Agenda

• OPI-integris Advantages
• OPI-integris System Solutions
• IntegrisPro Advanced Grain Management System
• IntegrisPro System Applications
• Advanced Grain Management
• OPI-integris Service Enhancements
• OPI-integris & You
OPI-integris Advantages
OPI-integris Advantages

Why OPI-integris?

• OPI-integris Advanced Grain Management technology improves the quality and profitability of grain storage by:
  – Delivering proactive grain storage management versus reactive management
  – Optimizing moisture content
  – Minimizing shrink and spoilage of stored assets
  – Reducing operating costs—achieve reduced fan run time by up to 80%

Be confident. IntegrisPro technology gives you the power to monitor the exact conditions of your stored grain and the ability to manage those conditions to your best advantage.
When you choose OPI-integris you get...

- Improved grain management resulting in:
  - Reduced shrink and spoilage
  - Optimized aeration control
  - Minimized energy consumption
  - Equipment that lasts longer and requires less maintenance

- Optimized moisture content
  - In-bin drying and potential rehydration
  - Reduced shrink and spoilage

- Improved labor utilization
  - Continuous Grain Level Monitoring
  - Optimized and automated aeration control

- Peace of mind
  - Increased visibility—removes guesswork about what is happening inside the bin
  - Reduced bin climbing and risk of injury
  - Maximized grain weight and profit

But don’t just take our word for it...
“I was looking for better information out of a monitoring system...we experienced a great deal of variability in the data we were working with and maintaining quality was quite a challenge. The OPIsystem [Integris parent company] seemed to make sense to me and with the programmability, the steady updates and the graph systems which tell me exactly what’s happening inside that bin, I was and still am, very impressed with the system.”

Dan Imler, Grain Superintendent
Farmers Cooperative

Imler says IntegrisPro report graphics make managing problem spots much easier.

Source: Feed & Grain February/March 2009
“We all know how fast corn can go out of condition. You’ve got 40 or 50,000 bushels of corn—that’s a quarter million dollars. Why would anybody in their right mind want to risk that?...[With IntegrisPro] regardless of the weather I can check the grain. No matter where I’m at I can check the grain and we can detect any problems...It takes care of the guesswork.”

“The reward, which is not having spoiled grain, is so much greater than the risk, i.e., writing the check to you guys. It’s incredible...Plus, I can darn near pay for this thing [IntegrisPro] just on energy savings alone...”

“One of the nice things about your system is every year there’s another aspect of it that stands out. As the years go by, you run into different conditions and considerations and your system [IntegrisPro] stands out in ways you didn’t realize it would.”
“IntegrisPro has given me all the tools I need to be a better grain manager. I especially like it in the winter when all I have to do to check my grain temperatures is to log on to my computer.”

“I reduced my fan run-time by at least 60%...The system paid for itself in 2 years.”

“Now I know if I have enough corn left to sell another truckload.”

[On Continuous Level Monitoring]
Jeff Rutledge
Rutledge Farms

“I did zero storage on rice prior to this [IntegrisPro] just because it [rice] is so much more of a problem maintaining quality when you get a high moisture condition in a bin...Having something that monitors it [the rice] 24 hours a day, that gives me an audible alert when I’m at the house and that kicks the fans on by themselves if the parameters are met, gives you a little assurance that it’s going to be taken care of.”

“Last year I had to take some rice into the processor without drying it first because I didn’t have enough capacity to store everything. The difference between what I took in “green” and what I dried myself [using IntegrisPro], was probably about $.50 to $1.00 higher just because the milling was so much better with what I dried in my bins.”

“It allows me to make sure that I’m drying the crop down and it’s staying in condition.”
“Now we don’t have a guy basically sitting around writing down temperatures 3 or 4 hours twice a week. Now it takes less time...about half an hour a day to go through everything and print out what we want and see where we’re at.”

“We had so many issues with maintenance and cables on our other system [Thermocouple]. A lot of times we had bins we couldn’t get to read. We spent a lot of money on maintaining that system too. With Integris we haven’t hardly spent anything...it’s a quick change out if you got a problem.”
“The biggest selling point for me was how heavy-duty the blue cables are. And you can switch them out even when grain’s in the bin. They just looked like they’d hold up better. So far they have.”

