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# Houlihan: Recipe for Production Success by Libby Walters with Scott Arquilla

*When it comes to stepped-up production efficiency, nothing beats the Houlihan system. Read how component manufacturers have turned their operations around with this legendary method!*

How is production efficiency measured in your operation? Perhaps you measure productivity using a home-grown formula based on total board footage. Many systems for measuring production efficiency are based on studies of time and motion, an elementary industrial engineering principle. Some of the earliest documented scientific manufacturing studies were recorded before 1900. You may be familiar with names like Frederick Taylor or Frank and Lillian Gilbreth (see the movie, Cheaper by the Dozen) in association with studies of time and motion. In this article, we present a popular method for measuring production efficiency in the truss plant, developed by a man who spent the better part of his professional career studying the concept of time and motion. You'll hear from component manufacturers who have made the commitment to provide a more structured production environment using this method.

## HOULIHAN HYPE

You'd be hard pressed to find a component manufacturer unaware of John Houlihan's contribution to measuring, tracking and analyzing production efficiency in the truss plant. Houlihan started his career at national retailer Montgomery Ward, where he first married the science of time and motion to production efficiency. In this case, he targeted the company's catalog/mail order operations, developing and revising an efficiency standard for picking and handling packages. In time, he transformed his experience at Ward into what we now know to be the Houlihan method. He improved upon this method for many years, preaching what he called the three Ms: man, material and machinery.

Unfortunately, John Houlihan is no longer with us today. Houlihan's legend continues to carry a large—and growing—presence in the industry, thanks to the two men who carried the Houlihan torch into the twenty-first century: Don Ullmer and Frank Zientarski. "John's concept grew overnight," Zientarski remembered. "One of his first successes [for the truss industry] was for Imperial Components in St. Charles [Illinois]." He noted that Houlihan's rapid-fire success in component industry production operations gave way to Ullmer and Zientarski's entrance into the business. Ullmer took over the Houlihan reigns in the 1990s and carried the business until his retirement in 1999. At BCMC 2001 in Louisville, Ullmer gave a presentation about production and spoke about the Houlihan system. Zientarski split amicably from Ullmer in 1999 and currently manages Scheduled Profit Systems, Inc. in Marengo, IL. He continues to work with component manufacturers to implement Houlihan's system, while diversifying his services to include other manufacturing industries like oil producers. Like Houlihan's perpetual drive to refine his system, Zientarski has expanded on Houlihan's three Ms, adding method and management to round out the theory.

Enlisting the help of a professional to install a stringent efficiency measurement system may seem drastic, but it was all too close to home for Scott Arquilla and his management team at Best Homes, Inc. in 1998. "Something was not adding up," Arquilla explained. He had good reason for adopting such an intensive production efficiency regime: sales had grown over the prior years, but the financials reported a poor profit performance. "We first attributed it to the fact that the Chicago market is a union labor market, but it turned out to be more than that." Arquilla did some re-search and talked to a few component manufacturers and soon pinpointed the trouble area: production and job pricing methodology. They were losing money on low-priced, difficult jobs, and the easy jobs were priced too high to the point that sales were not being made. Scott enlisted Don Ullmer's services to take command of the situation and prepared his troops for Houlihan boot camp.

## BEST HOMES MEETS HOULIHAN

Intense. Arquilla wouldn't soon forget when Ullmer and Zientarski arrived at his plant for six weeks to observe the Best Homes production operation. Enter the study of time and motion. With a stopwatch, they spent six weeks timing every job and motion in the plant. The duo timed every conceivable task—pickers, sawyers at each saw, shifting wood at the saw, moving wood from saws to tables, table set-up, actual production on the line, moving finished product from table to stacker—down to the second and took averages of each job. Once the time studies were finished and task points were calculated, Ullmer accounted for actual human capacity, setting an hourly goal for each line to work at 90 percent of amounts determined by actual time studies. From those averages, Ullmer and Zientarski created figures called realistic expectancies (R.E.s): every task or combinations of tasks had adequate time allotted to meet each worker's goal each hour. This set of numbers would become the standard of comparison for each production job at Best Homes and would ultimately remedy their production nightmare.

"By using the R.E.s to price work, we had a good idea of how to realistically budget labor for every job. In the big picture, all orders in process in the plant could be better managed and allocated based upon total labor hours available," Arquilla said.

