



Creating Level Pull

***A lean production-system improvement guide
for production-control, operations, and
engineering professionals***

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Some authors write books explaining the philosophy of lean with many illustrations to help the reader's understanding of the concept. Others write to explain the details of one of the tools of lean, the local results of its use at some point in the manufacturing stream, and maybe even how to use the tool. But for a complete understanding of the tool, it takes an instructional approach showing "how to" implement the details of the tool, where to start, what data are needed, and what results of implementation to expect *across* the entire value stream. Effective how-to books aren't easy to convey as they have to be written from experience and they have to show the reader how to deal with the cause and effects of implementation. *Creating Level Pull* is such a book.

The author sets the stage by assuming the Apogee Mirror Company is an automotive supplier, new at lean, has limited staff resources for implementing new approaches and must therefore start with a limited product line, the exterior mirror, to initiate the start of a level pull factory. The steps are the same whether the factory

implements level pull across all product lines at the same time or whether the company chooses an incremental approach. The incremental approach is easier for the reader to understand and probably represents most of the readers.

The author starts by showing the original state value stream, the current state, and the target or future state with 16 points of measurement comparing all value streams. He thus sets the stage for the work ahead. The second section discusses matching production system capability to customer demand. This requires an analysis of which finished goods to stock and which to manufacture to customer order and the pros and cons of each. Apogee Mirror selects an option and the rationale for the selection.

Section three shows how to select the pacemaker operation from which the production pull and replenishment signals are calculated. At this point, the author stresses the cycle of conveyance and replenishment required of the material handling team. The author recommends patience in unplugging the old scheduling system before the new system is functional. Too many

theory consultants have said "Throw out the MRP system."

Section four addresses controlling production upstream from the pacing operation. The author describes withdrawal and signal kanban as they are used in the flow of production from the buffer stocks back to the production centers.

Expanding the system, section five points out the difference between dedicated product lines and shared department equipment and how to expand the system for each case. Many readers will have one or the other and many more will have both. The distinction made in this section and how to approach each will be particularly useful in such cases.

How to sustain and improve the gains is often the complaint heard from companies implementing lean. The last section of the workbook shows how monitoring and changing the lot sizes and inventory levels to changes in customer demand is a must. Monitoring performance metrics to manage process stability and insure that standard work is being followed is the challenge to production control and operations supervisors. The author goes on to describe

what might be called the next wave of improvements such as setup reductions, shrinking the inventory buffers or markets, and evaluating what can be done from the marketing side to provide stability of demand, for example eliminating the end-of-month price breaks or discount deals that have been around for at least 75 years creating the end-of-month order hockey stick.

The book has a useful appendix which illustrates the detailed use of kanban used throughout the book.

This workbook is particularly useful as it shows the analytical steps and data required for arriving at the several decision point options the practitioner will encounter at various points in implementation. The book also explains how to create the level pull across the entire manufacturing work flow. This book is useful for operations managers, engineers, and production control people involved in transforming the factory floor from batch to a level pull environment.

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