

**JD GRAY ASSOCIATES
MANUFACTURING PRODUCTIVITY CONSULTANTS**

Industrial Engineering Proposal

**Semi-Automated Manufacturing System
Paced Assembly With Robotics**

Phase One — Indexing Paced Conveyor System

- Phase One allows an upfront initial gain of 25%-40% before any automation takes place.
- The time-balanced Phase One System prepares for Phase Two Semi-Automation by eliminating future time bottlenecks for operations not to be mechanized.
- Our staff has time and motion, performance leveling, and split station methodology know-how developed over the processing of thousands of assemblies for the paced platform technique.

SELECT DESIRED SERVICE AND CALCULATE YOUR COST

Service Activity	Fee Per Family	Number of Families	Service & Fee Selection
Work Measurement (G)	\$1,800		\$
Line Balance (G)	\$1,200		\$
Final Equipment Specification/Quote (G)	\$ 900		\$
Component Part Containerization	\$1,200		\$
Work Station Layout (G)	\$1,800		\$
Work Station Visual Aids	\$1,500		\$
Work Station Fixtures/Tooling	\$ 600		\$
Work Station Bill of Material	\$ 600		\$
Work Station Instructions	\$ 900		\$
Group Leader Training (G)	\$ 600		\$
Paced System Set-up	\$ 900		\$
Paced System Installation (G)	\$1,500		\$
Paced System Follow-up (G)	\$1,500		\$
Industrial Engineering Fixed Price	\$15,000		\$
(G) Required for Guaranteed First-Year Payoff	(\$9,300)		\$
Expenses - Travel and Per Diem for Two Weeks Onsite Data Collection	\$3,000 (USA)		\$
Expenses – Travel and Per Diem for Two Weeks Onsite System Installation	\$3,000 (USA)		\$
Industrial Engineering and Expenses	\$21,000		\$

PO BOX 63 SUMMIT HILL, PA 18250
PH 484-274-2851 FAX 570-805-4155

jdgravassociates@yahoo.com www.jdgrav-associates.com

**JD GRAY ASSOCIATES
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Agreement

- JD Gray Associates shall submit detailed service fee invoices to Company. Said invoices shall contain a detailed itemization of the date(s) on which services were provided and a description of tasks completed during the period with respect to which the invoice is submitted. On-site travel expenses to billed separately.
- Each compensation payment made by Company to JD Gray Associates shall be within 10 days.
- Company Property – JD Gray Associates agrees that any confidential information furnished by Company to JD Gray Associates or acquired by JD Gray Associates during the period in which JD Gray Associates is retained by Company is and shall remain the sole and exclusive property of Company and shall be placed in the hands of Company by JD Gray Associates upon termination of this Agreement including any copies made thereof.
- Confidentiality – JD Gray Associates agrees that at no time, either during or after the period in which JD Gray Associates is retained by Company shall JD Gray Associates utilize or disclose to any third party any of the confidential information of Company.

Date: _____

COMPANY OFFICIAL _____

Purchase Order Number: _____

Contract Terms:

Payment Schedule

- | | |
|--|----|
| 1. 20% upon approval, Purchase Order
and Irrevocable Letter of Credit | \$ |
| 2. 20% end of 1 st month | \$ |
| 3. 20% end of 2 nd month | \$ |
| 4. 20% end of 3 rd month | \$ |
| 5. 20% upon implementation | \$ |

Phase Two — Semi-Automated Work Cells

- Phase Two includes custom robot design and fabrication, programming, and electrical and mechanical installation.
- The shot pin platform-locating device under the cell to be mechanized permits gradual Phase Two semi-automation and cost. Product mechanization leads to an additional 30%-35% savings.

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