"Ullmer's premise is that every person in your plant should have a unique function and report the progress made in the span of one hour back to their supervisor," Arquilla explained. "Based on a set of predetermined R.E.s, the plant supervisors record points on an hourly basis for each job group and calculates an efficiency percentage."

After R.E.s were determined and the production staff was briefed on the system, plant managers implemented Houlihan with the assistance of Ullmer and Zientarski, who remained at Best Homes for the six-week implementation process. Points were reported hourly and recorded for every shift. “The process and transformation of our plant was not without its problems; initially, every worker was upset that we were watching.” Arquilla’s management team still makes time to analyze data in the daily production reports. “In analyzing the performance each day, we review each line’s performance. If it falls below 90 percent of the R.E., then questions are asked as to why the goal wasn’t met,” he said.

**THE ALLWOOD STORY: LABOR COSTS REVEALED**

Eric and Pat Lundquist of Allwood Building Components share a similar experience of success with the Houlihan method, with the exception of one small detail: they worked with John Houlihan himself. “John was a very unique individual,” Lundquist remembered. “John never used a computer; the only tool he had was a #2 pencil.”

Putting Houlihan’s quirky personality aside, Lundquist spoke candidly about the impact Houlihan has had on Allwood’s operations over the years. “We’ve been using Houlihan for over ten years. It’s almost like a religion,” noting that Allwood was one of the last truss plants Houlihan worked on before his retirement.

For Lundquist, the motivation for turning to Houlihan was a no-brainer: “Lumber and plate costs are easy to determine. But when it came to our labor costs as applied to a particular job, there was no consistency. Lundquist had previously attempted a DIY time and motion study, Allwood-style. “We were struggling to nail down labor costs, so I hired a few college students to conduct time and motion studies in the plant. We could never make the numbers work.”

Speaking about the up-front financial investment, Lundquist noted: “Based on our experience with the Houlihan method, it’s the best money a truss manufacturer could ever spend.” He added that Allwood was able to recoup the initial investment within nine months of implementation.

“With Houlihan in place, our bidding became more consistent and our labor percentage dropped.” In addition, Houlihan convinced shop employees to embrace the system, Lundquist said. “John did a really good job of selling it. His R.E. system was a crucial selling point because it was based on completely reasonable, achievable numbers.”

Lundquist said Houlihan was relentless in encouraging consistent improvement in production. “I would submit weekly reports to John for him to analyze. He used to call at 4:15 every Friday afternoon—the last time on earth you’d ever want to talk—to discuss the numbers. There was no let-up from John; if my percentages had dipped from the previous week, he’d raise hell.”

