

TURIN - 19TH JUNE 2017
 IIOT WORLD TOUR EVENT SERIES

IIOT IN ACTION: A LIME INDUSTRY CASE STUDY

PLATTFORM
INDUSTRIE4.0





DIGITAL TRANSFORMATION

Intelligent
Machines



Advanced
Analytics



People at
work



=



Availability



Quality



Config



Fuel



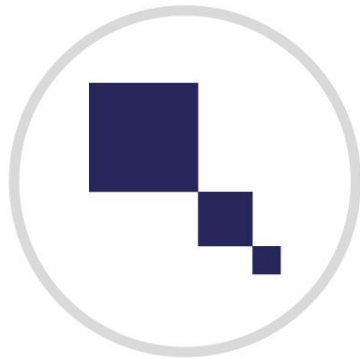
Power



DIGITAL PRODUCTION EXPERIENCE

DIGITAL LIME PLANT

the lime industrial company.
that's also a digital company.



...

#QUALICAL
INTERNATIONAL LIME INDUSTRY

qualical.com |     

MOSAICO

right information. right hands. right time



...

#QUALICAL
INTERNATIONAL LIME INDUSTRY

qualical.com |     

QualiTEAM

from reactive to proactive



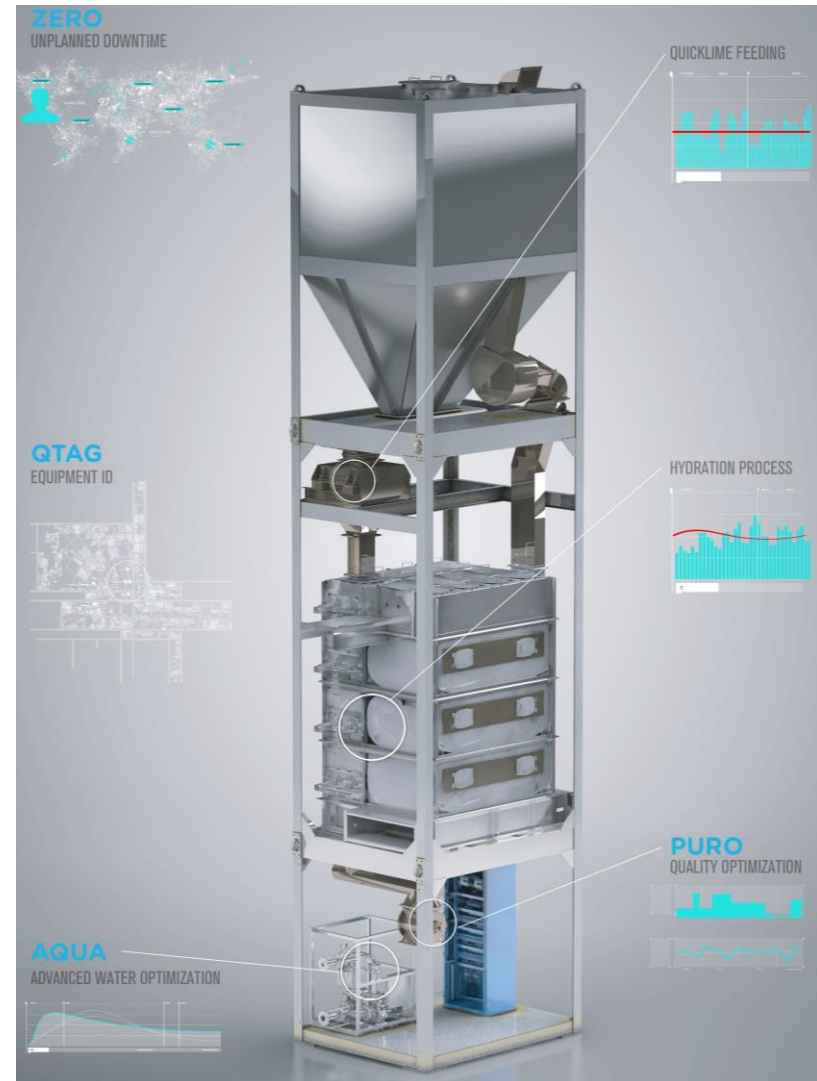
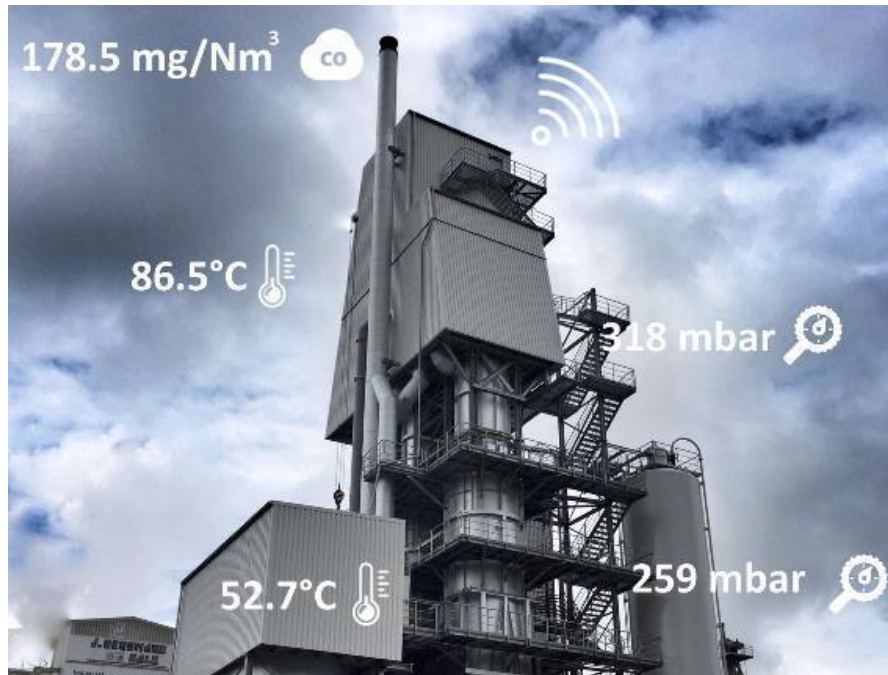
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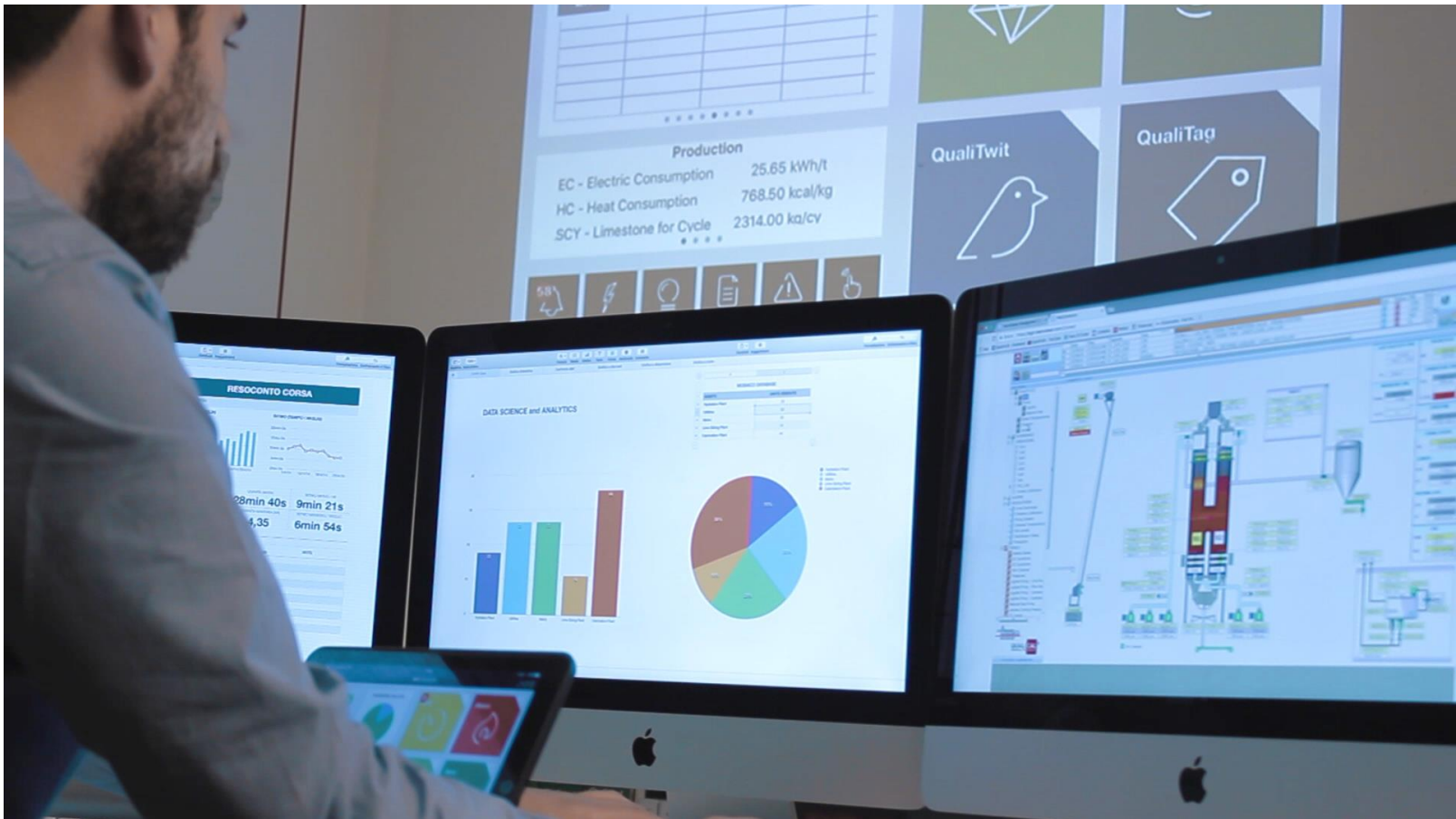


