

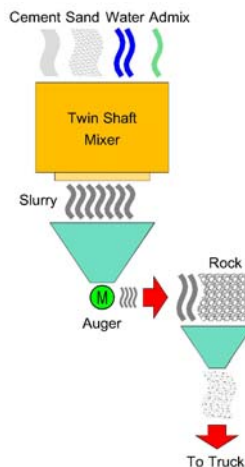
# JONEL

## THE PERFECT MIX - GOING HYBRID FOR HIGH STRENGTH – AN INTRODUCTION

Producing high strength concrete takes a unique approach. Longer mixing times, performance enhancing admixture and variability in moisture content of aggregates; greatly increase the complexity of producing a consistent product. High Strength Concrete is hard, Jonel makes it simple.

Jonel's **Progressive Matrix** batch solution is designed specifically to meet the unique challenges of high volume, high strength production. By combining the best practices of central mixing with the control of conventional dry batching, Jonel's Progressive Matrix hybrid batch solution transforms the pains of manufacturing high strength concrete into profits.

Our technique is simple. Take the three most important and volatile materials in concrete: cement, water, admix and fine aggregates and blend them at a high speed. Then transfer the pre mixed mortar through a progressive auguring process where it meets the pre-weighed course aggregate at the central intake point of the mixer truck.



**Progressive Batching techniques consistently deliver results for:**

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### BETTER SLUMP CONTROL

By dynamically adjusting and calculating free moisture of the sand at the time of mixing, producers have better control and reaction time to moisture variability. Further eliminating course aggregates from the mixing process, reduces the number of variables that can impact the dispersion of water as it reacts and binds with the cement.

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### HIGHER THROUGHPUT

By using the twin shaft and staging course aggregate in a separate holding hopper, producers are able to weigh multiple batches simultaneously providing throughput of up to 400 Y<sup>3</sup>/306 M<sup>3</sup> per hour.

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### INCREASE STRENGTHS/LESS CEMENT

Blending admix, water and cement without introducing the course aggregates enables a more uniform matrix of water and admixture dispersed throughout the cement when compared to traditional drum, tilt mixing. Materials reach 95% homogeneity within 15 seconds of mixing time. Improved strength gain using twin shaft technology results in up to 5% reduction in cement.

## BETTER WORKABILITY AND CONSISTENCY

Pre blending the slurry and then coating the rock dramatically improves mixing consistency. For self consolidating applications, the process is improved further by reducing the initial mixing time as much as 70%.

## REDUCE DRUM WEAR

Fully shearing the cement, admixture, water and sand during the mixing process creates a homogeneous consistency that eliminates balling and “caking” buildup in the mixer drum providing less wear and tear on the truck drum.

## LOWER EMISSIONS

Blending cement eliminates dust emissions and increases compliance with sustainability initiatives. Faster loading times, slump times and washout reduce the time the truck is idling, further eliminating diesel emissions.

Figure 1 Seven Year Capitalization and ROI

### CAPITAL EVALUATION FORM

#### Project Description

Implement Progressive Matrix Batch Solution retrofit for a conventional Dry Plant. Assumptions 20 Trucks and 220,000 CY/ 169 m3 Per Year

#### Evaluation Metrics

12% Discount Rate  
680,279 Net Present Value  
40% IRR

CASH ANALYSIS	Initial	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Capital Expenses</b>								
Mixer Tower Retrofit	-270,000	0	0	0	0	0	0	0
Progressive Matrix Mixer	-190,000	0	0	0	0	0	0	0
Automation	-80,000	0	0	0	0	0	0	0
Moisture Control	-15,000	0	0	0	0	0	0	0
Plant Setup	-180,000							
<b>Total Capital Outlay</b>	<b>-735,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Additional Expenses</b>								
Power Consumption	0	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000
Plant Maintenance Labor	0	-60,000	-60,000	-60,000	-60,000	-60,000	-60,000	-60,000
Parts Maintenance	0	-10,000	-10,000	-10,000	-10,000	-10,000	-10,000	-10,000
<b>Total Additional Expenses</b>	<b>0</b>	<b>-90,000</b>	<b>-90,000</b>	<b>-90,000</b>	<b>-90,000</b>	<b>-90,000</b>	<b>-90,000</b>	<b>-90,000</b>
<b>Profit Improvement</b>								
Cement Reduction	0	45,000	45,000	45,000	45,000	45,000	45,000	45,000
Trucking	0	320,000	320,000	320,000	320,000	320,000	320,000	320,000
Drum Maintenance and Chipping	0	53,000	53,000	53,000	53,000	53,000	53,000	53,000
Item	0	0	0	0	0	0	0	0
<b>Total Profit Improvement</b>	<b>0</b>	<b>418,000</b>	<b>418,000</b>	<b>418,000</b>	<b>418,000</b>	<b>418,000</b>	<b>418,000</b>	<b>418,000</b>
<b>NET CASH FLOW</b>	<b>-735,000</b>	<b>328,000</b>	<b>328,000</b>	<b>328,000</b>	<b>328,000</b>	<b>328,000</b>	<b>328,000</b>	<b>328,000</b>

#### Additional Notes and Assumptions

Assumes 15 minutes on internal trucks can be saved from existing loading and tempering time. Assumes annual chipping costs and drum wear at \$60,000 and a 5% reduction in cement