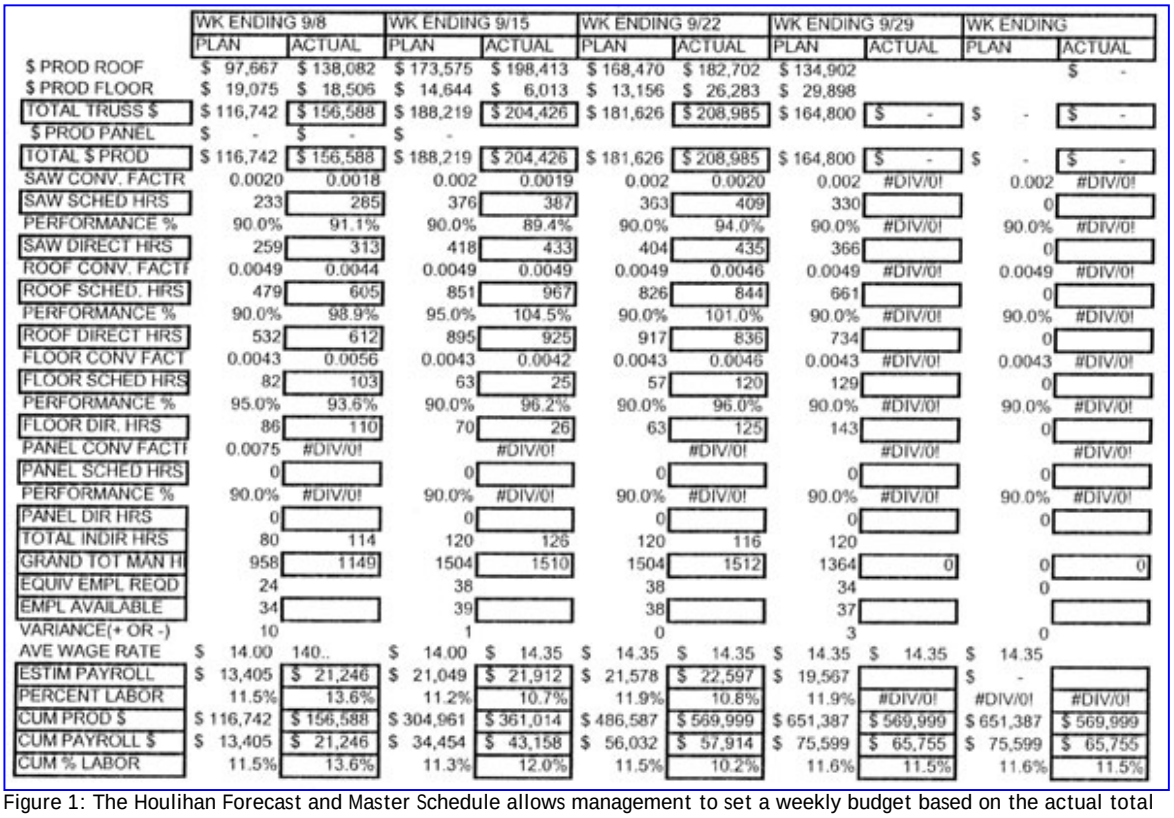
**ACCOUNTING FOR IRREGULARITIES**

You’re wondering how the Houlihan method accounts for irregularities in production like new hires, new machinery or equipment malfunction? In theory, if new automation or equipment is introduced to the operation, another session of one week is scheduled and Zientarski spends time integrating that equipment into another R.E. formula. “Unusual situations are noted hourly and, if they continue without being rectified, we review the reasons why. There is a schedule miss report that must be noted for the time and number of men tied up because of equipment problems. We can then address what needs to happen repair-wise,” Arquilla noted. With the industry’s soaring production turnover rate, the need to train additional staff is inevitable. “New hires are carried as indirect labor for their first day,” Arquilla said. “They are accounted for like supervisory personnel. The line gets the credit for their work, but not charged for the direct labor hours.”

**HOW HOULIHAN TURNED BEST HOMES AROUND**

Here’s the part where the rewards of choosing Houlihan far outweigh the intense induction process, time commitment and financial investment on the front end.

Houlihan is an excellent tool for year-to-year budgeting and analysis, Arquilla noted. In Excel, Arquilla reviews points (as compared to the numbers set by Ullmer/ Zientarski) daily, weekly and monthly (see Figure 1). “The whole system allows us to better assess our employees from our plant manager on down.”



