Decomposition method for the Multiperiod Blending Problem

Francisco Trespalacios, Irene Lotero and Ignacio Grossmann

March 12, 2014

Center for Advanced Process Decision-making
Department of Chemical Engineering Carnegie Mellon University
Pittsburgh, PA 15213
# Motivation and goals

## Motivation

**Multiperiod blending** is a general problem for many applications, and it is difficult to solve:
- Gasoline and crude oil blending are some of the applications
- The model contains mixed-integer variables and bilinear constraints

## Goals

**Generate “good solutions” fast**
- Guaranteeing global optimality is not a priority
- Solutions must be feasible

## Approach

**Decompose the problem to simplify search for feasible solutions**
- A master MILP relaxation of the problem “fixes” some tanks as “split tanks”
- MINLP subproblem contains fewer binary variables and bilinear terms