

The Lincoln Electric Company

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THE LINCOLN ELECTRIC COMPANY¹

We will base our human resources systems on our proven principles reflective of our core values and our commitment to attract, reward, develop and motivate high quality people. They will reflect the global scope of our business while demonstrating responsibility and flexibility with respect to cultural diversity, and statutory and regional business realities.

Lincoln Electric's mission statement

Today, the Lincoln Electric Company, under the leadership of Christopher Mapes, is the world leader in the design, development, and manufacture of arc-welding products, robotic arc-welding systems, and plasma and oxyfuel cutting equipment. The company also has a leading global position in the brazing and soldering alloys market. Headquartered in Cleveland, Ohio, Lincoln has at least 47 manufacturing locations, including operations, manufacturing alliances, and joint ventures in 19 countries and a worldwide network of distributors and sales offices covering more than 160 countries, including China, India, and Brazil. The company's U.S. market share (for arc-welding products) is estimated to be around 40%.¹

The Lincoln incentive management plan has been well known for many years. Many college management texts make reference to the Lincoln plan as a model for achieving higher worker productivity. Certainly, the firm has been successful according to the usual measures. For example, the stock price has doubled in the last five years and return on invested capital has been over 16% since 2010. Further, the firm has also been successful in positioning itself as the industry's most innovative company. As an illustration, in 2016, the company was granted 227 patents and 34% of its sales came from products that were launched in the last five years.²

¹Source: This case was originally prepared by Arthur Sharplin. It is adapted here by R. S. Schuler and Steve Werner and used with the permission of the authors.

James F. Lincoln died in 1965 and there was some concern, even among employees, that the management system would fall into disarray, that profits would decline, and that year-end bonuses might be discontinued. Quite the contrary, since Lincoln's death, the company appears as strong as ever. Each year, except in recession years, the company has seen high profits and bonuses. Employee turnover is almost nonexistent except for retirements. Lincoln's market share is stable. The historically high stock dividends continue. Today, sales exceed \$2.2 billion, employees number about 9,000, and income has grown on average more than 12% over the last eight years.

LINCOLN ELECTRIC'S HISTORY AND CULTURE

In 1895, after being "frozen out" of the depression-ravaged Elliott-Lincoln Company, a maker of Lincoln-designed electric motors, John C. Lincoln, took out his second patent and began to manufacture his improved motor. He opened his new business, unincorporated, with \$200 he had earned redesigning a motor for young Herbert Henry Dow, who later founded the Dow Chemical Company.

Started during an economic depression and cursed by a major fire after only one year in business, the company grew, but hardly prospered, through its first quarter century. In 1906, John C. Lincoln incorporated the business and moved from his one-room, fourth-floor factory to a new three-story building he erected in East Cleveland. He expanded his workforce to 30, and sales grew to over \$50,000 a year. John preferred being an engineer and inventor rather than a manager, though, and it was left to another Lincoln, James F. Lincoln, to manage the company through its years of success. In 1907, after a bout with typhoid fever forced him from Ohio State University in his senior year, James F. Lincoln, John's younger brother, joined the fledgling company. In 1914, he became the active head of the firm, with the titles of General Manager and Vice President. John remained president of the company for some years, but became more involved in other business ventures and in his work as an inventor.

One of James Lincoln's early actions was to ask the employees to elect representatives to a committee that would advise him on company operations. This Advisory Board has met with the Chief Executive Officer every two weeks since that time. This was only the first of a series of innovative personnel policies that have, over the years, distinguished Lincoln Electric from its competitors.

The first year the Advisory Board was in existence, working hours were reduced from 55 per week, then standard, to 50 hours a week. In 1915, the company gave each employee a paid-up life insurance policy. A welding school, which continues today, was begun in 1917. In 1918, an employee bonus plan was attempted. It was not continued, but the idea was to resurface later.

The Lincoln Electric Employees Association was formed in 1919 to provide health benefits and social activities. This organization continues today and has assumed several additional functions over the years. In 1923, a piecework pay system was in effect, employees got two weeks of paid vacation each year, and wages were adjusted for changes in the Consumer Price Index. Approximately 30% of the common stock was set aside for key employees in 1914. A stock purchase plan for all employees was begun in 1925.

The board of directors voted to start a suggestion system in 1929. The program is still in effect, but cash awards, a part of the early program, were discontinued several years ago. Now suggestions are rewarded by "additional points" that affect year-end bonuses.

The legendary Lincoln bonus plan was proposed by the Advisory Board and accepted on a trial basis in 1934. The first annual bonus amounted to about 25% of wages. There has been a bonus every year since then. The bonus plan has been a cornerstone of the Lincoln management system, and recent bonuses have approximated annual wages.

By 1944, Lincoln employees enjoyed a pension plan, a policy of promotion from within, and continuous employment. Base pay rates were determined by formal job evaluation and a merit rating system was in effect.

In the prologue of James F. Lincoln's last book, Charles G. Herbruck writes regarding the foregoing personnel innovations:

They were not to buy good behavior. They were not efforts to increase profits. They were not antidotes to labor difficulties. They did not constitute a "do-gooder" program. They were an expression of mutual respect for each person's importance to the job to be done. All of them reflect the leadership of James Lincoln, under whom they were nurtured and propagated.

During World War II, Lincoln prospered as never before. By the start of the war, the company was the world's largest manufacturer of arc-welding products. Sales of about \$4,000,000 in 1934 grew to \$24,000,000 by 1941. Productivity per employee more than doubled during the same period. The Navy's Price Review Board challenged the high profits. And the Internal Revenue Service questioned the tax deductibility of employee bonuses, arguing they were not "ordinary and necessary" costs of doing business. But the forceful and articulate James Lincoln was able to overcome the objections.

Certainly since 1935, and probably for several years before that, Lincoln's productivity has been well above the average for similar companies. The company claims levels of productivity more than twice those for other manufacturers from 1945 onward. Information available from outside sources tends to support these claims.

Company Philosophy

James F. Lincoln was the son of a Congregational minister, and Christian principles were at the center of his business philosophy. The confidence that he had in the efficacy of Christ's teachings is illustrated by the following remark taken from one of his books:

The Christian ethic should control our acts. If it did control our acts, the savings in cost of distribution would be tremendous. Advertising would be a contact of the expert consultant with the customer, in order to give the customer the best product available when all of the customer's needs are considered. Competition then would be in improving the quality of products and increasing efficiency in producing and distributing them; not in deception, as is now too customary. Pricing would reflect efficiency of production; it would not be a selling dodge that the customer may be sorry he accepted. It would be proper for all concerned and rewarding for the ability used in producing the product.