“With the regular temperature cables it seems like you’re fixing them every other year. And you’ll pay. It’s pretty good cash to get them fixed and then a year later you fixing them again, or some others, and it just irritates the heck out of you.”
“We had a system that didn’t serve our needs and wasn’t real user-friendly so we installed the Integris system ... Each year is different but last fall we cut our run times by one-third. I can’t tell you how much that is exactly, but it’s enough to make a difference... it’s [Integris system] another tool at our disposal to help maintain grain quality...”
Bernard Peterson, Peterson Farms

“...We’re estimating we saved somewhere in the 20% range...that's probably around $30K a year in this operation.”

“...We have the capability of drying all our grain and to save energy.”

“That’s one of the beauties of the system. It will turn the fans on and off when you’re not here, when they need to be run. And so that, in turn, is where we’ve saved a lot of the energy. You don’t over-run it. Nor when it needs to run you’re not missing that good opportunity. We’re capturing the natural air when it suits our needs...”
“Normally, we’d haul 20% of our corn in the summer. Now 80% is hauled in the summer time frame. The longer you keep grain stored, the more you earn from storage. We wouldn’t have dared do that in the past. You can’t afford to hold $4 corn and risk it going bad.”

“It is the best $30,000 I have spent. I have an employee who works 24/7, 365 days a year and managed my grain perfectly for the last 3 years.”

Source: Farm Industry News, August 2009
Maximized Carry Times: An **OPI-integris** Advantage

Mark Kistenmacher & Linda Kuhl, Mid-Iowa Cooperative

“Getting the bins under control, making sure that they are available to store longer term has been really key for me to be able to sell the carry in the market about the time I’m selling corn in August and September...rather than moving it in February and March and giving up six months of carry—that’s a substantial reason we make money in the business.”

- Linda Kuhl

“...we feel the system can take care of us until we’re ready for just-in-time-delivery and we can call on those bins to go to the market.”

- Mark Kistenmacher
“How you treat grain up front determines shelf life down the road. Cool it down as quick as you can [after harvest]. After that, constantly manage moisture and temperature levels. This system [IntegrisPro] does that more reliably than I can.”

Source: Successful Farming Magazine
July 16, 2009
Optimized Moisture Content: An OPI-integris Advantage

Cole Pestorious, Pestorious Inc.

“We’re pretty much recommending it to everyone. It’s [IntegrisPro] hands down the best thing you can do for your grain system.”

“I’ve taken over 400K bushels from the 105 and every load is testing 15.5 to 15.4% moisture content. The consistency of the grain that filled that bin was variable, with some coming from the dryers at 95 degrees and some delivered dry from others. It [IntegrisPro] accomplished a uniform moisture in only 300 hours of fan run time. I saved approximately 3,000 bushels of shrink, which is about $12,000. I tried doing the other bins by hand and could not replicate those results.”
“We were wanting to keep the grain longer and we needed to know what was going on inside a big pile of grain.”

“We figured if we saved 5,000 bushels of corn, it more than paid for the system. The top could look just perfect—if the hot spot is down in the middle, you’ll never know until you start pulling it down and you hit it. The energy efficiency of turning the fans on and off automatically and the natural air drying was a bonus.”

Source: Iowa Farm Bureau, Autumn Harvest supplement August 26, 2009
Bob Weiland, Laura, IL

Weiland counts on Integris Advanced Grain Management to protect his 590,000 bushels.

“When I used to check the grain by myself, I’d always wonder if it was going to be OK the next time...[the Integris system] saves energy, fuel and just gives you peace of mind that everything is OK in the bin.”

“I can look at the computer and know if hot spots in the bin are developing. It [IntegrisPro] turns on the fans only when it’s beneficial for the grain. I raised an awful lot of corn last year and it averaged a test weight of 60 pounds [per bushel] and 14.7% moisture. Had I manually controlled it that wouldn’t have happened.”

“At first there seems to be a lot of cost, but when you start calculating bushels the payback is extremely fast. The savings through using less electricity and only running fans when necessary are tremendous.”
“With me, being able to get in and look at these [site systems], the guy’s know I’ve been in there. They can tell it. And it drives them nuts, ‘What are you doing in my system?’ ‘Checking you out. Sorry, I will continue to do that.’”

