Intel’s hand injury success story
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FOCUS ON HAND & FOOT PROTECTION TECHNOLOGY TRIUMPHS

Intel’s Hand Injury Success Story

Rapid, safe construction plays a critical role in the chip maker’s success—yet recordables have plunged on its 50 million man-hour schedule this year.
by Brett Phillips and Brad Burris

Intel Corporation has been recognized throughout the world as a leader in the design and manufacture of integrated circuits for some time; and recently, Intel has begun gaining worldwide recognition as one of the safest places to work. Intel’s safety performance has achieved world-class status and continues to improve as a result of detailed data collection and analysis and its focus on three main elements: 1) strong programs, 2) individual commitment, and 3) leadership.

To illustrate just one of these three elements, the overall Intel safety performance results are briefly discussed here with a detailed review of Intel’s continuous improvement process: Prevention of Hand Injuries at Construction Sites.

Since 1994, the Intel employee recordable rates have dropped 84 percent to a world-class level of 0.18 (2001 YTD). Just as impressive is the safety performance improvement that has been realized on Intel construction projects. From 1994 to 2001 YTD, the recordable rate on Intel construction projects has dropped 86 percent, to 0.86. Based on these results and Intel’s innovative approach to safety, Craig Barrett, Intel’s president and CEO, received the 2001 National Safety Council’s Green Cross for Safety Award. To understand the significance of this accomplishment, one has to keep in mind that these rate reductions have occurred against the backdrop of phenomenal company growth, including a 200 percent increase in construction activity.

To meet the ever-increasing market schedules and demands for integrated circuits, Intel must build semiconductor fabrication plants ("fabs") and general-purpose buildings under intense schedule pressure. Intel is currently on pace to meet its 2001 planned expenditure of several billion dollars associated with construction. This correlates to approximately 50 million man-hours. Thus, rapid, safe construction plays a critical role in Intel’s success.

When Intel’s construction safety group looked for continuous improvement in already-low construction injuries at Intel sites, it leveraged the company’s leadership position, the commitment of the trades,
The new system selected a variety of specialized stripping tools for specific gages and types of wire.

"We coach our trade contractors that getting rid of the hazard altogether is the best way to prevent injuries," says Blake Devine of Baugh Construction, one of Intel's construction manager/general contractors. "Sometimes they want to use PPE— such as Kevlar gloves—as the first step. We remind them that PPE should only be used as a last resort, when no safer alternative is available."

**Step 3: Training the Foremen and Crews**

JHAs have become the basis for safe work practices. The next step is ensuring that foremen and their crews understand them.

Each trade contractor selected a training and communication method consistent with its own business practices. Some use traditional command-and-control, while others use innovative involvement techniques.

Kinetics, a process mechanical contractor, bound each of its Job Hazard Analyses together in a pocket-sized field manual and issued one to each of its craft employees. At each morning's coordination meeting, foremen led their crews through a rigorous task-planning exercise, using the JHA manual as a guide.

Mike Tietz, project manager for Kinetics, explains, "After a while, the new practice becomes habit. New employees joining the project also have a basis for understanding how we do business."

**Step 4: Observing the Crews**

Each team developed a means of observing how the crews were implementing the cut mitigation plans in the field. One project conducted random surveys of crafts, asking whether they were aware of the cut reduction efforts, and asked for examples of new practices learned. Another team trained general foremen and superintendents to conduct behavioral observations. Not only did this reinforce the positive conduct of crafts in the field, but it enhanced the skills and accountability of first-line managers for planning the safe execution of work.

**Step 5: Measuring Results**

Teams were tasked with selecting metrics for measuring results of the mitigation efforts. Emphasis was placed on leading indicators to supplement traditional lagging indicators, so teams monitored the number of alternative means and methods selected, number of craft-generated Best Known Methods, and performance against plan for foremen and their crews.

In each case, cuts and hand injuries were virtually eliminated during the emphasis period. Some contractors, who had gone
Some things were just meant
to go together,
Bacon & Eggs,
Salt & Pepper,
Milk & Cookies,
and
PIP & Marigold.

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through a similar exercise previously, have shown encouraging results. Rosendin Electric, Inc., an electrical contractor, has not
suffered a hand cut due to wire stripping in more than 30 months
and 450,000 manhours of work.

To date, we have seen a slight increase in hand injury recordables from our February low; however, we are confident that
repeating the process will assist our construction sites in continuing toward the goal of eliminating hand injuries.

Step 6: Repeating the Process

The methodology is not innovative; it is, however, thorough.
And it is well supported by Intel’s longstanding commitment to continuous improvement of its own performance and that of its
contractor colleagues. “The challenge now is for the construction community at Intel to repeat this process for the next injury type
we need to eliminate,” says Jason Ptacek, Intel project manager.

Intel’s procurement group works to enhance the efforts, as well.
On new projects, the Intel Contracts and Materials manager drives continuous improvement of contractor performance in a variety of
areas, including safety. “When the procurement folks talk to our trade contractors about continuous improvement of safety perfor-
mane, it really drives the message home,” says Neil Simolke, Intel Tool Install project manager. “We rely on our EHS professionals
to be coaches and technical experts, but we set the expectations ourselves. It makes a big difference in how it’s perceived.”

Next Steps

The commitment of Intel and its construction contractors continues to create a safer construction workplace. Recordable injury
rates at Intel’s sites worldwide range between about 0.50 and 1.80,
averaging about 0.86 thus far in 2001. This performance helps
influence construction safety in general in the communities where
Intel is present.

Based on the analysis of our data, which we filter for the pur-
oposes of fatality prevention and elimination of injury, our next
Pareto Item focus area will be the elimination of potential near-
misses and hits of underground utilities. The entire process out-
lined above will be repeated for the elimination of these types of
events, as well. Intel is committed to the continuous improvement
process for several reasons: 1) reduced injury to workers, 2) higher
job-site morale, 3) greater productivity and efficiency, and 4) lower-
ered costs.

At a recent safety conference in Portland, Oregon, an EHS
professional at a neighboring high-tech facility said Intel’s efforts
influenced safety on her site, too. Contractors that had recently
worked on an Intel site, she said, typically brought innovative tech-
niques that her company had not thought of. “I’ll take a trade con-
tractor from Intel any day,” she said.

Intel hopes its efforts do just that: influence the way construc-
tion contractors do business outside of Intel.

It’s just one more way the company can provide a great place to
work.

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Manager. Intel Projects EHS Managers are responsible for overseeing
environmental, health, and safety issues for Intel construction projects
worldwide. The responsibilities include ensuring that construction and
future operation and maintenance of Intel sites are safe for human health
and the environment. Intel Corporation is based in Santa Clara, Calif.

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