



Mid-West Company Uses System Dynamics to Beat Industry-Wide Sales Contraction

Armed with System Dynamics knowledge, a company can undergo smart and strategic action to anticipate future sales. Warren Farr, the CEO of Refrigeration Sales Corporation (RSC) in Valley View, OH, led his team through these changes when he was appointed president of RSC in 2000. His long-range, systemic examination of the heating and cooling industry, and subsequent action, led to a 25% growth in sales through a 30% industry-wide sales contraction.

By: System Dynamics Society & Leverage Networks, Inc.

RSC acts as a wholesale distributor and supporter of heating, ventilation, air conditioning, and refrigeration (HVACR) units for the Ohio and western Pennsylvania markets. Through the late 1990s, the industry had enjoyed three decades of continuous growth, with RSC observing a 10% average annual increase in AC sales.

In 2000, new industry data was believed to predict a decline in unit sales. Eager to protect against losses, newly appointed CEO Warren Farr began examining the industry using System Dynamics modeling.

Farr had his first taste of System Dynamics through a week-long business seminar at Massachusetts Institute of Technology (MIT). The tools and analysis he was exposed to were powerful, and led him to the models he used to help insulate RSC from losses in the predicted market decline.

Learning about these tools and sharing them with his colleagues was an important first step in making the subsequent policy changes at RSC.

“Using the proven Strategy Dynamic process focused our limited resources on organizing strategic issues, identifying the critical resources, and developing the insight to more rapidly create intuitive and actionable business strategy.”

-Warren Farr, CEO, Refrigeration Sales Corporation

Industry-Wide View Provides Insights for Company

Industry predictions for the air conditioning (AC) market were charted out on a bell curve, seen in Figure 1, with the three prediction lines representing the ways in which the market could move forward. Farr and RCS management pursued further information about these forecasts, and through discussions with customers and suppliers, saw a very hopeful trajectory for the market. But, Farr's study of System Dynamics led him to believe otherwise.

System Dynamics provides tools for understanding patterns in market-types. As a durable good, AC sales follow the shape of a bell curve, where sales of new units increase until the market becomes saturated, at which point new sales come from replacements, upgrades, or new home construction. As a System Dynamics student, Farr tuned in to this industry insight and began examining data to better understand the potential downturn and ways to protect his company from its impacts.

System Dynamics Tools Help Forecast Market Trends

The data collected answered pressing action-oriented questions including, "How significant will the down-turn be?" and "Over what time-scale will it play out?" The dynamic model constructed by Farr and his team quantified the accumulation of the installed-base and internalized the feedback of declining first-time sales, allowing managers to observe reality and refine their outlooks about the ebbs and flows of the industry's growth cycle.

Not only was the approaching saturation point reducing the installation base for new AC units, but in a colder region like Ohio where an AC unit could last for 15 to 20 years, replacement sales were unlikely to fuel growth. Farr used dynamic modeling to create stock and flow diagrams of the Aging Cycle of both housing units and AC units to better understand this cycle, as well as a model of Adoption Methods, to examine potential opportunities for expansion (Fig. 2).

"The modeling provided a longer-term perspective, allowing RSC management to make these dramatic changes in company bandwidth over a period of about 3 years, avoiding the excess cost associated with rapid 'cutting'"

-Warren Farr, CEO, Refrigeration Sales Corporation

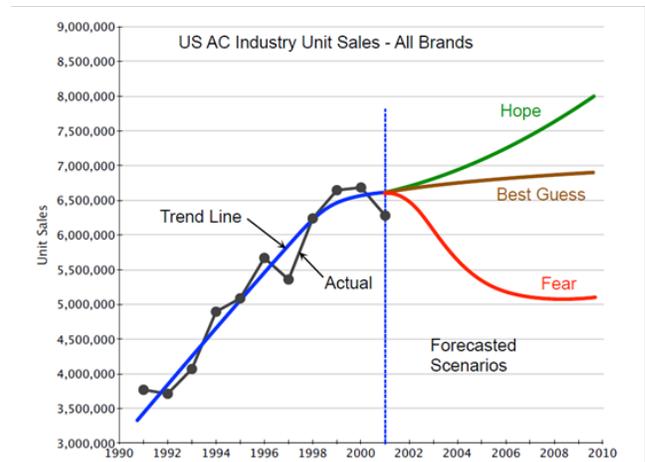


Figure 1. The industry forecast of AC Unit Sales, circa 2000. Source: Farr 2012, Air Conditioning, Heating, and Refrigeration Institute, 2011, "Central Air Conditioners and Air-Source Heat Pumps Historical Data."