There is no indication that Lincoln attempted to evangelize his employees or customers—or the general public, for that matter. Neither the former chairman of the board and chief executive, George Willis, nor his predecessor, Donald F. Hastings, mentioned the Christian gospel in their speeches and interviews. The company motto, “The actual is limited, the possible is immense,” is prominently displayed, but there is no display of religious slogans, and there is no company chapel.

Attitude Toward Debt and Finance

James F. Lincoln felt strongly that financing for company growth should come from within the company—through initial cash investment by the founders, through retention of earnings, and through stock purchases by those who work in the business. He saw the following advantages of this approach:

1. Ownership of stock by employees strengthens team spirit. “If they are mutually anxious to make it succeed, the future of the company is bright.”
2. Ownership of stock provides individual incentive because employees feel that they will benefit from company profitability.
3. “Ownership is educational.” Owner-employees “will know how profits are made and lost; how success is won and lost. There are few socialists in the list of stockholders of the nation’s industries.”
4. “Capital available from within controls expansion.” Unwarranted expansion would not occur, Lincoln believed, under his financing plan.
5. “The greatest advantage would be the development of the individual worker. Under the incentive of ownership, he would become a greater man.”
6. “Stock ownership is one of the steps that can be taken that will make the worker feel that there is less of a gulf between him and the boss. Stock ownership will help the worker to recognize his responsibility in the game and the importance of victory.”

Until 1980, Lincoln Electric borrowed no money. Even now, the company’s liabilities consist mainly of accounts payable and short-term accruals. The unusual pricing policy at Lincoln was succinctly stated by Willis: “At all times price on the basis of cost and at all times keep pressure on our cost.” This policy resulted in the price for the most popular welding electrode then in use going from 16 cents a pound in 1929 to 4.7 cents in 1938. According to Dr. C. Jackson Grayson of the American Productivity Center in Houston, Texas, Lincoln’s prices increased only one-fifth as fast as the Consumer Price Index from 1934 to about 1970. This resulted in a welding products market in which Lincoln became the undisputed price leader for the products it manufactured. Not even the major Japanese manufacturers, such as Nippon Steel for welding electrodes and Saka Transformer for welding machines, were able to penetrate this market.

Substantial cash balances accumulated each year preparatory to paying the year-end bonuses. Modest success with international expansion put some pressure on what was basically a conservative financial philosophy. However, the company borrowed money in 1992 to pay for employee bonuses in the United States. In 1995, Lincoln issued \$119 million of new stock. This sale created greater public ownership. As a consequence, Don Hastings, then CEO, remarked that the company must now consider not only the employees but also its shareholders, customers, and suppliers.

Policies that Shaped the Culture and Business

It is easy to believe that the reason for Lincoln's success is the excellent attitude of the employees and their willingness to work harder, faster, and more intelligently than other industrial workers. However, Richard Sabo, former assistant to the chief executive officer, suggests that appropriate credit be given to Lincoln executives, whom he credits with carrying out the following policies that have shaped Lincoln's business and culture:

1. Management has limited research, development, and manufacturing to a standard product line designed to meet the major needs of the welding industry.
2. New products must be reviewed by manufacturing and all producing costs verified before being approved by management.
3. Purchasing is challenged not only to procure materials at the lowest cost, but also to work closely with engineering and manufacturing to ensure that the latest innovations are implemented.
4. Manufacturing supervision and all personnel are held accountable for reduction of scrap, energy conservation, and maintenance of product quality.
5. Production control, material handling, and methods engineering are closely supervised by top management.

6. Management has made cost reduction a way of life at Lincoln, and definite programs are established in many areas, including traffic and shipping, where tremendous savings can result.
7. Management has established a sales department that is technically trained to reduce customer welding costs. This sales approach and other real customer services have eliminated nonessential frills and resulted in long-term benefits to all concerned.
8. Management has encouraged education, technical publishing, and long-range programs that have resulted in industry growth, thereby ensuring market potential for the Lincoln Electric Company.

Sabo writes, “It is in a very real sense a personal and group experience in faith—a belief that together we can achieve results which alone would not be possible. It is not a perfect system and it is not easy. It requires tremendous dedication and hard work. However, it does work and the results are worth the effort.”

STAKEHOLDERS

Lincoln Electric differs from most other companies in the importance it assigns to each of the groups it serves. Hastings identified these groups, in the order of priority ascribed to them, as: (1) customers, (2) employees, and (3) stockholders.

Customers

James Lincoln saw customers’ needs as the *raison d’être* for every company. He wrote, “When any company has achieved success so that it is attractive as an investment, all money usually needed for expansion is supplied by the customer in retained earnings. It is obvious that the customer’s interests, not the stockholder’s, should come first.” In 1947 he said, “Care should be taken . . . not to rivet attention on

profit. Between ‘How much do I get?’ and ‘How do I make this better, cheaper, more useful?’ the difference is fundamental and decisive.” Willis, too, ranked the customer as management’s most important constituency. This is reflected in Lincoln’s policy to “at all times price on the basis of cost and at all times keep pressure on our cost . . .” Lincoln’s goal, often stated, is “to build a better and better product at a lower and lower price.” James Lincoln said, “It is obvious that the customer’s interests should be the first goal of industry.”

This priority, and the priority given to other groups, is reflected in the Vision, Missions, and Values Statements and the set of goals shown in Exhibit LE.1. Certainly the firm’s customers have fared well over the years. Lincoln prices for welding machines and welding electrodes are acknowledged to be the lowest in the marketplace. Quality has consistently been high. The cost of field failures for Lincoln products was recently determined to be a remarkable 0.04% of revenues. The Fleetweld electrodes and the SA-200 welders have been the standard in the pipeline and refinery construction industry, where price is hardly a criterion, for decades. A Lincoln distributor in Monroe, Louisiana, says that he has sold several hundred of the popular AC-225 welders, which are warranted for one year, but has never handled a warranty claim.

Exhibit LE.1: Vision, Missions, Values, and Goals of the Lincoln Electric Company

Vision

We are a global manufacturer and the market leader of the highest quality welding, cutting, and joining products. Our enduring passion for the development and application of our technologies allows us to create complete solutions that make our customers more productive and successful. We will distinguish ourselves through an unwavering commitment to our employees and a relentless drive to maximize shareholder value.

Missions

Total Solutions. We will be driven by customer satisfaction and become known as the supplier of choice in our industries. We will strive to exceed customer expectations. We will be a solutions company, not simply a supplier of equipment or consumables.