DIGITAL PLANT





DATA SCIENCE





MOSAICO ... EN MARCHÉ!

MOSAICO





CUSTOMER STORY MATTER



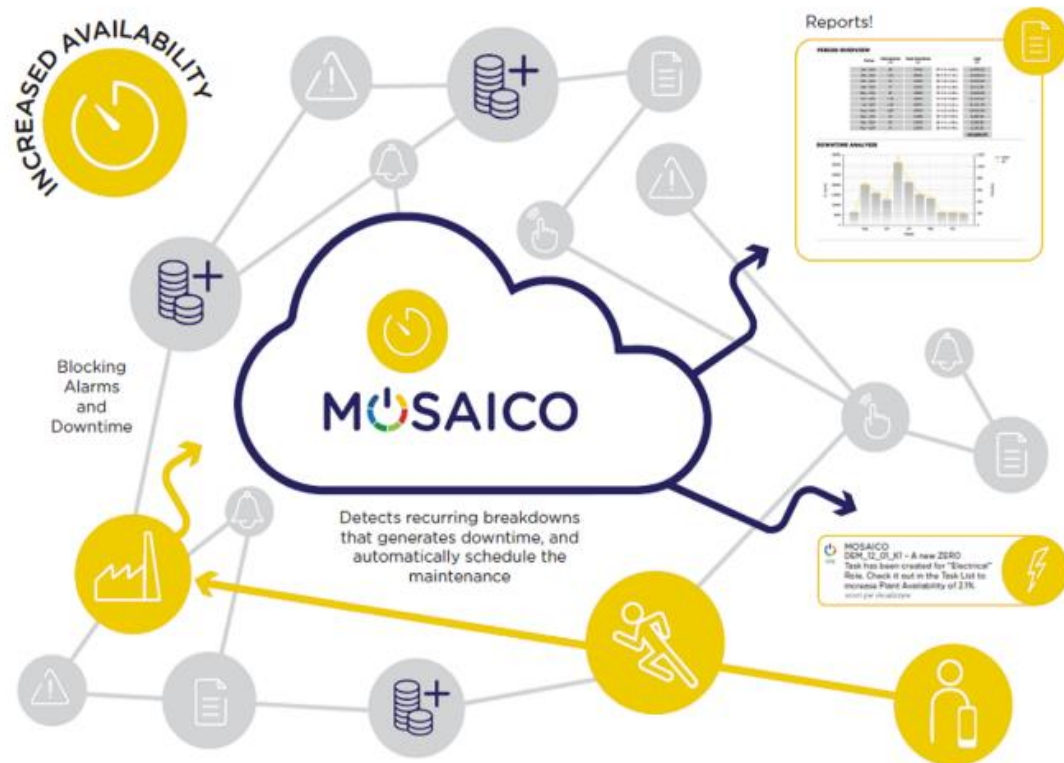


“HOW MUCH DOWNTIME IS IDEAL?
ZERO SOUNDS GOOD.”



MOSAICO ZERO_app

- Reduce unplanned downtime
- Optimize maintenance costs
- Smart pro-active maintenance plan





ZERO APP

UNPLANNED DOWNTIME



vodafone IT 12:29 78%

Back DEM_12_01_K1

Unplanned Downtime

3.15%
↓ 44%

Last 7 days

Tasks

Reports

Plans

Capture

Notifications

vodafone IT 12:26 79%

Back DEM_12_01_K1

MOSAICO

WEEKLY UNPLANNED DOWNTIME COST IMPACT

REPORT FROM 26/09/2016 TO 02/10/2016

PERIOD OVERVIEW

DATASET	PERIOD	ALARMS (#)		COST (€)
Actual	26/09/2016 - 02/10/2016	85	04 h 39 m 08 s	3,818.70
Period - 1	19/09/2016 - 24/09/2016	81	06 h 18 m 38 s	5,153.62
Last Year	26/09/2015 - 02/10/2015	0		

UNPLANNED DOWNTIME ANALYSIS

Residual unplanned downtime (%)

2.8%
↓ 29.28%

Cost trend

11,065.44 €
in production losses

based on quicklime price of 100 €/t

Cerca 12:37 66%

Back DEM_12_01_K1

	d	w	m	y
1	P1_ALM_0579			5 h
	K1ZV220.2 / SHAFT 2 LIMESTONE LOADING VALVE / WRONG POSITION			
2	P1_ALM_0578			3 h
	K1ZV220.1 / SHAFT 1 LIMESTONE LOADING VALVE / WRONG POSITION			
3	P1_ALM_0673			10 m
	QUICKLIME EXTRACTION / TOO FAST			
4	P1_ALM_0672			4 m
	QUICKLIME EXTRACTION SHAFT 2 / TOO SLOW			

vodafone IT 12:28 79%

Back DEM_12_01_K1

MAINTENANCE PLANS

Active	Archived
<p>CAL.SYN40.COM.AIRXS.BL...</p> <p>Contact Aerzen for blower revision</p>	<p>Tobias Lang</p> <p>PROGRESS</p> <p>10/08/2016</p>
<p>GENERIC.ITEM</p> <p>Check crash of the App on TOBIAS's task</p>	<p>Support</p> <p>PROGRESS</p> <p>23/08/2016</p>
<p>CAL.SYN40.WFS.WFSXS.FIL...</p> <p>Verify filter bag</p>	<p>Tobias Lang</p> <p>PROGRESS</p> <p>07/09/2016</p>
<p>CAL.SYN40.FIR.ABCXS.____</p> <p>ABACO cooling system failure</p>	<p>Tobias Lang</p> <p>PROGRESS</p> <p>07/09/2016</p>
<p>CAL.SYN40.BUR.KFUXS.INS...</p> <p>Channel Thermocouple damaged?</p>	<p>Tobias Lang</p> <p>PROGRESS</p> <p>09/09/2016</p>
<p>CAL.SYN40.COM.AIRXS.AF...</p>	<p>Tobias Lang</p>



