Inst. Jpn.) Vol.58 (10), 1972, 1511-1525.
- [6] W.P. Young and W.T. Whitfield, "Casting of Quality Steel at Wisconsin Steel", 51ST National Open Hearth and Basic Oxygen Steel Conference, AIME, New York, Vol. 51, 1968, 127-132.
- [7] K. Matsunaga, Y. Ohkita, S. Hirayama, S. Kimiya, S. Kojima, "Progress in the Continuous-Strand Casting of Billets at Kokura Steel Works of Sumitomo Metals (Retroactive Coverage)", 59th National Open Hearth and Basic Oxygen Steel Conference, (St. Louis Mo.), Metallurgical Society AIME, New York, N.Y., 1976, 228-249.
- [8] Y. Aketa and K. Ushijima, Tetsu-to-Hagane (J. Iron Steel Inst. Jpn.) Vol. 45 1959, 1314-1345.