Expertise. We will be differentiated from our competitors by technology, quality, applications engineering, sales and marketing expertise.

Global. We will be global, with over 40% of our total sales coming from outside North America. We will have cost competitive manufacturing facilities located worldwide, where appropriate, to best serve our customers' needs.

Principles. We will base our human resources systems on our proven principles reflective of our core values and our commitment to attract, reward, develop and motivate high quality people. They will reflect the global scope of our business while demonstrating responsibility and flexibility with respect to cultural diversity, and statutory and regional business realities.

Stakeholders. Our emphasis on continuous improvement in all aspects of our business will enable us to reward our shareholders and employees.

Responsibility. We will continually strive to be environmentally responsible and to support the health and safety of our employees, customers, and neighbors. We support the communities where we operate and the industries in which we participate.

Values Statement

Our Core Values. As a responsible and successful company in partnership with our customers, distributors, employees, shareholders, suppliers, and our host communities, we pledge ourselves to conduct our business in accordance with these core values:

- Respond to our customers' needs and expectations with quality, integrity, and value.
- Recognize people as our most valuable asset.
- Maintain and expand the Lincoln Incentive Management philosophy.
- Practice prudent and responsible financial management.
- Strive continually to be environmentally responsible.
- Support communities where we operate and industries in which we participate.

Goals:

Respond to Our Customers' Needs and Expectations with Quality, Integrity, and Value

- Assure value through innovative, functional, and reliable products and services in all the markets we serve around the world.
- Exceed global standards for products and service quality.
- Provide our customers with personalized technical support that helps them achieve improvements in cost reduction, productivity, and quality.
- Lead the industry in aggressive application of advanced technology to meet customer requirements.

- Invest constantly in creative research and development dedicated to maintaining our position of market leadership.
- Achieve and maintain the leading market share position in our major markets around the world.

Recognize People as Our Most Valuable Asset

- Maintain a safe, clean, and healthy environment for our employees.
 - Promote employee training, education, and development, and broaden skills through multidepartmental and international assignments.
 - Maintain an affirmative action program and provide all employees with opportunities for advancement commensurate with their abilities and performance regardless of race, religion, national origin, sex, age, or disability.
 - Maintain an environment that fosters ethical behavior, mutual trust, equal opportunity, open communication, personal growth, and creativity.
 - Demand integrity, discipline, and professional conduct from our employees in every aspect of our business and conduct our operations ethically and in accordance with the law.
 - Reward employees through recognition, “pay for performance,” and by sharing our profits with incentive bonus compensation based on extraordinary achievement.
-

Employees

If fulfilling customer needs is the desired goal of business, then employee performance and productivity are the means by which this goal can best be achieved. The Lincoln attitude toward employees, reflected in the following comments by James Lincoln, is credited by many with creating the success the company has experienced:

He is just as eager as any manager is to be part of a team that is properly organized and working for the advancement of our economy. He has no desire to make profits for those who do not hold up their end in production, as is true of absentee stockholders and inactive people in the company.

If money is to be used as an incentive, the program must provide that what is paid to the worker is what he has earned. The earnings of each must be in accordance with accomplishment.

Status is of great importance in all human relationships. The greatest incentive that money has, usually, is that it is a symbol of success. The resulting status is the real incentive. Money alone can be an incentive to the miser only.

There must be complete honesty and understanding between the hourly worker and management if high efficiency is to be obtained.

These beliefs and assumptions have helped shape Lincoln's human resource objectives. These are shown in Exhibit LE.2. The firm's employees have also fared well over the years. Not the least of their benefits, of course, are the year-end bonuses, which effectively double an already average compensation level. The foregoing description of the personnel program and the comments in Exhibit LE.4 further illustrate the desirability of a Lincoln job.

Exhibit LE.2: Lincoln Electric's HR Objectives

HR Objectives of Lincoln Electric

- To maintain and expand the Lincoln Incentive Management Philosophy
 - To recognize people as [the company's] most valuable asset
 - To promote training, education, and development that broaden employee skills
 - To maintain an affirmative action program and provide all employees with opportunities for advancement commensurate with their abilities and performance regardless of race, religion, national origin, sex, age, or disability
-

Stockholders

Stockholders are given last priority at Lincoln. This is a continuation of James Lincoln's philosophy:

“The last group to be considered is the stockholders who own stock because they think it will be more profitable than investing money in any other way.” Concerning division of the largess produced by incentive management, he wrote, “The absentee stockholder also will get his share, even if undeserved, out of the greatly increased profit that the efficiency produces.”

While stockholders were relegated to a lower status by James F. Lincoln, they have done very well indeed since the 1995 stock issue. Even in the last five years, the price of the company's common shares has more than doubled. Risk associated with Lincoln stock, a major determinant of stock value, is minimal because of the small amount of debt in the capital structure, an extremely stable earnings record, and because of Lincoln's practice of purchasing the restricted stock whenever employees offer it for sale. The stock now trades freely on the NASDAQ stock exchange (symbol: LECO).

LINCOLN'S BUSINESS

Arc welding has been the standard joining method in shipbuilding for decades. It is the predominant way of connecting steel in the construction industry. Most industrial plants have their own welding shops for maintenance and construction. Manufacturers of tractors and all kinds of heavy equipment use arc welding extensively in the manufacturing process. Many hobbyists have their own welding machines and use them for making metal items such as patio furniture and barbecue pits. The popularity of welded sculpture as an art form is growing.

While advances in welding technology have been frequent, arc-welding products, in the main, have hardly changed. Lincoln's Innershield process is a notable exception. This process, described later, lowers welding cost and improves quality and speed in many applications.

The company's share of the U.S. arc-welding products market appears to have been about 40% for many years. The welding products market has grown somewhat faster than the level of industry in general. The market is highly price competitive, with variations in prices of standard items normally amounting to only a percentage point or two. Lincoln's products are sold directly by its engineering-oriented sales force and indirectly through its distributor organization.

The other major welding process, flame welding, has not been competitive with arc welding since the 1930s. However, plasma arc welding, a newer process that uses a conducting stream of superheated gas (plasma) to confine the welding current to a small area, has made some inroads, especially in metal tubing manufacturing, in recent years. Major advances in technology that will produce an alternative superior to arc welding in the next decade or so appear unlikely, although the continued refinement of automation and robots is very likely. Nonetheless, it seems likely that changes in the machines and techniques used in arc welding will be evolutionary rather than revolutionary.

It is also reasonable to observe that Lincoln Electric's business objectives, shown in Exhibit LE.3, are likely to change in an evolutionary rather than a revolutionary way.

