



On Site Intelligence
KNOW • INTERPRET • CONTROL

KNOW

where your assets are located.

INTERPRET

through innovative remote asset technology.

CONTROL

for immediate asset status.

Company Background

Presenter:

Gary Rapp

Zia Systems, LLC

Presenter:

Giacomo (Jack) Conte

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CIPP Industry

- Cured In Place Pipeline Rehab
- Over \$2 Trillion in infrastructure projects in next 5 years in U.S.
- Of this, Rehab of thousands of miles of sanitary and storm sewers

CIPP

The Problem

- Currently, temperature readings taken manually, only at the A-Station and B-Station (manholes).
- Temperature readings along the pipeline are unknown.
- Liner Curing is an art.
- Proper resin curing requires appropriate temperature readings every 10-20 feet, or so, along the replacement pipe.
- More difficult to warrant the job.

Site Photos



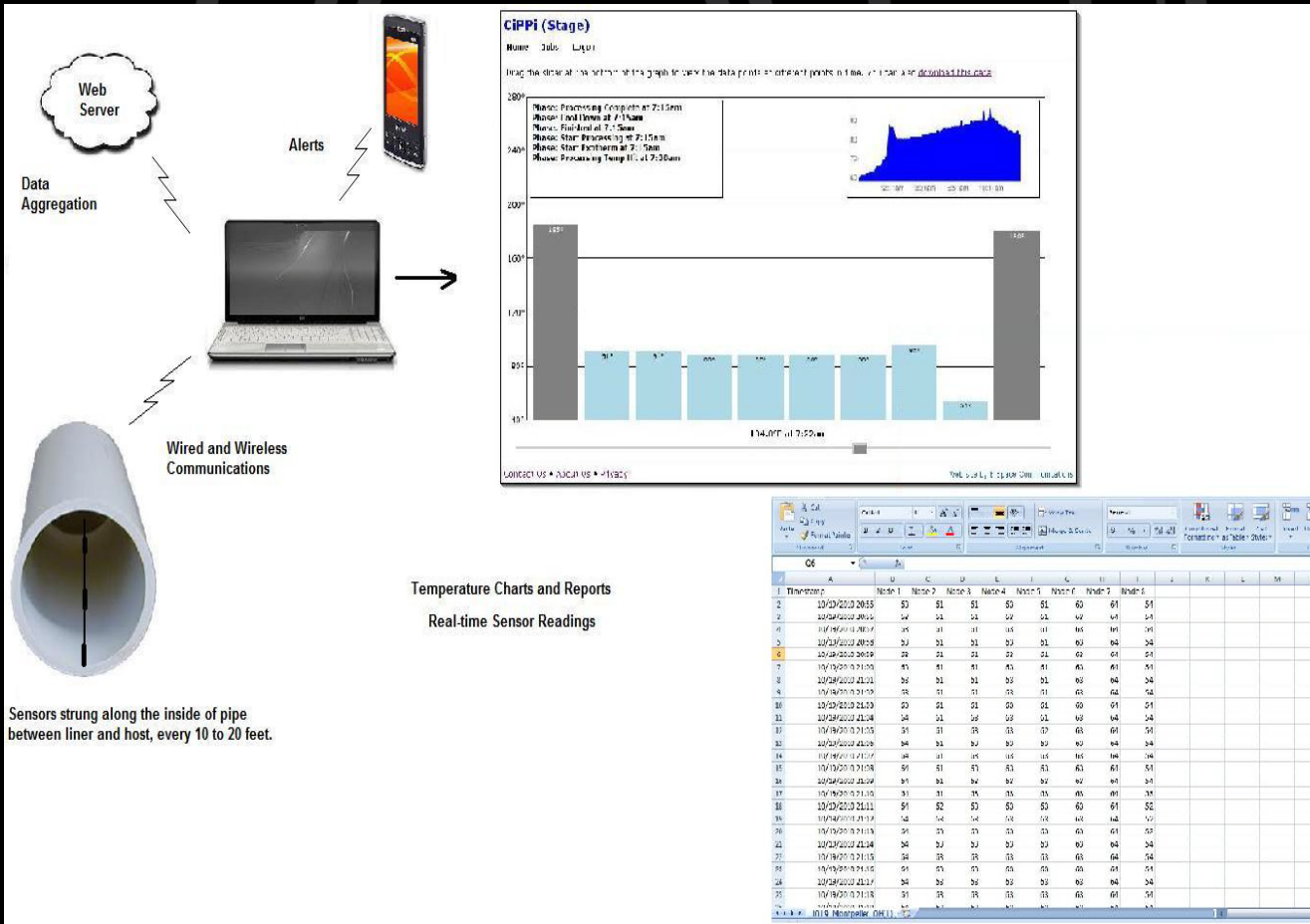
Solution

Real Time Sensor Monitoring

CIPP Intelligence (CiPPi™)

- Incorporate a private wireless and wired mesh network at the site.
- Distribute Smart Temperature sensors along the inside of the pipe to be repaired (every 10 – 20 ft.).
- Monitor and report temperature readings in real-time to onsite computer (charts and reports).
- Send alerts if readings outside proper range.

