Contribution ID: **132** Type: **not specified**

# Constructing large OMARS designs by concatenating two definitive screening designs

Orthogonal minimally aliased response surface or OMARS designs permit the study of quantitative factors at three levels using an economical number of runs. In these designs, the linear effects of the factors are neither aliased with each other nor with the quadratic effects and the two-factor interactions. Complete catalogs of OMARS designs with up to five factors have been obtained using an enumeration algorithm. However, the algorithm is computationally demanding for designs with many factors and runs. To overcome this issue, we propose a construction method for large OMARS designs that concatenates two definitive screening designs and improves the statistical features of its parent designs. The concatenation employs an algorithm that minimizes the aliasing among the second-order effects using foldover techniques and column permutations for one of the parent designs. We study the properties of the new OMARS designs and compare them with alternative designs in the literature.

## Special/ Invited session

JQT/QE/TECH session

## Classification

Mainly methodology

## Keywords

orthogonal design, screening design, response surface design

**Primary author:** GOOS, Peter (KU Leuven)

**Co-authors:** VAZQUEZ, Alan (Tecnologico de Monterrey); SCHOEN, Eric (KU Leuven, Belgium)

**Presenter:** GOOS, Peter (KU Leuven)

**Track Classification:** Other/special session/invited session