Exhibit LE.3: Lincoln Electric's Business Objectives

Business Objectives of Lincoln Electric

- To be a global leader in price and quality and serve the customers first
- To achieve and retain global leadership as a total quality supplier of superior products and services
- To respond to our customers with quality, integrity, and value
- To practice prudent and responsible financial management
- To strive continually to be environmentally responsible

To support communities where we operate and industries in which we participate
To maintain an environment that fosters ethical behavior, mutual trust, equal opportunity, open communication, personal growth, and creativity
To promote feedback
To demand integrity, discipline, and professional conduct from our employees in every aspect of our business and conduct operations ethically and in accordance with the law
To reward employees through recognition, pay for performance, and by sharing profits with incentive bonus compensation based on extraordinary achievement as a means of motivation
To promote dynamic teamwork and innovation

Products

The company is primarily engaged in the manufacture and sale of arc-welding products: electric welding machines and metal electrodes. Lincoln also produces electric motors ranging from 0.5 horsepower to 200 horsepower. Motors constitute about 8–10% of total sales. Several million dollars have recently been invested in automated equipment that will double Lincoln's manufacturing capacity for 0.5- to 20-horsepower electric motors. The electric welding machines, some consisting of a transformer or motor and generator arrangement powered by commercial electricity, and others consisting of an internal combustion engine and generator, are designed to produce 30 to 1,500 amperes of electrical power. This electrical current is used to melt a consumable metal electrode with the molten metal being transferred in superhot spray to the metal joint being welded. Very high temperatures and hot sparks are produced, and operators usually must wear special eye and face protection and leather gloves, often along with leather aprons and sleeves. Lincoln and its competitors now market a wide range of general-purpose and specialty electrodes for welding mild steel, aluminum, cast iron, and stainless and special steels. Most of these electrodes are designed to meet the standards of the American Welding Society, a trade association. They are, thus, essentially the same in size and composition from one manufacturer to

another. Every electrode manufacturer has a limited number of unique products, but these typically constitute only a small percentage of total sales.

Welding electrodes are of two basic types: coated stick electrodes and coiled wire. Coated “stick” electrodes, usually 14 inches long and smaller than a pencil in diameter, are held in a special insulated holder by the operator, who must manipulate the electrode to maintain a proper arc width and pattern of deposition of the metal being transferred. Stick electrodes are packaged in 6- to 50-pound boxes.

Thin coiled wire is designed to be fed continuously to the welding arc through a gun held by the operator or positioned by automatic positioning equipment. The wire is packaged in coils, reels, and drums weighing from 14 to 1,000 pounds and may be solid or flux cored.

For more information on products, visit the website at <http://www.lincolnelectric.com>.

Manufacturing Process

The main plant is in Euclid, Ohio, a suburb on Cleveland’s east side. There are no warehouses. Materials flow from the half-mile long dock on the north side of the plant through the production lines to a very limited storage and loading area on the south side.

Materials used on each workstation are stored as close as possible to the workstation. The administrative offices, near the center of the factory, are entirely functional. A corridor below the main level provides access to the factory floor from the main entrance near the center of the plant. *Fortune* declared the Euclid facility one of America’s ten best-managed factories.

Another Lincoln plant, in Mentor, Ohio, houses some of the electrode production operations, which were moved from the main plant. Electrode manufacturing is highly capital intensive. Metal rods purchased from steel producers are drawn down to smaller diameters, cut to length, and coated with pressed-powder flux (for stick electrodes) or plated with copper (for conductivity) and put into coils or

spools for wire. Lincoln's Innershield wire is hollow and filled with a material similar to that used to coat stick electrodes. As mentioned earlier, this represented a major innovation in welding technology when it was introduced. The company is highly secretive about its electrode production processes, and outsiders are not given access to the details of those processes.

Lincoln welding machines are made on a series of assembly lines. Gasoline and diesel engines are purchased partially assembled, but practically all other components are made from basic industrial products—for example, steel bars and sheets and bar copper conductor wire.

Individual components, such as gasoline tanks for engine-driven welders and steel shafts for motors and generators, are made by numerous small “factories within a factory.” The shaft for a certain generator, for example, is made from raw steel bar by one operator who uses five large machines, all running continuously. A saw cuts the bar to length, a digital lathe machines different sections to varying diameters, a special mining machine cuts a slot for the keyway, and so forth until a finished shaft is produced. The operator moves the shafts from machine to machine and makes necessary adjustments. Another operator punches, shapes, and paints sheet metal cowling parts. One assembles steel laminations onto a rotor shaft, then winds, insulates, and tests the rotors. Finished components are moved by crane operators to the nearby assembly lines. Many of these processes continue to be automated to enhance plant efficiency. To further enhance efficiencies across all areas of the company, Lincoln Electric launched its Lean and Six Sigma programs. Lincoln has completed hundreds of Six Sigma and Lean projects in its U.S. and Canadian facilities, resulting in a savings of more than \$10 million. Among their employees, they have trained more than 160 Red Belts, 70 Black Belts, and one Master Black Belt. To date, Six Sigma initiatives have been rolled out in the United States, Canada, Mexico, and Asia.

Worker Performance and Attitudes

Exceptional worker performance at Lincoln is a matter of record. The typical Lincoln employee earns about twice as much as other factory workers in the Cleveland area. Yet the company's labor cost per sales dollar is well below industry averages. Worker turnover is practically nonexistent except for retirements and departures by new employees. Turnover is generally less than 4% for employees who have been on the jobs for at least 18 months.³

Sales per Lincoln factory employee currently exceed \$150,000. An observer at the factory quickly sees why this figure is so high. Each worker is proceeding busily and thoughtfully about the task at hand. There is no idle chatter. Most workers take no coffee breaks. Many operate several machines and make a substantial component unaided. The supervisors are busy with planning and record-keeping duties and hardly glance at the people they "supervise." The manufacturing procedures appear efficient: no unnecessary steps, no wasted motions, no wasted materials. Finished components move smoothly to subsequent workstations. Exhibit LE.4 includes summaries of interviews with employees.

Exhibit LE.4: Employee Interviews

Employee Interviews

Following are typical questions and answers from employee interviews. In order to maintain each employee's personal privacy, fictitious names have been given to the interviewees.

Interview 1

Betty Stewart, a 52-year-old high school graduate who had been with Lincoln 13 years, was working as a cost accounting clerk at the time of the interview.

Q: What jobs have you held here beside the one you have now?

A: I worked in payroll for awhile, and then this job came open and I took it.

Q: How was your performance rating last year?