| | WK ENDING 9/8 | | WK ENDING 9/15 | | WK ENDING 9/22 | | WK ENDING 9/29 | | WK ENDING | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PLAN | ACTUAL | PLAN | ACTUAL | PLAN | ACTUAL | PLAN | ACTUAL | PLAN | ACTUAL |
| $ PROD ROOF | $ 97,667 | $ 138,082 | $ 173,575 | $ 198,413 | $ 168,470 | $ 182,702 | $ 134,902 | | | $ - |
| $ PROD FLOOR | $ 19,075 | $ 18,506 | $ 14,644 | $ 6,013 | $ 13,156 | $ 26,283 | $ 29,898 | | | |
| TOTAL TRUSS $ | $ 116,742 | $ 156,588 | $ 188,219 | $ 204,426 | $ 181,626 | $ 208,985 | $ 164,800 | $ - | $ - | $ - |
| $ PROD PANEL | $ - | $ - | $ - | | | | | | | |
| TOTAL $ PROD | $ 116,742 | $ 156,588 | $ 188,219 | $ 204,426 | $ 181,626 | $ 208,985 | $ 164,800 | $ - | $ - | $ - |
| SAW CONV. FACTR | 0.0020 | 0.0018 | 0.002 | 0.0019 | 0.002 | 0.0020 | 0.002 | #DIV/0! | 0.002 | #DIV/0! |
| SAW SCHED HRS | 233 | 285 | 376 | 387 | 363 | 409 | 330 | | 0 | |
| PERFORMANCE % | 90.0% | 91.1% | 90.0% | 89.4% | 90.0% | 94.0% | 90.0% | #DIV/0! | 90.0% | #DIV/0! |
| SAW DIRECT HRS | 259 | 313 | 418 | 433 | 404 | 435 | 366 | | 0 | |
| ROOF CONV. FACTF | 0.0049 | 0.0044 | 0.0049 | 0.0049 | 0.0049 | 0.0046 | 0.0049 | #DIV/0! | 0.0049 | #DIV/0! |
| ROOF SCHED. HRS | 479 | 605 | 851 | 967 | 826 | 844 | 661 | | 0 | |
| PERFORMANCE % | 90.0% | 98.9% | 95.0% | 104.5% | 90.0% | 101.0% | 90.0% | #DIV/0! | 90.0% | #DIV/0! |
| ROOF DIRECT HRS | 532 | 612 | 895 | 925 | 917 | 836 | 734 | | 0 | |
| FLOOR CONV FACT | 0.0043 | 0.0056 | 0.0043 | 0.0042 | 0.0043 | 0.0046 | 0.0043 | #DIV/0! | 0.0043 | #DIV/0! |
| FLOOR SCHED HRS | 82 | 103 | 63 | 25 | 57 | 120 | 129 | | 0 | |
| PERFORMANCE % | 95.0% | 93.6% | 90.0% | 96.2% | 90.0% | 96.0% | 90.0% | #DIV/0! | 90.0% | #DIV/0! |
| FLOOR DIR. HRS | 86 | 110 | 70 | 26 | 63 | 125 | 143 | | 0 | |
| PANEL CONV FACTF | 0.0075 | #DIV/0! | | #DIV/0! | | #DIV/0! | | #DIV/0! | | #DIV/0! |
| PANEL SCHED HRS | 0 | | 0 | | 0 | | 0 | | 0 | |
| PERFORMANCE % | 90.0% | #DIV/0! | 90.0% | #DIV/0! | 90.0% | #DIV/0! | 90.0% | #DIV/0! | 90.0% | #DIV/0! |
| PANEL DIR HRS | 0 | | 0 | | 0 | | 0 | | 0 | |
| TOTAL INDIR HRS | 80 | 114 | 120 | 126 | 120 | 116 | 120 | | | |
| GRAND TOT MAN H | 958 | 1149 | 1504 | 1510 | 1504 | 1512 | 1364 | 0 | 0 | 0 |
| EQUIV EMPL REQD | 24 | | 38 | | 38 | | 34 | | 0 | |
| EMPL AVAILABLE | 34 | | 39 | | 38 | | 37 | | | |
| VARIANCE(+ OR -) | 10 | | 1 | | 0 | | 3 | | 0 | |
| AVE WAGE RATE | $ 14.00 | 140.. | $ 14.00 | $ 14.35 | $ 14.35 | $ 14.35 | $ 14.35 | $ 14.35 | $ 14.35 | |
| ESTIM PAYROLL | $ 13,405 | $ 21,246 | $ 21,049 | $ 21,912 | $ 21,578 | $ 22,597 | $ 19,567 | | $ - | |
| PERCENT LABOR | 11.5% | 13.6% | 11.2% | 10.7% | 11.9% | 10.8% | 11.9% | #DIV/0! | #DIV/0! | #DIV/0! |
| CUM PROD $ | $ 116,742 | $ 156,588 | $ 304,961 | $ 361,014 | $ 486,587 | $ 569,999 | $ 651,387 | $ 569,999 | $ 651,387 | $ 569,999 |
| CUM PAYROLL $ | $ 13,405 | $ 21,246 | $ 34,454 | $ 43,158 | $ 56,032 | $ 57,914 | $ 75,599 | $ 65,755 | $ 75,599 | $ 65,755 |
| CUM % LABOR | 11.5% | 13.6% | 11.3% | 12.0% | 11.5% | 10.2% | 11.6% | 11.5% | 11.6% | 11.5% |

Figure 1: The Houlihan Forecast and Master Schedule allows management to set a weekly budget based on the actual total production sales, labor hours and performance percentages from the previous week. The spreadsheet calculates actual monthly totals and averages, which is a valuable long-range budgeting tool for component manufacturers.

According to Lundquist, “I don’t know why more manufacturers don’t use Houlihan. It’s been the best tool for us in terms of assessing labor costs. If production consistency is what you’re lacking, Houlihan is the system for you.”

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SBC HOME PAGE