The SEMI Test Problems

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The SEMI test problem suite consists of 3 instances of a two-stage multi-period stochastic integer program arising in the planning of semiconductor tool purchases. The problem formulation is described in [1]. The instances have mixed-integer first-stage variables and continuous second-stage variables.

DATA:

The SMPS data for the three problem instances are contained in the zip file semi.ZIP. The zip file includes 1 core and 1 time file, and 3 stoch files corresponding to three scenario numbers (2,3,and 4). The size of the deterministic equivalent problem for three instances are tabulated below.

Problem	Scen	Cols	Int	Rows
SEMI2	2	20216	612	11686
SEMI3	3	30018	612	17528
SEMI4	4	39820	612	23370

SOLUTION:

The following table presents the upper and lower bounds obtained using IBM OSLSE on an IBM Thinkpad Model 770 (with 233 MHz speed and 256 MB RAM) running Windows NT 4.0.

Problem	UB	LB	% Gap	CPUs	Nodes	Iter
SEMI2	1545.5	1457.1	6.1	2,164	7,153	93,118
SEMI3	1808.1	1745.4	3.6	8,914	28,410	383,787
SEMI4	2197.2	2148.4	2.3	27,519	61,192	1,125,986

REFERENCES:

[1] F. Barahona, S. Bermon, O. Gunluk, and S. Hood. "Robust Capacity Planning in Semiconductor Manufacturing," IBM Research Report RC22196, 2001.

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