Denny Hines, Mid-Iowa Cooperative
Ron Barkema, Prairie Land Cooperative

“We’ve been trying to run our locations as efficient as possible labor wise so this is a substitute for some labor.”
• INTEGRIS IS MUCH MORE THAN GRAIN TEMPERATURE MONITORING...

• Integris is proactive Advanced Grain Management versus reactive monitoring!
Retractable Cables and Digital Technology Delivers

• **Accuracy**: To within 1° F
• **Reliability**: Sensors are protected inside the tube
• **Durability**: High-quality, hard-wearing enclosure
• **Simplicity**: Serviceable by the customer
• **Flexibility**: Serviceable whether bin is full or empty—no down-time
• **Scalability**: For current and future technologies
Varying cable sizes ensure a custom “fit” for your bin..

- Cables feature outer and inner removable tube and sensors.
- Cable length and the number of cables and sensors depend on your bin size:
  - **Medium-duty** for less than 50’
  - **Commercial-duty** for 50’-100’
  - **Heavy-Duty** for lengths greater than 100’
Based on a principle call Equilibrium Relative Humidity (ERH), relative humidity and temperature measurements are taken up through the grain mass to calculate grain moisture content.

With accuracies of +/- 1.5% or better, moisture cables provide feedback to Integris ProModel.

Introducing…

2011 AE50 Award for Outstanding Innovation in Product Technology

2011 Agritechnika Medaille Winner for Product Innovation
Inside each temperature sensor is a microprocessor that measures temperature and converts it from an analog into a digital signal.

All sensors are connected to the same 2-conductor cable and all cables can be read at one plug.
Proactive Monitoring: An OPI-integris Advantage

- **StorMax—Digital**
  - PROACTIVE Grain Storage Management
  - Log history tracks trends over time for better ongoing management
  - Optional auto-control

- **Thermocouple—Analog**
  - Reactive monitoring that "sees" only one sensor at a time
  - "Hot spots" detected only after the damage is done.

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*Figure 1: Temperature trend graph showing a steady decrease.*

*Figure 2: Thermocouple reading showing bin, cable, sensor numbers and temperature.*
OPI-integris System Solutions
Integris Monitoring & Control Systems

- Fully upgradeable from StorMax Handheld system to the IntegrisPro
  - **StorMax** – Handheld temperature monitoring
  - **IntegrisBasic** – PC-based monitoring, alarms and continuous level
  - **IntegrisPro** – PC-based monitoring, alarms, continuous level and automated fan control
Detect changes before shrink and spoilage occur!

- **StorMax Digital Monitor**
  - One plug-in per bin/bin-group
  - Displays 32 sensors per screen
  - Graphical display
  - Stores 1+ years of historic data
  - Reads other kinds of cables
  - Easy upgrades for future technology
  - Optional PC upload
Communicates to the PC by wired and/or wireless connection

Alarms for
- High limit
- Rate of rise
- System Status

Alarm Output Options
- On-screen
- On-site (audible or visual)
- Text messaging
- Email

Interface Options
- On-site, PC-based
- Internet-based

Monitors
- Temperature Sensing
- Moisture Sensing
- Insector, Insect Detection

PC-Based Monitoring & Alarm System
PC-Based Monitoring, Alarm & Control System

Monitors
- Temperature Sensing
- Moisture Sensing
- Insect Detection
- Headspace RH/T
- Plenum Pressure/RH/T
- Weather

Communicates to the PC by wired and/or wireless connection

Controls
- Fans
- Heater
- Roof ventilation

Interface
- On-site
- By Internet

High limit, rate-of-rise and system status alarms
- On-screen
- On-site (audible or visual)
- Text messaging
- E-mail
Roof Support Options

• Internally or externally mounted roof support brackets.

• Available for cables measuring up to 50’ for non-structure roofs.
Termination Enclosure: 16 Sensors x 26 Cables = 416 Sensors

You would have to terminate 486 wires using a Thermacouple system. Plus the cost of installation by an electrician!