Dynamic Data Modeling Provides Fuel for Action Plan and Substantial Payoff

After examining this data that predicted industry wide declines, Farr and RCS management made a two phase action plan. From 2001 to 2005, thanks to confidence derived from the System Dynamics modeling, RCS focused on tightening company policies and creating a leaner, more efficient company. Actions in this early phase included: reducing warehouse space and staff size, increasing responsibilities for each team member, and increasing inventory accuracy.

This tightening was not an easy decision to make, nor was it immediately evident that the decision was successful. From inside RCS, there was concern, particularly from RCS customers, employees, and suppliers. And, in 2004 and 2005, AC unit sales spiked dramatically. New government regulations set to be implemented in 2006 caused contractors to stock up on older AC units before new minimum efficiency requirements kicked in and raised prices. But, despite some lost potential sales as a result of their downsizing, RCS stuck to its forecasting model. From the outside, to suppliers and customers, this move seemed short-sighted, as the industry was experiencing these years of record sales.



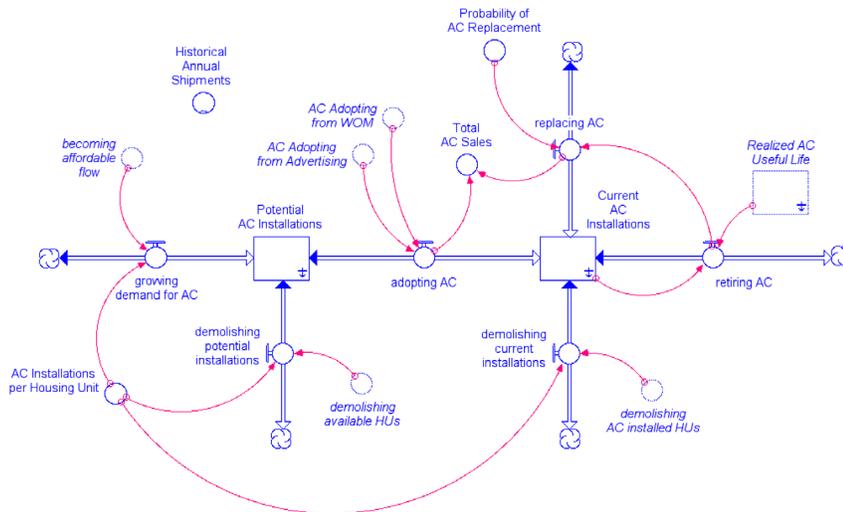


Figure 2. The AC Installations Aging Chain Model used by Farr to help understand recommended actions. Source: Farr, 2012.

In 2006, the forecasting model and associated actions paid off. The AC unit market took a drastic downturn, with sales contracting by 30%. RSC, in the second phase of their plan, was in position to take strategic and beneficial action.

As competitors were forced to lay-off talent and contract their markets, RCS had the resources to invest in that laid-off talent, as well as new product lines that were rolled out. This bust period also saw a growth in territory covered for RSC.

In territories where the AC market saw a 30% contraction from 2000 to 2010, RSC saw a 25% increase in annual revenues and 30% increase in its sales locations.

System Dynamics Provides Tools to Pursue Growth and Profitability Despite Industry Downturn

The bigger-picture approach that Warren Farr and RCS utilized to add resilience to their company required the willingness to step outside their normal habits and actions. As they demonstrated, using System Dynamics to combine industry principles with powerful, quantified tools creates an opportunity for growth and profitability. Similarly, looking ahead and taking action based on the future, rather than allowing the impact of new market conditions to throw off business plans, can position a company to be a leader for its industry.

As evidenced by Warren Farr and his work at RCS, System Dynamics is a practical, accessible method that savvy managers and their teams, can learn to use to great effect.

For more information about this systemic pattern, check out [The New Systems Thinker: Market Diffusion](#)

Collaborators: Matthew Bigman, Kris Wile, Rebecca Niles, Carolyn Niehaus

Sources:

Farr, Warren. "Using System Dynamics to Create Durable Business Strategy: US Air Conditioning Industry Case Study." 2012. <http://www.systemdynamics.org/conferences/2012/proceed/papers/P1175.pdf> Paper presented at System Dynamics Society 30th International Conference, Switzerland: July 22-26, 2012.

Refrigeration Sales Corporation. <http://www.rsc2go.com>

Add your comments to the conversation about this piece at: leveragenetworks.com/forums

