

**An Analysis of the Mendota Plant's Options  
For Expanding Press Capacity**



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December 2000

RR Donnelley & Sons was founded in 1864 as a local printing company in Chicago, Illinois. Today it is an international communications company with operations all over the world and approximately \$5 billion in annual sales. Sales are distributed fairly evenly across the company's five primary business units;

**Figure 1. Donnelley's Main Service Offerings**

<i>Magazine Printing</i>	Segmented into two divisions by total pressrun. Specialized Publishing Services (SPS) prints magazines with press runs from 8,000 copies to 200,000 copies. Consumer Magazine Services (CMS) prints magazines with press runs between 200,000 and 20,000,000 copies.
<i>Book Printing</i>	Donnelley prints books ranging from narrow interest, paperbacks to mass consumer books like Harry Potter. Donnelley is also the largest printer of Bibles in the world.
<i>Direct Marketing</i>	Donnelley prints direct mail, newspaper inserts and catalogs for most of the major retailers.
<i>Directory Printing</i>	Donnelley is the dominant printer of phone books and major directories in the world.
<i>Financial Printing</i>	Donnelley prints highly sensitive financial products such as mutual fund prospectuses as well as assisting clients with EDGAR filings, etc.

Donnelley is a publicly traded company whose stock in the last two years has been trading well below previous levels, even though the company has performed at or above analyst expectations. Most experts within and outside of the company attribute this situation to the lack of "sexiness" of an "old technology" industry such as printing. A possible antidote to the malaise has been identified-- rapid sales growth.

The SPS division of Donnelley’s magazine business represents one of the fastest growing market segments in the company. It currently accounts for approximately \$250,000,000.00 in sales. As information gets more specific and specialized, publishers are focusing their products on a narrower, better-defined audience. Donnelley’s SPS division is further segmented into four plants, again by total pressrun.

**Figure 2. SPS Divisions & Niche**

<i>Senatobia, Mississippi</i>	Standard size magazines (8 3/8” x 10 7/8”) with pressruns from 8,000 to 35,000 copies
<i>Mendota, Illinois</i>	Standard size and Tabloid magazines with pressruns from 30,000 to 80,000 copies
<i>Pontiac, Illinois</i>	Standard size and Tabloid magazines with pressruns from 70,000 to 140,000 copies
<i>Berea, Ohio</i>	Standard size and tabloid magazines with pressruns from 125,000 to 200,000 copies

Throughout most of 2000, the Mendota plant has been running near or at capacity with no forecast of a relaxation in workload. To the contrary, newly sold titles on the short end of Mendota’s niche are being redirected to Senatobia. Some newly sold titles on the upper range are being printed in the Pontiac plant. This puts pressure on the other divisions because they are filling valuable capacity with work outside of their core niche. Demand is strong for the Mendota product, but there is virtually no supply available. In the Mendota plant, the constraint is the pressroom. The pre-press and post-press departments have capacity available, but it does the company no good without the ability to put ink on paper. In the budgeting process for 2001, the company allocated funds to create capacity by either rebuilding current presses, which aren’t running at peak efficiency, or purchase additional horsepower.

Either option, to rebuild or purchase new equipment, would require a major investment. Rebuilding a press would cost approximately \$3,000,000.00 and would require taking the press (currently loaded with existing work) offline for three months. This would choke capacity even further for the time the press is down, but would cost less than purchasing a new press. In researching their options, the plant discovered that it could sell one of the older presses that wasn't running at optimum levels (and needed a rebuild), for \$2,000,000.00. A new, workhorse replacement press would cost between \$6-9 million.

Making the decision between rebuilding and buying a new press was not easy. By the time this project was begun, the plant had done their own analysis and had already made their decision to purchase a new press. I wanted to see if I could come to the same conclusion using data collected from the key functional leaders in the division and Expert Choice software, a program that was designed to help users make choices that “best meet their objectives”<sup>1</sup>. The software is based on the Analytic Hierarchy Process (AHP) developed by Thomas Saaty. Saaty developed AHP as “a simple way to help ordinary people make complex decisions.”<sup>2</sup> In the early 1980's Dr. Ernest Forman adapted AHP for use on a personal computer, the result is Expert Choice software.<sup>3</sup> The program synthesizes qualitative and quantitative data, weighs preferences and presents in a number of graphical ways, the “best choices” to meet the specified goal. The crucial inputs to the software program are objectives, alternatives and comparisons between the

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<sup>1</sup> Ernest Forman and Mary Ann Selly, *Decision By Objectives; How to Convince Others That You Are Right*, Self Published, Expert Choice Inc.

<sup>2</sup> Ibid.

alternatives as they relate to each objective. In this particular model the alternatives were buying a new press or rebuilding an existing press.

