

A Thermoforming Case Study

Presented by Modern Machinery of Beaverton, Inc., and Solar Products, Inc. - The Infrared Heater Company

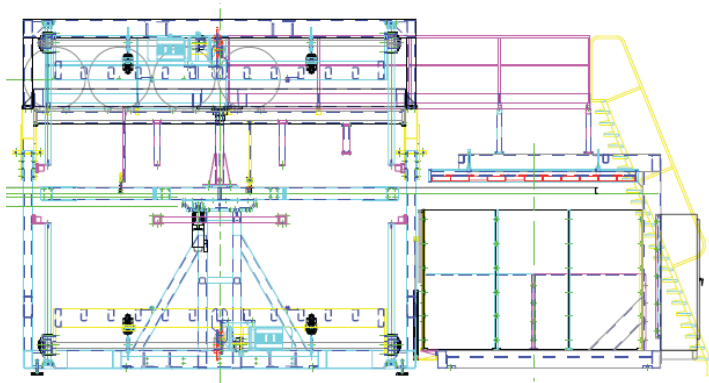
Solar/Modern

Delivers 1-2 Punch for Ray Products

CUSTOMER PROFILE

Ray Products is a heavy gauge custom thermoformer, located on the west coast.

The company had many decisions to make when purchasing their new three-station rotary. They wanted an OEM that would stand behind their machine and a heater supplier that would offer the flexibility that they demanded.



MACHINE SPECIFICATIONS

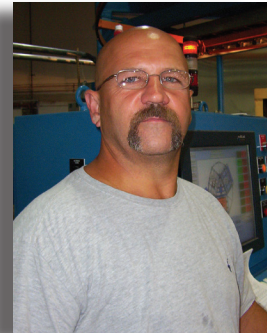
- Machine Type..... Three Station Rotary
- Heated Area..... 132” x 228”
- Maximum Sheet..... 120” x 216”
- Heater Type..... Solar Products, Inc.
- Top..... F-Series
- Bottom..... G-Series
- Top Zones..... 209
- Bottom Zones..... 209
- Controls..... Modern Machinery PC Control System

Heater zones are controlled by the Modern Machinery PC control system via a proportional output on a 2 second time-base. Features included are random firing of oven solid state relays to minimize peak current draw and current sensing for oven control diagnostics of SSRs heaters, and fuses. A multi-tasking (Windows) operating system with touch screen interface provides a scaled graphical representation of the oven and includes the sheet size for aiding in profiling the oven zones.

Dan Sweet

VP of Operations-Ray Products

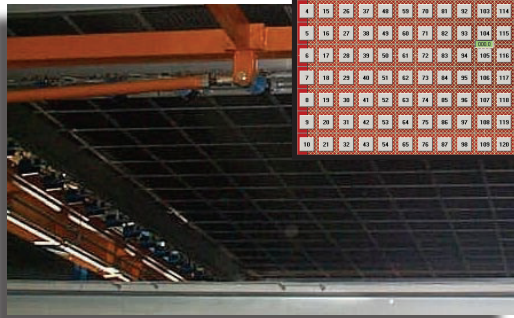
"I've never seen an oven have such immediate and positive impact on polyethylene. The ability to adjust the heat parameters in such a small area and see immediate impact is phenomenal. The Solar Oven has proven to be the best oven I have ever used; it certainly will be a future requirement on all new equipment for Ray Products."



SOLAR PRODUCTS HEATERS OFFER THE FOLLOWING BENEFITS:

- Fast heating cycle times
- Low energy consumption
- No reduction in efficiency over time
- Long life - 25,000 hour typical life expectancy
- Virtually maintenance free
- Uniformity
- Ease of installation

TOP OVEN ZONE LAYOUT



1	12	23	34	45	56	67	78	89	100	111	122	133	144	155	166	177	188	199
2	13	24	35	46	57	68	79	90	101	112	123	134	145	156	167	178	189	200
3	14	25	36	47	58	69	80	91	102	113	124	135	146	157	168	179	201	
4	15	26	37	48	59	70	81	92	103	114	125	136	147	158	169	180	202	
5	16	27	38	49	71	82	93	104	115	126	137	148	159	170	181	192	203	
6	17	28	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204
7	18	29	40	51	62	73	84	95	106	117	128	139	150	161	172	183	194	205
8	19	30	41	52	63	74	85	96	107	118	129	140	151	162	173	184	195	206
9	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207
10	21	32	43	54	65	76	87	98	109	120	131	142	153	164	175	186	197	208

Contact:



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