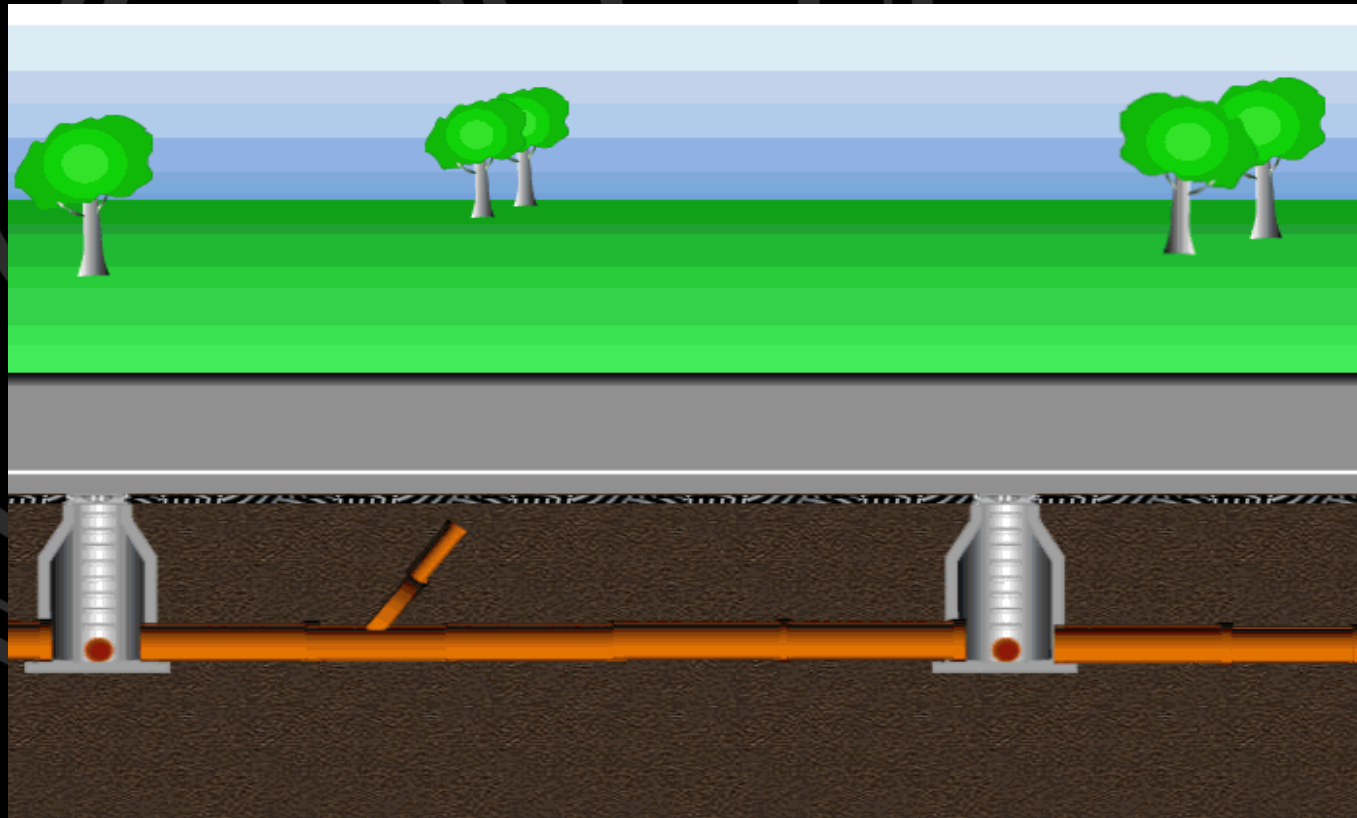
CiPPI Solution Mesh Networked Sensors



- “Smart” tags laid by cable within pipe
- Sensors collect and transmit temperature readings to onsite computer
- Temperature readings are reported in real-time on charts and reports.
- Data is uploaded to a web-server for aggregation and reporting
- Alerts and reports can also be processed on smartphones