A: It was around 100 points, but I lost some points for attendance for my back problem.

Q: How did you get your job at Lincoln?

A: I was bored silly where I was working, and I had heard that Lincoln kept their people busy. So I applied and got the job the next day.

Q: Do you think you make more money than similar workers in Cleveland?

A: I know I do.

Q: What have you done with your money?

A: We have purchased a better home. Also, my son is going to the University of Chicago, which costs \$13,000 a year. I buy the Lincoln stock, which is offered each year, and I have a little bit of gold.

Q: Have you ever visited with any of the senior executives, like Mr. Willis or Mr. Hastings?

A: I have known Mr. Willis for a long time.

Q: Does he call you by name?

A: Yes. In fact, he was very instrumental in my going to the doctor that I am going to with my back. He knows the director of the clinic.

Q: Do you know Mr. Hastings?

A: I know him to speak to him, and he always speaks, always. But I have known Mr. Willis for a good many years. When I did Plant Two accounting I did not understand how the plant operated. Of course, you are not allowed in Plant Two, because that's the electrode division. I told my boss about the problem one day, and the next thing I knew Mr. Willis came by and said, "Come on, Betty, we're going to Plant Two." He spent an hour and a half showing me the plant.

Q: Do you think Lincoln employees produce more than those in other companies?

A: I think with the incentive program the way that it is, if you want to work and achieve, then you will do it. If you don't want to work and achieve, you will not do it no matter where you are. Just because you are merit rated and have a bonus, if you really don't want to work hard, then you're not going to. You will accept your 90 points or 92 or 85 because even with that you make more money than people on the outside.

Q: Do you think Lincoln employees will ever join a union?

A: I don't know why they would.

Q: So, you say that money is a very major advantage?

A: Money is a major advantage, but it's not just the money. It's the fact that having the incentive, you do wish to work a little harder. I'm sure that there are a lot of men here who, if they worked some other place, would not work as hard as they do here. Not that they are overworked—I don't mean that—but I'm sure they wouldn't push.

Q: Is there anything that you would like to add?

A: I do like working here. I am better off being pushed mentally. In another company if you pushed too hard you would feel a little bit of pressure, and someone might say, "Hey, slow down, don't try so hard." But here you are encouraged, not discouraged.

Interview 2

Ed Sanderson, a 23-year-old high school graduate who had been with Lincoln four years, was a machine operator in the electrode division at the time of the interview.

Q: How did you happen to get this job?

A: My wife was pregnant, and I was making three bucks an hour and one day I came here and applied. That was it. I kept calling to let them know I was still interested.

Q: Have you bought your Lincoln stock this year?

A: No, I haven't bought any Lincoln stock yet.

Q: Do you get the feeling that the executives here are pretty well thought of?

A: I think they are. To get where they are today, they had to really work.

Q: Wouldn't that be true anywhere?

A: I think more so here because seniority really doesn't mean anything. If you work with a guy who has 20 years here, and you have two months and you're doing a better job, you will get advanced before he will.

Q: Are you paid on a piece-rate basis?

A: My gang does. There are nine of us who make the bare electrode, and the whole group gets paid based on how much electrodes we make.

Q: Do you think you work harder than workers in other factories in the Cleveland area?

A: Yes, I would say I probably work harder.

Q: Do you think it hurts anybody?

A: No, a little hard work never hurts anybody.

Q: If you could choose, do you think you would be as happy earning a little less money and being able to slow down a little?

A: No, it doesn't bother me. If it bothered me, I wouldn't do it.

Q: Why do you think Lincoln employees produce more than workers in other plants?

A: That's the way the company is set up. The more you put out, the more you're going to make.

Q: Do you think it's the piece rate and bonus together?

A: I don't think people would work here if they didn't know that they would be rewarded at the end of the year.

Q: Do you think Lincoln employees will ever join a union?

A: No.

Q: What are the major advantages of working for Lincoln?

A: Money.

Q: Are there any other advantages?

A: Yes, we don't have a union shop. I don't think I could work in a union shop.

Q: Do you think you are a career man with Lincoln at this time?

A: Yes.

Interview 3

Roger Lewis, a 23-year-old Purdue graduate in mechanical engineering who had been in the Lincoln sales program for 15 months, was working in the Cleveland sales office at the time of the interview.

Q: How did you get your job at Lincoln?

A: I saw that Lincoln was interviewing on campus at Purdue, and I went by. I later came to Cleveland for a plant tour and was offered a job.

Q: Do you know any of the senior executives? Would they know you by name?

A: Yes, I know all of them—Mr. Hastings, Mr. Willis, Mr. Sabo.

Q: Do you think Lincoln sales representatives work harder than those in other companies?

A: Yes. I don't think there are many sales reps for other companies who are putting in 50- to 60-hour weeks. Everybody here works harder. You can go out in the plant, or you can go upstairs, and there's nobody sitting around.

Q: Do you see any real disadvantage of working at Lincoln?

A: I don't know if it's a disadvantage, but Lincoln is a spartan company, a very thrifty company. I like that. The sales offices are functional, not fancy.

Q: Why do you think Lincoln employees have such high productivity?

A: Piecework has a lot to do with it. Lincoln is smaller than many plants, too; you can stand in one place and see the materials come in one side and the product go out the other. You feel a part of the company. The chance to get ahead is important, too. They have a strict policy of promoting from within, so you know you have a chance. I think in a lot of other places you may not get as fair a shake as you do here. The sales offices are on a smaller scale, too. I like that. I tell someone that we have two people in the Baltimore office, and they say, “You’ve got to be kidding.” It’s smaller and more personal. Pay is the most important thing. I have heard that this is the highest-paying factory in the world.

Interview 4

Jimmy Roberts, a 47-year-old high school graduate who had been with Lincoln 17 years, was working as a multiple drill press operator at the time of the interview.

Q: What jobs have you had at Lincoln?

A: I started out cleaning the men’s locker room in 1967. After about a year I got a job in the flux department, where we make the coating for welding rods. I worked there for seven or eight years and then got my present job.

Q: Do you make one particular part?

A: No, there are a variety of parts I make—at least 25.

Q: Each one has a different piece rate attached to it?

A: Yes.

Q: Are some piece rates better than others?

A: Yes.

Q: How do you determine which ones you are going to do?

A: You don’t. Your supervisor assigns them.

Q: Have you ever received any kind of award or citation?

A: No.

Q: Was your rating ever over 110?

A: Yes. For the past five years, probably, I made over 110 points.

Q: Is there any attempt to let the others know . . . ?

A: The kind of points I get? No.