ZERO APP

UNPLANNED DOWNTIME



OPERATIONAL OUTCOME

- Minimized Unplanned Downtime
 - Reduced time to restart the plant



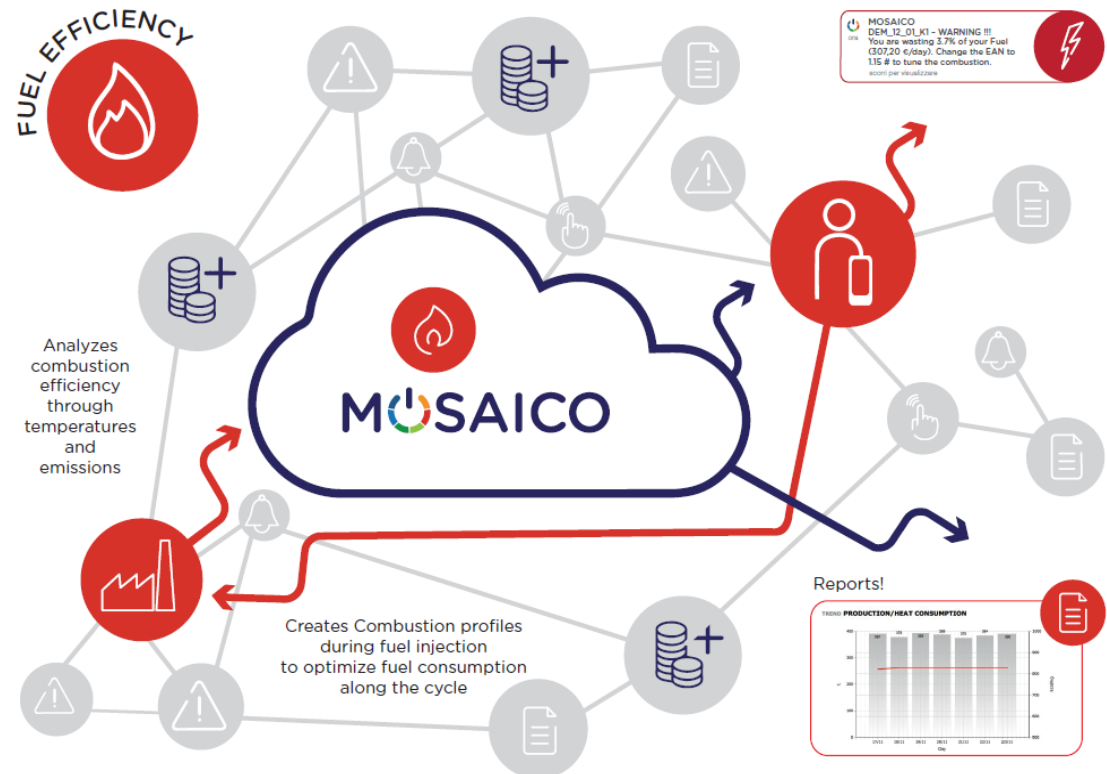
*”HOW MUCH FUEL SHOULD I USE?
JUST THE BARE ESSENTIAL.”*



MOSAICO ABACO_app

Increase the
burning and
combustion:

- Save fuel by reducing the unburned quantities
- Improve product quality
- Reduce thermal losses from the kiln
- Minimize environmental impact





ABACO APP

ADVANCED BURNING & COMBUSTION OPTIMIZATION



Mobile app interface for ABACO, showing various data screens and a social media post.