CiPPi Application

How it is Done





CiPPi

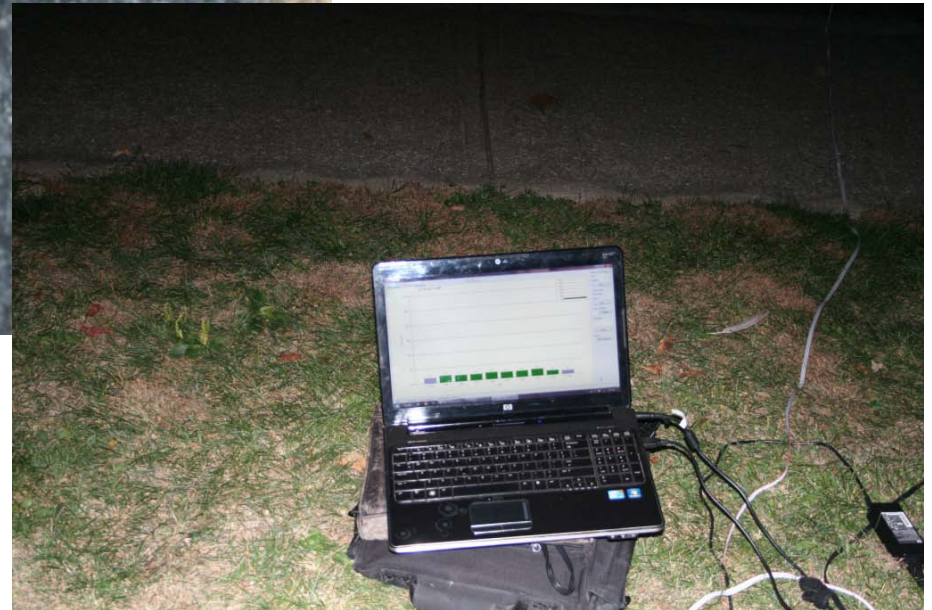
Value Proposition

- Accurate and timely sensor readings (takes away recording errors)
- Pinpoints actual time of cure process
- Installed to design specs
- Reduction in installation time of 3-6 hours
- Ensures product safeguards and QA
- Customer satisfaction

Site Photos



Site Photos



Site Photos

The screenshot displays the CiPPI software interface, which is used for data entry and processing. The main window is titled "CiPPI" and features three tabs: "Site Information" (selected), "Temperatures", and "Diagnostics".

Site Information Tab:

- First Node*:** Text input field.
- Job Number*:** Text input field.
- Contractor:** Text input field.
- Site Address:** Text input field.
- Weather:** Text input field.
- Upstream Manhole #:** Text input field.
- Pipe Length:** Text input field.
- Pipe Type:** Text input field.
- Wall Thickness:** Dropdown menu.
- Liner Supplier:** Text input field.
- Cure Type:** Dropdown menu.
- Temp Scale*:** Dropdown menu.
- Crew Number:** Text input field.
- Customer:** Text input field.
- Downstream Manhole #:** Text input field.
- Pipe Diameter:** Dropdown menu.
- Pipe Shape:** Text input field.
- Resin Type:** Text input field.
- Sensor Spacing:** Dropdown menu.

Boiler A & B Readings:

- Temp.:** Two text input fields.
- Pressure:** Two text input fields.
- Save:** Button.

Curing Targets:

- Temperature:** Text input field.
- Minutes:** Text input field.
- Save:** Button.

Temp. Calibration:

- Calibrate:** Button.

Comments:

- Text area for comments.
- Save:** Button.

Phase:

- Start Processing:** Button.

Navigation Buttons:

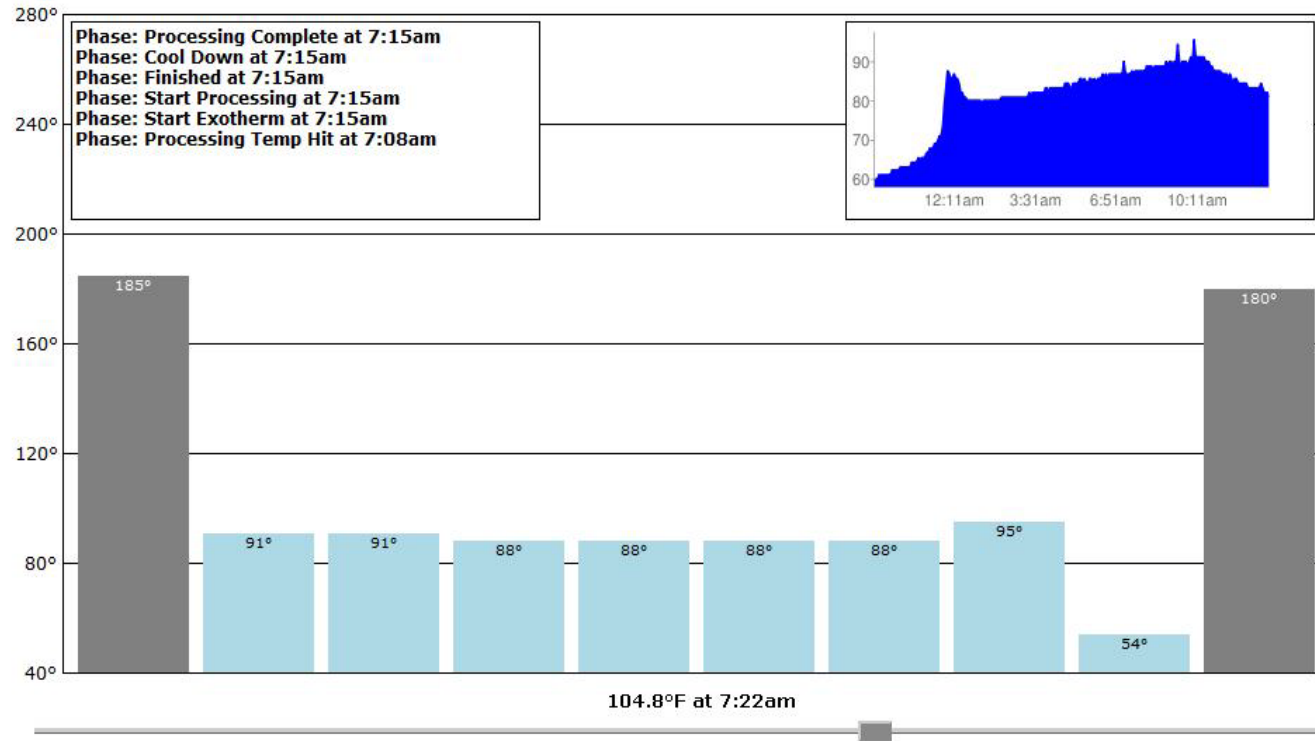
- Begin:** Button.
- End:** Button.
- Upload:** Button.

Site Photos

CiPPi (Stage)

[Home](#) [Jobs](#) [Logon](#)

Drag the slider at the bottom of the graph to view the data points at different points in time. You can also [download this data](#).



Site Photos



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Timestamp	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6	Node 7	Node 8										
2	10/19/2010 20:55	63	61	61	63	61	63	64	54										
3	10/19/2010 20:56	63	61	61	63	61	63	64	54										
4	10/19/2010 20:57	63	61	61	63	61	63	64	54										
5	10/19/2010 20:58	63	61	61	63	61	63	64	54										
6	10/19/2010 20:59	63	61	61	63	61	63	64	54										
7	10/19/2010 21:00	63	61	61	63	61	63	64	54										
8	10/19/2010 21:01	63	61	61	63	61	63	64	54										
9	10/19/2010 21:02	63	61	61	63	61	63	64	54										
10	10/19/2010 21:03	63	61	61	63	61	63	64	54										
11	10/19/2010 21:04	64	61	63	63	61	63	64	54										
12	10/19/2010 21:05	64	61	63	63	62	63	64	54										
13	10/19/2010 21:06	64	61	63	63	63	63	64	54										
14	10/19/2010 21:07	64	61	63	63	63	63	64	54										
15	10/19/2010 21:08	64	61	63	63	63	63	64	54										
16	10/19/2010 21:09	64	61	63	63	63	63	64	54										
17	10/19/2010 21:10	64	61	63	63	63	63	64	53										
18	10/19/2010 21:11	64	62	63	63	63	63	64	52										
19	10/19/2010 21:12	64	63	63	63	63	63	64	52										
20	10/19/2010 21:13	64	63	63	63	63	63	64	52										
21	10/19/2010 21:14	64	63	63	63	63	63	64	54										
22	10/19/2010 21:15	64	63	63	63	63	63	64	54										
23	10/19/2010 21:16	64	63	63	63	63	63	64	54										
24	10/19/2010 21:17	64	63	63	63	63	63	64	54										
25	10/19/2010 21:18	64	63	63	63	63	63	64	54										
26	10/19/2010 21:19	64	63	63	63	63	63	64	54										



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