The first step was defining the major objectives of the division with regard to adding capacity. I was given access to several Powerpoint presentations that the Division Director, John O'Sullivan, had presented to Donnelley Corporate while advocating for additional press capacity. I also spoke with the head of the pressroom, Steve Gargani. Between the two sources, I established the major objectives as, fit with existing work, minimize downtime, long term viability, cost, quality of print, ease of use, and flexibility.

The next step was to get feedback as to how important one objective was in comparison to another. They were given a scale with two objectives and were asked to choose a preference. For example,

**Cost** 9 8 7 6 5 4 3 2 1 **EVEN** 1 2 3 4 5 6 7 8 9 **Ease of use**

Twenty-one comparisons were made. Each objective was compared to each other. After weighing each of the objectives, they were prioritized as follows,

- 1- Quality of print
- 2- Long term viability
- 3- Minimize downtime
- 4- Ease of use
- 5- Flexibility
- 6- Fit with existing work
- 7- Cost

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<sup>3</sup> Expert Choice Inc. Website.

Both were then asked to weigh the two options (rebuild vs. purchase a press) with respect to each objective. For example,

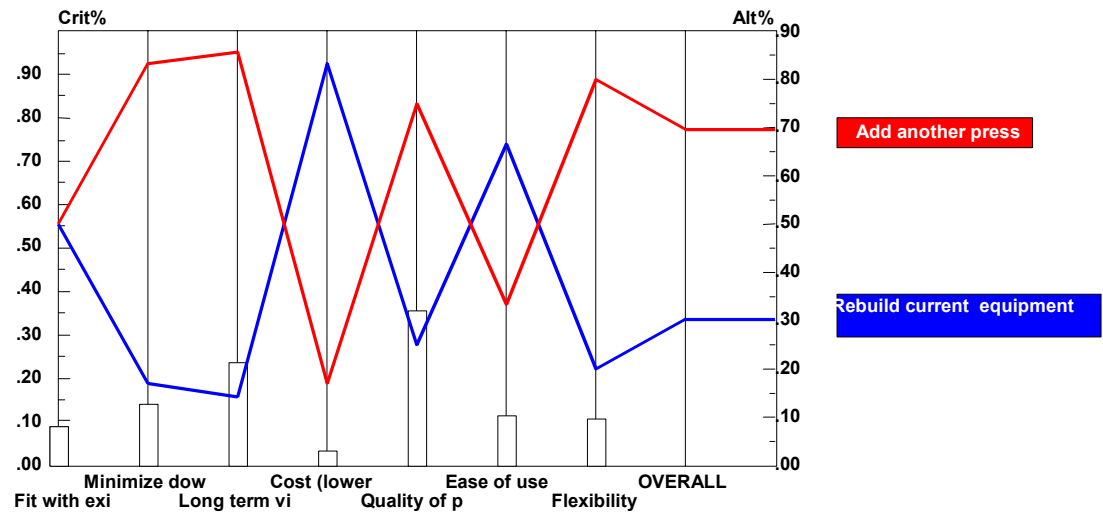
With respect to *quality of print*, compare the relative preference

**Rebuild** 9 8 7 6 5 4 3 2 1 **EVEN** 1 2 3 4 5 6 7 8 9 **Purchase Press**

All of the data was entered into the Expert Choice software program for analysis. The results, as can be seen on the next page, echo the decision the plant made to go forward with examining new presses as opposed to rebuilding existing iron. The downtime required to rebuild the press and the uncertainty around the long term viability of a rebuilt press outweighed the lower cost and ease of operator use associated with that option.

The plant was at this very point in their decision process when I began this project. They had established that buying an additional press was the best course of action. It is the purpose of the rest of this analysis to make a specific recommendation using the same objectives and process that was used to echo the plant's decision to purchase a new press.

**Performance Sensitivity for nodes below: Goal: Determine the best way to expand Mendota's press capacity**



**Objectives Full**

Fit with	Fit with existing work
Minimize	Minimize downtime
Long term	Long term viability
Cost (lower	Cost (lower being better)
Quality of p	Quality of print
Ease of use	Ease of use (operator perspective)
Flexibilit	Flexibility

**Alternatives Full**

Rebuild curr	Rebuild current equipment
Add another	Add another press

Purchasing a heatset web printing press for magazine production requires very serious analysis. The investment can range from about \$6,000,000.00 to in excess of \$10,000,000.00. The Mendota plant is currently considering several presses within this price range. It also requires a host of configuration, materials, maintenance, training, pre and post press considerations. As one of the largest printing companies in the world, Donnelley has an excellent relationship with the foremost manufacturer of heatset web printing equipment, Heidelberg –Harris. Within Donnelley’s magazine business unit, all web presses are Heidelbergs. The presses being considered by Mendota are also all Heidelbergs, each has very different features and associated costs. The presses being considered are; a used M-1000, a used M-1000 Duplex, a new M-600 , a new M-1000 and a new M-2000. Each press could meet the division’s basic requirements. The analysis will endeavor to identify which press *best* fits.

