



PRECAST Solutions





Ed Birkhead

Production Director

Spiroll Precast Services Ltd, part of the CCL Group of Companies

Mechanical Engineer from a production background
in Automotive Manufacturing



Spiroll Precast Services:

- Hollowcore Extruders and other production machinery
- Wire and Strand Stressing, Gripping, Cutting and Handling Equipment
- Stressing Safety Training Services
- Special Projects



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POWER ON



SAFETY RESET



GEARBOX MOTORS



INTERNAL VIBRATORS



TOP VIBRATORS



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SPIROLL PRECAST SERVICES LTD

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MACHINE SERIAL NO: SPS1207
MACHINE TYPE: 150/200/250/300/400 POWER UNIT VORTEX
INPUT VOLTAGE: 380/415 V PHASES: 3 CYCLE: 50 HZ



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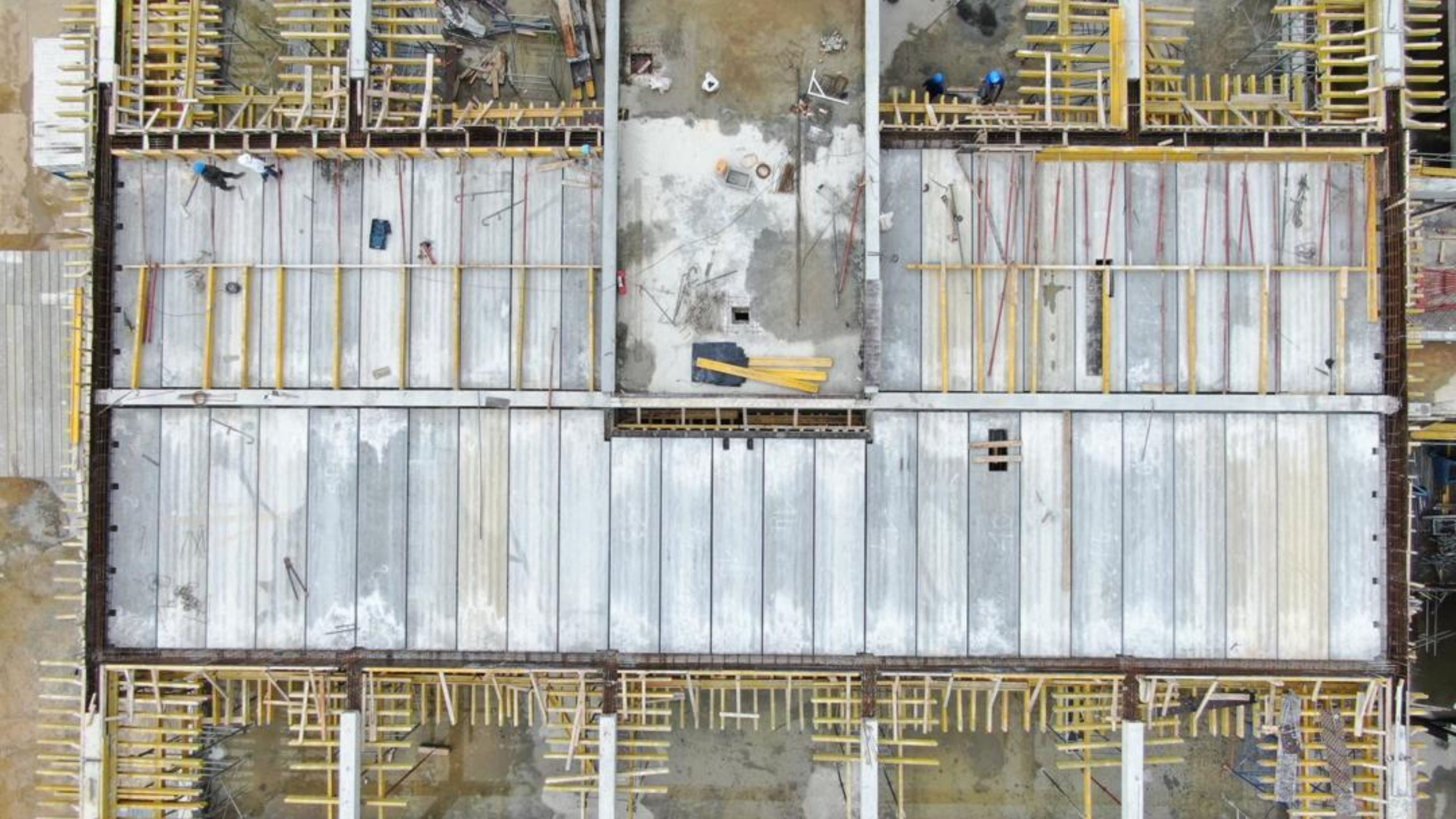