Top Bar: Vodafone IT, Signal strength, Time (12:29, 13:01, 12:35, 16:57), Battery (78%, 75%, 77%, 63%).

Navigation: Back, DEM_12_01_K1, Home, Refresh, Back, DEM_12_01_K1, Back, DEM_12_01_K1, Profile.

Main Content:

- Left Panel:** MUSAICO DAILY BURNING & COMBUSTION ANALYSIS REPORT. REPORT OF 05/08/2016. Includes a table for PROCESS CONDITION and INDEX COMBUSTION EFFICIENCY.
- Center Panel:** Combustion Efficiency. 96.5% (↑ 0%). Last 1 day. Includes a menu icon.
- Right Panel:** Social media post by Edoardo Cella (10.06.2016) with 2 likes. Text: "Today good quality of lime". Comments: Luca Frigeri: @support, Luca Frigeri: Translate?, Support: Great result @edoardo.cella!

Bottom Panel: Reports, Notifications.

Bottom Right Panel: Nominal Production [tpd] **5,888.57 € in fuel losses** (based on a fuel price of 0.2 €/kcal).

TIME	HP_#	HC_#	EAN_#	ALC_#	TC_1	TC_2	TWS
00:03:05	149	695	1.25	0.68	1094	1110	81
23:52:44	129	745	1.22	0.66	1022	1030	86



ABACO APP

ADVANCED BURNING & COMBUSTION OPTIMIZATION



OPERATIONAL OUTCOME

- Combustion Efficiency: +2,5%
- Fuel Consumption : -6.000
€ / month



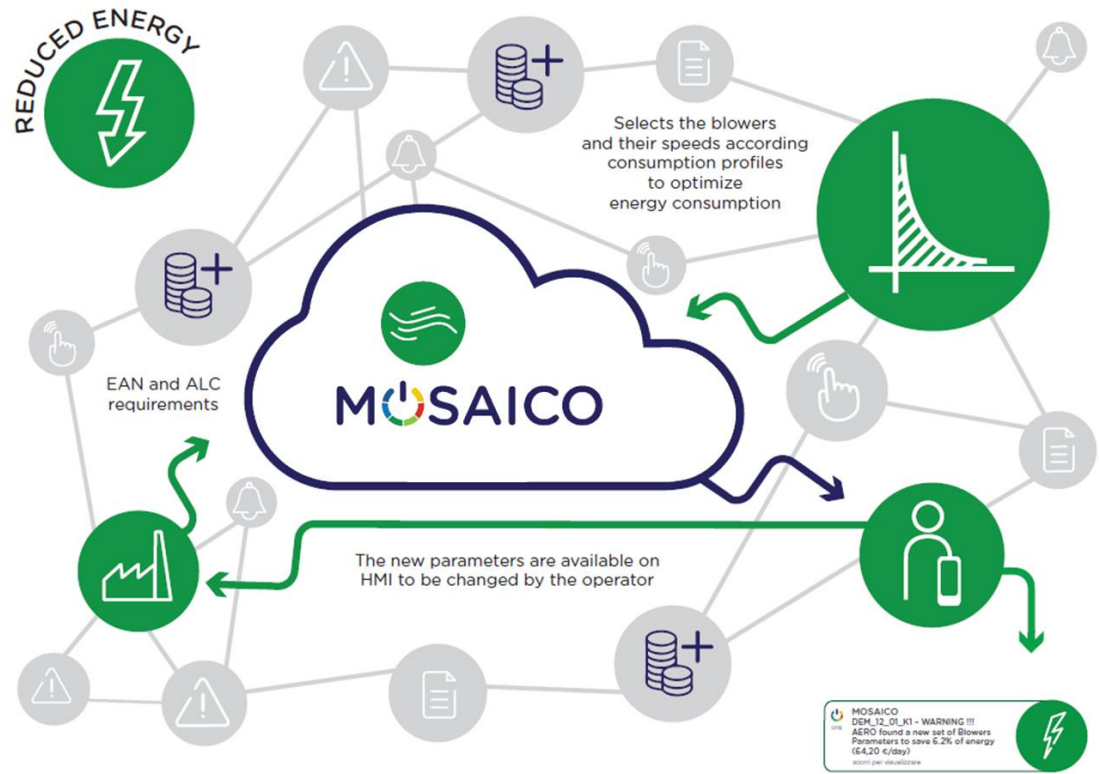
“ENERGY SAVED TODAY IS ASSET FOR FUTURE.”