Q: Do you know what they are making?

A: No. There are some who might not be too happy with their points and they might make it known. The majority, though, do not make it a point of telling other employees.

Q: Would you be just as happy earning a little less money and working a little slower?

A: I don’t think I would, not at this point. I have done piecework all these years, and the fast pace doesn’t really bother me.

Q: Why do you think Lincoln productivity is so high?

A: The incentive thing—the bonus distribution. I think that would be the main reason. The paycheck you get every two weeks is important, too.

Q: Do you think Lincoln employees would ever join a union?

A: I don’t think so. I have never heard anyone mention it.

Q: What is the most important advantage of working here?

A: Amount of money you make. I don’t think I could make this type of money anywhere else, especially with only a high school education.

Q: As a black person, do you feel that Lincoln discriminates in any way against blacks?

A: No. I do not think any more so than any other job. Naturally, there is a certain amount of discrimination, regardless of where you are.

Interview 5

Joe Trahan, a 58-year-old high school graduate who had been with Lincoln 39 years, was employed as a working supervisor in the tool room at the time of the interview.

Q: Have you ever gotten a special award of any kind?

A: Not really.

Q: What have you done with your money?

A: My house is paid for, and my two cars. I also have some bonds and the Lincoln stock.

Q: What do you think of the executives at Lincoln?

A: They're really top-notch.

Q: What is the major disadvantage of working at Lincoln Electric?

A: I don't know of any disadvantage at all.

Q: Do you think you produce more than most people in similar jobs with other companies?

A: I do believe that.

Q: Why is that? Why do you believe that?

A: We are on the incentive system. Everything we do, we try to improve to make a better product with a minimum of outlay. We try to improve the bonus.

Q: Would you be just as happy making a little less money and not working quite so hard?

A: I don't think so.

Q: Do you think Lincoln employees would ever join a union?

A: I don't think they would ever consider it.

Q: What is the most important advantage of working at Lincoln?

A: Compensation.

Q: Tell me something about Mr. James Lincoln, who died in 1965.

A: You are talking about Jimmy Sr. He always strolled through the shop in his shirtsleeves. Big fellow. Always looked distinguished. Gray hair. Friendly sort of guy. I was a member of the Advisory Board one year. He was there each time.

Q: Did he strike you as really caring?

A: I think he always cared for people.

Q: Did you get any sensation of a religious nature from him?

A: No, not really.

Q: And religion is not part of the program now?

A: No.

Q: Do you think Mr. Lincoln was a very intelligent man, or was he just a nice guy?

A: I would say he was pretty well educated. A great talker—always right off the top of his head. He knew what he was talking about all the time.

Q: When were bonuses for beneficial suggestions done away with?

A: About 18 years ago.

Q: Did that hurt very much?

A: I do not think so, because suggestions are still rewarded through the merit rating system.

Q: Is there anything you would like to add?

A: It's a good place to work. The union kind of ties other places down. At other places, electricians only do electrical work, carpenters only do carpentry work. At Lincoln Electric, we all pitch in and do whatever needs to be done.

Q: So a major advantage is not having a union?

A: That's right.

Organizational Structure

Lincoln has never allowed development of a formal organization chart. The objective of this policy is to ensure maximum flexibility. An open-door policy is practiced throughout the company, and personnel are encouraged to take problems to the persons most capable of resolving them. Once, Harvard Business School researchers prepared an organization chart reflecting the implied relationships at Lincoln. The chart became available within the company, and present management feels that had a disruptive effect. Therefore, no organizational chart appears in this case.

Perhaps because of the quality and enthusiasm of the Lincoln workforce, routine supervision is almost nonexistent. A typical production supervisor, for example, supervises as many as 100 workers, a span of control that does not allow more than infrequent worker-supervisor interaction.

Position titles and traditional flows of authority do imply something of an organizational structure, however. For example, the vice president of sales and the vice president of the electrode division report to the president, as do various staff assistants such as the director of human resources and the director of purchasing. Using such implied relationships, it has been determined that production workers have two or, at most, three levels of supervision between themselves and the president.

A Global Focus

As stated in the beginning of this case, Lincoln Electric has production sites in 19 other countries and distribution and sales offices in more than 160 countries. As Lincoln Electric has increased its global presence, it has learned just how much it can use the same philosophy of managing human resources. The company has learned that countries have important legal, cultural, and political conditions that can influence the effectiveness and applicability of some of their practices and that the company needs to either adapt to them or locate in places where the differences with the United States are more modest.

This process of learning, however, was not necessarily easy or without some cost. During the late 1980s and early 1990s, Lincoln expanded rapidly, sometimes by acquiring existing companies, sometimes by joint ventures, and sometimes by establishing a new facility. Lincoln's top management assumed that there would be enough people around the world who would take to the Lincoln system as much as the employees in Cleveland have. They learned that this assumption was not always valid, and as a consequence they had to close some facilities. As a result of top management's relatively limited international experience, the 1990s proved to be very challenging, costly, and humbling times. Donald Hastings has described these times in great detail in his article entitled "Lincoln Electric's Harsh Lessons from International Expansion," in the *Harvard Business Review* (May–June 1999): 163–178. Their experiences are reflected today in the missions and values statements of the company shown earlier in Exhibit LE.1. The global business environment continues to be a major growth opportunity for Lincoln Electric, both in terms of global production and exports from the United States. With continued growth in the emerging markets, Lincoln is continuing to grow organically and through acquisitions.⁴

HUMAN RESOURCE POLICIES AND PRACTICES

As mentioned earlier, it is Lincoln's remarkable human resource policies and practices that are credited by many with the company's success.

Job Security

In 1958, Lincoln formalized its guaranteed continuous employment policy, which had already been in effect for many years. There have been no layoffs since World War II. Since 1958, every worker with over two years' longevity has been guaranteed at least 30 hours per week, 49 weeks per year.

The policy has been severely tested during recessions. As a manufacturer of capital goods, Lincoln's business is highly cyclical. In some recessions, the company has been able to avoid major sales declines. However, in others (such as the one in 1982) sales plummeted 32%. Few companies could withstand such a revenue collapse and remain profitable. Yet Lincoln not only earned a profit that year, but no employee was laid off and year-end incentive bonuses continued. To weather the storm that year, management cut most of the non-salaried workers back to 30 hours a week for varying periods of time. Many employees were reassigned, and the total workforce was slightly reduced through normal attrition and restricted hiring. Many employees grumbled at their unexpected misfortune, probably to the surprise and dismay of some Lincoln managers. However, sales and profits—and employee bonuses—soon rebounded.