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Control panel with a small screen and several buttons.

Warning label with a yellow triangle and exclamation mark.





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Production Support Activities

Defined here as: The processes and functions required to produce manufactured goods in a consistent, repeatable and safe manner.





Most producers will have at least a recognised Quality Management System and manufacture according to standards and codes.

But rigorous process and factory production control goes further than standards and legal legislative requirements.





Failure Mode and Effects Analysis

Failure Modes and Effects Analysis (**FMEA**) is a systematic, proactive method for evaluating a process to identify where and how it might fail and to assess the relative impact of different failures, in order to identify the parts of the process that are most in need of change.



Failure Mode and Effects Analysis

- A highly structured, systematic technique for failure analysis
- Quantifies the Severity, Occurrence and Detection Likelihood of failures
- Used by the Military, Aerospace, Automotive, Tech and Food Industries
- An FMEA is produced for each product and family
- FMEA's are developed by a cross party group from different departments



Example - FMEA

Function or Process Step	Failure Type	Potential Impact	SEVERITY	Potential Causes	OCCURANCE	Detection Mode	DETECTION	Risk Prevention Number
Briefly outline function, step or item being analyzed	Describe what has gone wrong	What is the impact on the key output variables or internal requirements?	How severe is the effect to the customer?	What causes the key input to go wrong?	How frequently is this likely to occur?	What are the existing controls that either prevent the failure from occurring or detect it should it occur?	How easy is it to detect?	Risk priority number
Tire function: support weight of car, traction, comfort	Flat tire	Stops car journey, driver and passengers stranded	10	Puncture	2	Tire checks before journey. While driving, steering pulls to one side, excess noise	3	60



Example - FMEA

Recommended Actions	Responsibility	Target Date	Action Taken	Revised SEVERITY	Revised OCCURANCE	Revised DETECTION	Revised Risk Prevention Number
What are the actions for reducing the occurrence of the cause or improving the detection?	Who is responsible for the recommended action?	What is the target date for the recommended action?	What were the actions implemented? Now recalculate the RPN to see if the action has reduced the risk.				
Carry spare tire and appropriate tools to change tire	Car owner	From immediate effect	Spare tire and appropriate tools permanently carried in trunk	4	2	3	24

Barrel and Wedge Maintenance

- Barrels and wedges are crucial to the prestressing process.
- Complete failure has a very high severity rating and potentially fatal implications.
- Small failures can affect product conformity.
- Rigorous Stock Control, Maintenance and Inspection and reduce the overall Risk Prevention Score.

Equipment Calibration, Maintenance and Tracking

- Direct effect on the product conformity.
- Asset tracking systems can be used to monitor maintenance requirements.
- Calibrations effect product integrity and performance.
- Uptime monitoring and return-on-investment analysis.
- Failures are often difficult to detect.
- Requires a preventative approach.

Raw Material Inspection and Traceability

- Incoming goods inspection of raw material.
- Easy to understand specifications, checking methods and work instructions.
- Segregation and reaction procedures for non-conforming product.
- Failures have direct effect on product quality.
- Potentially High Severity and difficult to detect.

Raw Material Usage and Waste

- Ensure equipment is optimising material efficiently
 - Extruded or slip formed slab profiles.
 - Strand wastage at the end of the bed.
 - Production planning.
 - Maintenance of equipment.

In our experience - is a high Occurrence.

In my experience, construction product manufacturing often lags behind other industries in their adoption and implementation of lean process control.

I hope the industry will adopt these techniques and learn from sister industries for the better.



Thank you for listening