MOSAICO

AERO_app

improvement in blower's reliability and electrical consumption of by:

- Optimizing blowers operating conditions,
- increasing their lifespan
- Recognizing in advance sign of failures of the blowers
- Suggesting predictive fine – tuning to minimize electric consumption





AERO APP

ADVANCE PROCESS AIR MANAGEMENT



Back DEM_12_01_K1 17:11 62% Back DEM_12_01_K1 17:10 62% Back DEM_12_01_K1 12:35 77% Back DEM_12_01_K1 17:12 62%

MOSAICO DAILY ENERGY & AIR SUPPLY EFFICIENCY REPORT
REPORT OF 01/10/2016

PROCESS CONDITION

TIME	NP_n [GJ/h]	EC [kWh/GJ]	CAPI_n [kWh/GJ]	EAN_n [GJ]	ALC_n [kWh/GJ]	CBAP [kWh/GJ]	LCAP S1 [kWh/GJ]	LCAP S2 [kWh/GJ]
00:00:01	195	33	8716.03	1.23	0.64	431	252	363
23:50:35	200	32	8876.68	1.23	0.64	401	238	374

INDEX AIR SUPPLY EFFICIENCY

INDEX POWER PROVISIONING COM

INDEX POWER PROVISIONING KOO

MR_13_02_K1 01/10/2016 1 of 13

Air supply Efficiency

81.1%
↑ 1%
Last 1 day

Reports

Notifications

d w m y

EAN [#]

delta EAN [#]

Combustion air pressure [mbar]