In the Expert Choice model, the different presses were entered as the alternatives. Again, I took the prioritized objectives of the division (same priorities as in the new vs. rebuild decision) and collected the relative preferences of the pressroom supervisor between each press with regard to each objective. The preferences were derived from a series of weighted comparisons such as,

With regard to *ease of use* please choose

**M600** 9 8 7 6 5 4 3 2 1 **EVEN** 1 2 3 4 5 6 7 8 9 **M1000**

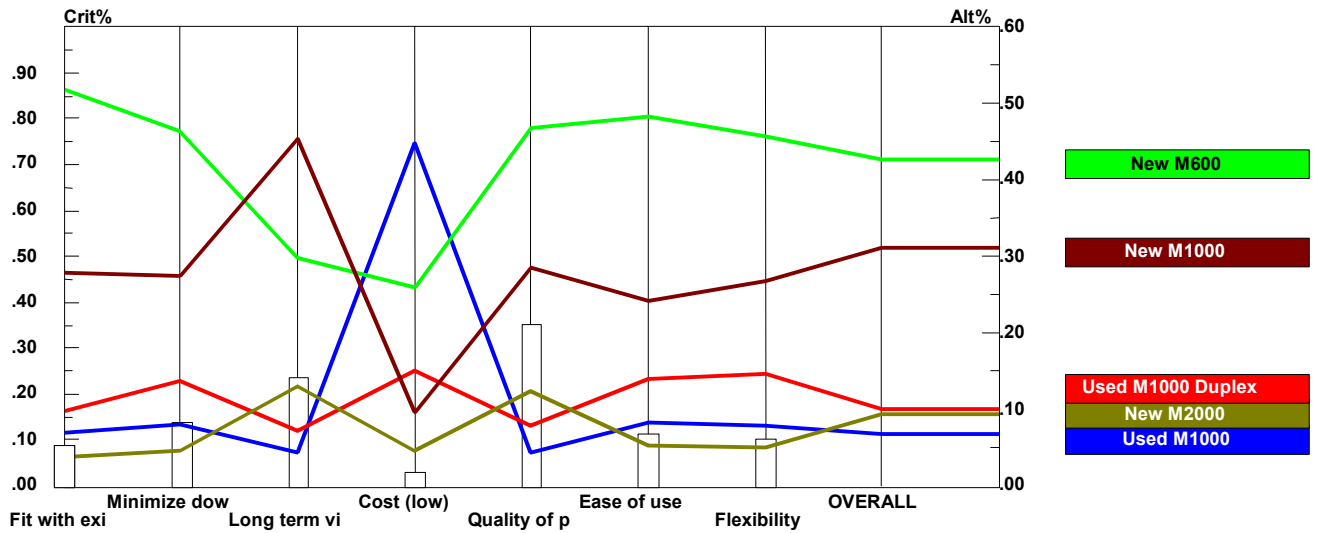


With regard to *cost* please choose

**M1000** 9 8 7 6 5 4 3 2 1 EVEN 1 2 3 4 5 6 7 8 9 **M2000**

Seventy such comparisons were made, rating the preference of each of the seven alternative presses with regard to the objectives. The data was entered into Expert Choice. I was impressed by how low the inconsistency numbers were. Steve Gargani, the pressroom supervisor was almost totally consistent in his preferences throughout the seventy comparisons. As can be seen on the following page, the M600 rose to the top by a substantial margin. The cost of the press (\$6,800,000.00) coupled with its ease of use, quality of print and need for minimal downtime makes this press a clear choice for Mendota.

**Performance Sensitivity for nodes below: Goal: Choose the right press to expand Mendota's capacity**



**Objectives Full Names**

Fit with exi	Fit with existing work
Minimize dow	Minimize downtime
Long term vi	Long term viability
Cost (low)	Cost (low)
Quality of p	Quality of print
Ease of use	Ease of use (operator perspective)
Flexibility	Flexibility

**Alternatives Full Names**

Used M1000	Used M1000
Used M1000 D	Used M1000 Duplex
New M600	New M600
New M1000	New M1000
New M2000	New M2000

RR Donnelley & Sons is looking to the SPS division to be one of the significant growth engines that makes the company's stock price more attractive. The Mendota plant is currently at capacity for two reasons. The first is the great amount of available titles published that fit within Mendota's market niche. Many trade associations and special interest publishers have total circulations in this range. The second and more important reason is how well the plant serves its customers. Service and quality like that from the Mendota plant is second to none. The division's ability to maintain the levels of service that it expects of itself and that its customers expect is going to be impacted negatively if the division continues to operate at its current "at capacity" status. A very good way to infuse the company with new sales and to maintain the loyal base of accounts within the Mendota plant is to install a M600 press. Like the voice in the cornfields, "If you build it, they will come"!

### **Selected Bibliography**

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Expert Choice Inc. Website

Heidleberg Website

Expert Choice Software