During the recession years of 2008–2009, Lincoln again faced many challenges. They responded by expanding their operations through acquisitions and plant modernizations in India, China, and Poland. Consequently they gained market share and became more global. Sales and profits since then have been good and the company seems well-positioned for the future.

Recruitment and Selection

Every job opening is advertised internally on the company intranet, and any employee can apply for any job so advertised. External hiring is permitted only for entry-level positions. Selection for these jobs is

done on the basis of personal interviews; there is no aptitude or psychological testing. A committee consisting of vice presidents and supervisors interviews candidates initially cleared by the Human Resources department. Final selection is made by the supervisor who has a job opening. Nonetheless, it is increasingly desirable that factory workers have some advanced mathematical skills and understand the use of computers. Consequently, Lincoln's expansion is becoming increasingly dependent on getting employees qualified to work in the Lincoln environment within the famous incentive system.⁵

Performance Management

Each supervisor formally evaluates subordinates twice a year using the cards shown in Exhibit LE.5. The employee (non-management) performance criteria of quality, dependability, ideas, cooperation, and output are considered to be independent of each other. Marks on the cards are converted to numerical scores that are forced to average 100 for each evaluating supervisor. Individual merit rating scores normally range from 80 to 110. Any score over 110 requires a special letter to top management. These scores (over 110) are not considered in computing the required 100-point average for each evaluating supervisor.

Suggestions for improvements often result in recommendations for exceptionally high performance scores. Supervisors discuss individual performance marks with the employees concerned. Each warranty claim is traced to the individual employee whose work caused the defect. The employee's performance score may be reduced, or the worker may be required to repay the cost of servicing the warranty claim by working without pay.

Exhibit LE.5: Merit Rating Cards

Quality

This rating has been done jointly by your department head and the Inspection Department in the shop and with other department heads in the office and engineering.

This card rates the QUALITY of work you do.

It also reflects your success in eliminating errors and in reducing scrap and waste.

Dependability

This rating has been done by your department head.

This card rates how well your supervisors have been able to depend on you to do those things that have been expected of you without supervision.

It also reflects your ability to supervise yourself, including your work safety performance, your orderliness, care of equipment, and the effective use you make of your skills.

Output

This rating has been done jointly by your department head and the Production Control Department in the shop and with other department heads in the office and engineering.

This card rates how much productive work you actually turn out.

It also reflects your willingness not to hold back and recognizes your attendance record.

Ideas and Cooperation

This card rates your Cooperation, Ideas, and Initiative.

New ideas and new methods are important to your company in our continuing effort to reduce costs, increase output, improve quality, work safety, and improve our relationship with our customers.

This card credits you for your ideas and initiative used to help in this direction.

It also rates your cooperation—how you work with others as a team. Such factors as your attitude toward supervision, coworkers, and the company, your efforts to share knowledge with others, and your cooperation in installing new methods smoothly are considered here.

Performance evaluation for managerial and all salary employees is conducted using six criteria or competencies. These include (1) leadership/ownership, (2) decision making and judgment, (3) results orientation, (4) teamwork/commitment, (5) quality and customer focus, and (6) creativity/innovation. The evaluation is conducted on a semiannual basis using a conventional graphic rating format. For each of these criteria, the employees must establish goals based on the strategic needs of the company. Employees are provided feedback and coaching at least once a year for performance improvement and development. Evaluation results influence merit pay and bonus decisions.

Compensation

Basic wage levels for jobs at Lincoln are determined by a wage survey of similar jobs in the Cleveland area.⁶ These rates are adjusted quarterly in accordance with changes in the Cleveland area wage index. Insofar as possible, base wage rates are translated into piece rates. Typically, the average Lincoln factory worker earns the equivalent of approximately \$2 to \$3 an hour more than the average manufacturing wage in the Cleveland area. Practically all production workers, and many others—for example, some forklift operators—are paid by piece rate. Once established, piece rates are never changed unless a substantive change in the way a job is done results from a source other than the worker doing the job.

In December of each year, a portion of annual profits is distributed to employees as bonuses. Since 1934, incentive bonuses have averaged about 90% of annual wages. Individual bonuses are proportional to merit rating scores. For example, assume the amount set aside for bonuses is 80% of total wages paid to eligible employees. A person whose performance score is 95 will receive a bonus of 76% of annual wages. While these percentages have often resulted in high total compensation, some employees believe

that their bonuses are not rising fast enough, despite rising profits. This reflects the firm's decision to use profits to expand the operations rather than put them into higher bonuses.⁷

Benefits

A medical plan and a company-paid retirement program have been in effect for many years. A plant cafeteria, operated on a breakeven basis, serves meals at about 60% of usual costs. The Employee Association, to which the company does not contribute, provides disability insurance and social and athletic activities. The employee stock ownership program has resulted in employee ownership of about 50% of the common stock. Under this program, each employee with more than two years of service may purchase stock in the corporation. The price of these shares is established at book value. Stock purchased through this plan may be held by employees only. Dividends and voting rights are the same as for stock that is owned outside the plan. Approximately 75% of the employees own Lincoln stock.

As far as vacations go, the company is shut down for two weeks in August and two weeks during the Christmas season. Vacations are taken during these periods. For employees with over 25 years of service, a fifth week of vacation may be taken at a time acceptable to superiors.

Another benefit is the company's support of employee-based affinity groups. Affinity groups, including new ones added in 2016, include a Woman's group, a Women in STEM group, a Diversity group, and a Wellness group.

Employee Participation in Decision Making

Thinking of participative management usually evokes a vision of a relaxed, nonauthoritarian atmosphere. This is not the case at Lincoln. Formal authority is quite strong. "We're very authoritarian around here," says George Willis. James F. Lincoln placed a good deal of stress on protecting management's authority.

“Management in all successful departments of industry must have complete power,” he said.

“Management is the coach who must be obeyed. The men, however, are the Players who alone can win the game.” Despite this attitude, there are several ways in which employees participate in management at Lincoln. Richard Sabo, former assistant to the chief executive officer, relates job enlargement/enrichment to participation. He said, “The most important participative technique that we use is giving more responsibility to employees. We give a high school graduate more responsibility than other companies give their foremen.” Management puts limits on the degree of participation that is allowed, however. In Sabo’s words:

When you use “participation,” put quotes around it. Because we believe that each person should participate only in those decisions he is most knowledgeable about. I don’t think production employees should control the decisions of the chairman. They don’t know as much as he does about the decisions he is involved in.