22,067.18 €
in energy losses

based on a fuel price of 0.07 €/kWh

Luca Frigeri 19.07.2016

1 likes
Pressure test on going with @tobias.lang

Davide Beretta 21.06.2016



AERO APP

ADVANCE PROCESS AIR MANAGEMENT



OPERATIONAL OUTCOME

- Air Supply Efficiency: +26%
- Electrical Consumption: -500
€/day



ATENEO LIME QUALICAL ACADEMY





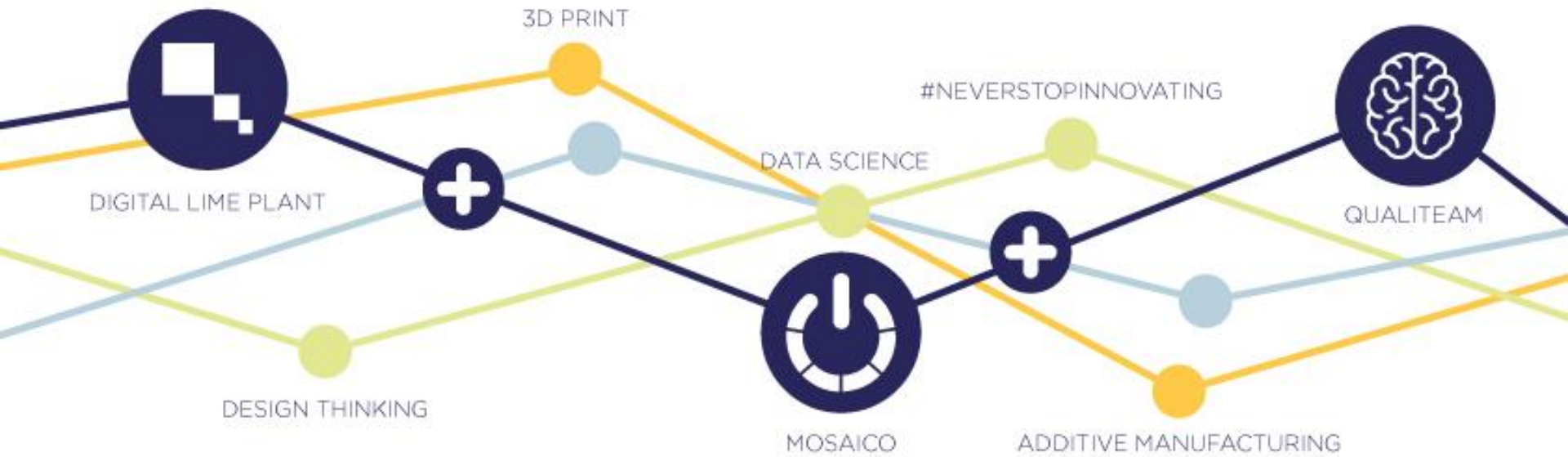
PERFORMANCE & RELIABILITY CENTER





QUALITEAM





CONCLUSION

#QUALICAL
INTERNATIONAL LIME INDUSTRY





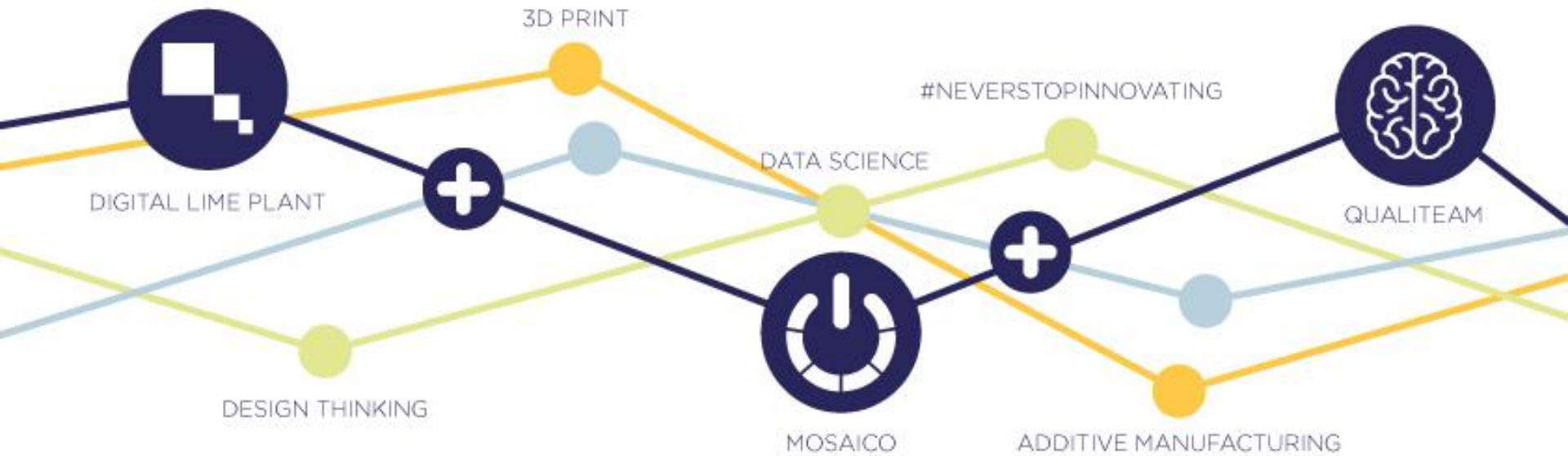
#INNOVATION





“THINK ABOUT THE FUTURE.
IT WILL BE HERE SOON
ENOUGH”





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THANK YOU