With an Integris system there are only 52 wires to terminate. Plus, we’ll set it up for you!
IntegrisPro Advanced Grain Management System
Software improvements for ease of use...

- Simplified operation
- High-level navigation options
- Real-time, on-screen EMC
- Updated aeration algorithms
- Improved navigation
- Auto-delete—simplified setting and reporting
- Continuous level monitoring
- Expanded and improved reports...
**Site Navigation** — current snapshot of several key indicators. Select to look at a single cable, the highest cable or the maximum/minimum/average for sensor levels. Icons indicate fan and alarm states backgrounds.
Structure View—Temperature of an individual cable in relation to several key factors.
**Level**—Summary of the amount of grain in a structure.
Large Flatstore level capabilities that allow users to view the level of the entire flatstore at once, even when the building is divided into smaller grain conditioning units (typically a single fan and duct).
2-D Graph; Cable Data—temperature and level data for one cable over time.

NEW—Enhanced operation for sites with a large numbers of data points. The new optimized 2-D graph enables the display of large data sets with much less impact on the memory usage of the computer for a faster, more robust user experience.
NEW — EMC temp targets added to 2D graph; Fan Control Summary. Users can now see how the set-points changed over time to help understand the operation and results from the system.
NEW— Profiles added for **2D graph; fan control summary**, allowing users to customize one or more combinations of curves to view the data in a more meaningful way. It also saves time by selecting the most commonly viewed parameters with one mouse click.
2-D Graph; Fan Control Cables—Complete day-by-day snapshot of what happened in the structure.
Table— Provides an at-a-glance, color-coded visual of vital information in an easy-to-read table format.

NEW— Access cable Temperature, RH and moisture (EMC) in its own separate table view.
Alarms—Monitors a variety of conditions and triggers alarms as needed.
**NEW**—Ability to enable/disable stale alarms. Now sensors can be removed from the stale alarm routine to prevent false alarms from slowly changing values.

**NEW**—Empty bin alarm. When auto delete and level routines detect an empty bin, users receive an alarm and automatic fan control will not operate. Users are also prompted to enter an empty date to complete the fill/empty cycle.
Configuration; Alarms—Used to establish temperature control setpoints for the sensors on the temperature cables in a structure.
Configuration; Fans—controls aeration and ventilation fans and heaters in a structure.
**NEW**—EMC will auto-populate from moisture cable data in **Configuration; Manage**. This time-saving function helps users fill-in the initial in-bin moisture content upon starting a fill cycle by importing the values from the in-bin moisture cables.
Email/Text Messaging Options

• Includes choice of short or long messages:
  – Long messages can be selected from a list of message types to be sent.

• Messages can also be sent on a timed basis, which you can vary for different users.

• Multiple email or text messaging destinations for each user.
Advanced Grain Management
Ideal Temperature Settings

• Growth of insects, mites, molds and other microbes are at their highest levels in the 80°F range.

• For safe storage take grain down to the 40°F range
  – Forces adult insects into dormancy
  – Larvae, and eventually eggs, die after enough exposure to low temperatures

• Do not store grain below freezing for an extended period—ideally, take grain into the spring in the 40°F range.
Safe storage requires a balance between temperature and moisture content.
Advanced Grain Management

How EMC (Equilibrium Moisture Content) relates to grain moisture content.
Relative Humidity (RH) runs opposite to Temperature over the 24-hour period.
Every combination of Ambient Temperature and Relative Humidity generates an Ambient EMC value.
Aeration should occur only when EMC is in the grain moisture target band.
Automatic aeration occurs when the time is right!

Fans automatically run when conditions are optimal!
Ask about the exclusive Integris EMC Calculator to help you calculate EMC for various grain types, as well as ambient and plenum conditions.
What’s realistic to accomplish with my system

- Understand the capabilities and limitations of your system based on factors such as:
  - Climate
  - Airflow
  - Length of storage
  - Safe storage period
  - Moisture control objectives