The Advisory Board, elected by the workers, meets with the chairman and the president every two weeks to discuss ways of improving operations. As noted earlier, this board has been in existence since 1914 and has contributed to many innovations. The incentive bonuses, for example, were first recommended by this committee. Every employee has access to Advisory Board members, and answers to all Advisory Board suggestions are promised by the following meeting. George Willis is quick to point out, though, that the Advisory Board only recommends actions. “They do not have direct authority,” Willis says, “and when they bring up something that management thinks is not to the benefit of the company, it will be rejected.”

Under the early suggestion program, employees were awarded one-half of the first year's savings attributable to their suggestions. Now, however, the value of suggestions is reflected in performance evaluation scores, which determine individual incentive bonus amounts.

Training and Development

Production workers are given a short period of on-the-job training and then placed on a piecework pay system. Lincoln does not pay for off-site education, unless very specific company needs are identified. The idea behind this latter policy, according to Sabo, is that everyone cannot take advantage of such a program, and it is unfair to expend company funds for an advantage to which there is unequal access. Recruits for sales jobs, already college graduates, are given on-the-job training in the plant followed by a period of work and training at one of the regional sales offices.

Lincoln has regularly expanded and updated its training and development over the years. For example, in 2016 Lincoln paired with Odessa College in Texas to establish the Lincoln Electric Advanced Processes Lab. The lab was the first of its kind in the nation, and provides the newest and most advanced equipment for training students and customers in advanced welding technologies.⁸ The same year, Lincoln also expanded its training and development programs to include a comprehensive on-line learning portal for its professional employees and launched a global leadership development program to improve its pipeline of global leaders.

Executive Perquisites

As to executive perquisites, there are none—crowded, austere offices, no executive washrooms or lunchrooms, and no reserved parking spaces. Even the top executives pay for their own meals and eat in

the employee cafeteria. If the CEO arrives late due to a breakfast speaking engagement, he has to park far away from the factory entrance.

Unions

There has never been a serious effort to organize Lincoln employees. While James Lincoln criticized the labor movement for “selfishly attempting to better its position at the expense of the people it must serve,” he still had kind words for union members. He excused abuses of union power as “the natural reactions of human beings to the abuses to which management has subjected them.” Lincoln’s idea of the correct relationship between workers and managers is shown by this comment: “Labor and management are properly not warring camps; they are parts of one organization in which they must, and should, cooperate fully and happily.”

THE FUTURE

Lincoln electric has many weathered many changes in the external business environment and remains a global leader in comprehensive arc welding, cutting, and joining solutions. Through their technological expertise, performance-driven human resource practices and culture of continuous improvement they believe they can weather future changes in the business environment. They plan to stay ahead of the competition by introducing and refining next generation technologies.

Next Generation Technologies

Although technological improvements are evolutionary rather than revolutionary, Lincoln continues to invest in them. Historically, R&D spending equals about 2% of sales. In 2016, 34% of sales were from new products launched in the last five years. Technological improvements are frequently achieved

through global research and development teams. Next generation technologies that are currently being developed include:

- Additive manufacturing, which capitalizes on Lincoln's expertise in automation, laser, and specialty consumables capabilities.
- Virtual reality sales tools, to improve customer service.
- Internet and mobile applications, to improve diagnostic analysis and report generation.
- Online education curriculums, to improve training and development of customers and employees.⁹

Lincoln electric believes that the use of next generation technologies coupled with their innovative management practices will help achieve their goals of continued outstanding financial performance and growth.

Growth Through New Products, Global Expansion, and Acquisitions

Lincoln is striving to grow in the next decade, with the goal of doubling its sales in the next ten years.

New products utilizing new generation technologies such as the Power Wave quality control and software system are seen as critical in the push for growth. Christopher Mapes, the current CEO, believes new products stimulate growth and increase profits because they have no competitors when the product is first introduced. Lincoln now produces around 100 new products a year, substantially more than the 50 or so it was producing a decade ago.

Lincoln also plans on growing through continued global expansion and more acquisitions.

Lincoln sees opportunities for global expansion by entering new countries in Latin America, Africa, and Asia. The growth in demand in fast-growing economies such as China and India also present a great

growth opportunity. Expansion around the world is particularly viable in the areas of automation and alloy technology. Recent acquisitions, including Wayne Trail, Tennessee Rand, Vizient Manufacturing Solutions (a robot maker), and Air Liquide Welding helped solidify the company's leadership in automation and cutting solutions.¹⁰

In conclusion, Lincoln Electric has been a strong brand for more than 120 years. The company is known not just for its quality products and outstanding customer service, but also for its unique approach to human resource management and relentless focus on performance. At Lincoln, high performers are given a chance to thrive and maximize their income to the benefit of customers and shareholders as well as themselves.

¹ See the company's website for current information on all issues and topics addressed in this case (<http://www.lincolnelectric.com>); Björkaman, I. (1999). Lincoln Electric in China, Part A, *Insead* [Fontainebleau, France]; Björkaman, I. (2004). Lincoln Electric in China, Part B, *Insead* [Fontainebleau, France].

² Lincoln Electric (2017). *Lincoln Electric, Inc. 2016 Annual Report*. (www.ir.lincolnelectric.com/phoenix.zhtml?c=100845&p=iro1-reportsannual).

³ Schiller, Z. (1996, January 22). A Model Incentive Plan Gets Caught in a Vise, *BusinessWeek*: 89, 92.

⁴ See Chu, D.L. and Decker, J. (2007, November 4). Case Study: Lincoln Electric Venturing Abroad. www.knowledgeaction.blogspot.com/2007/11/case-study-lincoln-electric-venturing.html.

⁵ Narisetti, R. (1995, September 8). Job Paradox Manufacturers Decry a Shortage of Workers While Rejecting Many, *The Wall Street Journal*: A4.

⁶ Schiller, Z. (1996, January 22). A Model Incentive Plan Gets Caught in a Vise, *BusinessWeek*: 89, 92.

⁷ Gerdel, T.W. (1995, December 10). Lincoln Electric Experiences Season of Worker Discontent, *Plain Dealer*: 1-C.

⁸ Anonymous (2015, April 16). Odessa College OC signs agreement with Lincoln Electric for its welding program. *Odessa American*: C1.

⁹ Lincoln Electric (2017). *Lincoln Electric, Inc. 2016 Annual Report*

(www.ir.lincolnelectric.com/phoenix.zhtml?c=100845&p=irol-reportsannual).

¹⁰ McCafferty, R.A. (2013, May 27). Lincoln Electric CEO expects company to double its revenue in 10-year period. *Crain's Cleveland Business*: 3–4.