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Airflow in cfm/bu</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeration</td>
<td>.08 - .250</td>
<td>Temperature control only</td>
</tr>
<tr>
<td>Conditioning</td>
<td>.25 to .50</td>
<td>Moving moisture down or up 2% Tightening min/max spread up to 2%</td>
</tr>
<tr>
<td>NAD (Natural Air Drying)</td>
<td>.75 to 2.0</td>
<td>.75 cfm/bu reducing moisture up to 5% 1-2 cfm/bu reducing moisture up to 10%</td>
</tr>
</tbody>
</table>
| NAD + Heat              | .75 to 2.0       | Low heat added (typically < 100F) to:  
  - Reduce RH to bring air into drying zone  
  - Increase temp to increase drying rate |
| Dryeration              | .50 to 1.0       | Final removal of 1-3 points of moisture from the drier.                     |
The OPI-Integris 4-pronged approach delivers the most accurate grain storage moisture management system on the market today...

IntegrisPro Automated Controls

moisture Cable—NEW for 2010

Advanced Grain Management

Integris ProModel
Integris ProModel for Moisture Management

• Extracts historic data from the IntegrisPro database, to display moisture profile up through bin, accurately and in real-time!

• Improves storage profitability in three key ways:
  – As a grain storage, aeration and storage management design tool:
    ✓ Select the best type and configuration of storage, aeration and conditioning equipment that will meet your in-bin storage and conditioning requirements, as well as to optimize drier throughput.
    ✓ Delivers a better understanding as to how the IntegrisPro system could improve your grain value and minimize storage-related operating costs.
  – Monitoring moisture from bottom to top and throughout the storage cycle:
    ✓ View your moisture profile throughout the storage cycle to better calculate moisture content and shrink.
  – Enhanced moisture content and shrink control:
    ✓ Set EMC (moisture control) windows to obtain a higher level of moisture control with little or no shrink.

• Customer Care support required to run modeling scenarios
What’s living in your bin?

- Find out with the exclusive Integris Insector probe!
  - Easily integrated into both IntegrisBasic and IntegrisPro platforms
  - Captures and counts insects by species and time
  - Provides early detection for zonal control
  - Helps manage aeration control and reduce fumigation
  - Measures effectiveness of fumigation program

The Insector measures the size and count of insect populations inside your bins.
Compares insect counts to insect size to determine if insects are in the bin and the species of the captured insects.
Lets users see the specific Insector that captured the insects to ensure the Insectors are working normally.
Compares counts to temperature to determine insect activity.
Checks count against insect density to reveal average insect density, insect density at each Insector location and insect density of each captured species.
Checks insect intensity against density to show insect density at each location and the insect density trend.
Integris Service Enhancements
Integris is your Advanced Grain Management partner. Committed to maintaining profound, long-term relationships.

- To that end, we have created add-on service enhancements that allow you to leverage our expertise to your greatest advantage:
  - Customer Care Support
  - Annual Site Service
  - Extended Warranty Program
Customer Care: OPI-integris Service Enhancements

Worry-free professional support is just a phone call away with Customer Care!

- **Help Desk** support from our team of operations experts providing you with:
  - Training, whether you need a “brush-up” or are introducing new users to the system
  - System operating parameters set-up support
  - Periodic reviews, including recommendations to help generate optimum results
  - Integris ProModel analysis with systems setting recommendations to help you achieve maximum grain quality

- **Software Updates**
  - Benefit from annual software updates throughout the year.

Let our team of Advanced Grain Management experts help you get the best possible results from your OPI-integris system.
Maximize your system’s performance!

• Annual Site Service includes:
  – Annual visit to each site for overall system service
  – Weather station and HRHT sensor calibration
  – Labor for repair and/or replacement of system components as needed
  – Materials will be billed as required unless covered by our Extended Warranty Program...
Protect your system and your wallet with the OPI-integris Extended Warranty Program!

• Warranty coverage for Integris system components that require replacement
  – For materials only and does not include removing and replacing components
  – Excludes coverage for excess wear and tear
  – Eliminates the separate billing for replacement materials as noted in the Annual Site Service
OPI-integriris & You
Maximize your ROI!

“Low End” systems have 1 bin and no frills. “High End” is a fully loaded 5-bin system.
Traditional grain storage... or Advanced Grain Management?

Thank you!

Let OPI-integris design a custom Advanced Grain Management solution for you.

Toll Free: (800) 661-1055
Web: www.advancedgrainmanagement.com