mipac

beyond the solution



MPA AND TCARD

What happened on the last shift? What happens next?

One place for your operations team to capture the shift and coordinate the work, bridging your control system and your daily report.

For concentrators, smelters and refineries running around the clock.

THE PROBLEM

Your plant runs on a control system. Your shift runs on a spreadsheet and an inbox.

Every processing operation runs the same daily rhythm. Set the targets. Run the pre-start. Hand over between crews. Work with maintenance, metallurgy and the lab. Manage the exceptions. Get the daily report out. Then do it all again.

The control system runs the plant. The historian stores the history. The maintenance system holds the work orders. None of them were built to hold what the crew saw, decided and did in between, so that part ends up in Excel, Word, email threads, a whiteboard and the verbal handover.

What that costs you

- **Getting the data becomes the job.** The numbers sit across the control system, the historian, the lab system and three spreadsheets. Someone on your technical team pulls them together by hand, every day.
- **Reporting eats your metallurgists.** The hour before the production meeting goes on rebuilding numbers instead of analysing them, and errors creep in along the way.
- **Losses get argued, not fixed.** Downtime is classified from memory at the end of shift. Nobody fully trusts the total, and the cause is a matter of opinion.
- **Agreements live in someone's inbox.** What was agreed at the pre-start is whatever people remember, or whoever kept the email.

Each one gets you through a shift. Together, they never add up to a shared record.



WHERE IT GOES WRONG: THE CREW BOUNDARY

A whiteboard gets you through a shift change. It won't get you through R&R.

The cost shows up at the crew boundary, and there are two of them.

Shift change

EVERY 8-12 HOURS

The handover covers what's happening right now. What happened, what was tried and why mostly stays behind.

Roster change

AFTER 1-3 WEEKS ON R&R

A returning supervisor can only catch up by asking people who weren't there either. Trends, repeat failures and half-finished actions disappear.

> Once what happened is captured in one place, the handover stops being a summary of the last shift. It becomes a view of what's actually been going on.

Where MPA and TCard fit

Every system on site owns a piece of the day. MPA takes the piece that has no system behind it, and TCard keeps the work moving.

Acting in the moment	Your control system. When something happens, your operator is on the DCS, which is exactly where they should be. MPA doesn't go near it.	YOUR SYSTEM
Capturing what happened	Logsheets and Production Monitor	MPA
Coordinating the work	Shift Handover, with tasks and actions on the TCard board	MPA + TCARD
Reporting and deciding	Production Reporting, Digital TARP and Golden State	MPA
Storing history	Your site historian, such as AVEVA PI, which MPA reads from and writes back to	YOUR SYSTEM

HOW IT WORKS: START WITH ONE THING

Start with one application. Add the next when you're ready.

You don't need a platform program or a digital transformation roadmap. Pick the application that fixes the problem that impacts you the most, get it live, and let it earn the next step. Once the infrastructure is in place, most sites are live in two to four weeks.

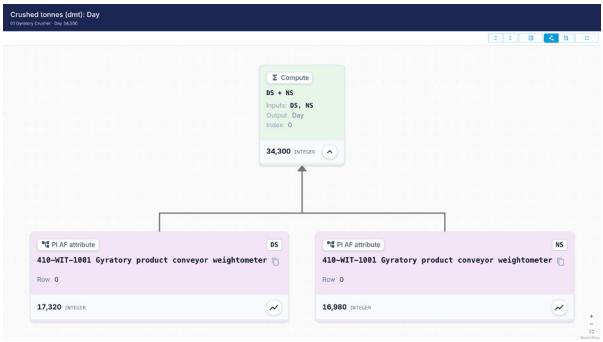
1	**Capture**	What happened is written down once, in a consistent structure, by the people who saw it	**Logsheets** **Production Monitor**
2	**Coordinate**	The handover, the pre-start and commitments across departments run off that record	**Shift Handover** **TCard**
3	**Report**	The daily and monthly numbers assemble themselves instead of being rebuilt	**Production Reporting**
4	**Manage by exception**	You're told when something was missed, rather than reading everything	**Digital TARP**
5	**Understand**	Performance drivers and bad actors become visible over time	**Golden State**

Each stage is worth having on its own, and each one makes the next easier. Stages 4 and 5 come later for a reason: they rely on a record your site is already keeping, and they ask the operation to change how it works.

What about AI?

Every AI tool for operations needs one thing first: a record of what happened and why. If losses aren't classified, the shift log is in a notebook and nobody wrote down why the line went down, there's nothing for a model to read. AI can't tell you what it was never told.

CAPTURE COMES FIRST.



WHO IT'S FOR

Built around the people who run the shift

PROCESSING MANAGER

You're accountable for targets you only see after the fact. MPA and TCard give you the shift picture as it forms: what was lost, why, and what the crew did about it. The morning meeting moves on to what happens next, not what happened yesterday.

METALLURGY SUPERINTENDENT

Your metallurgists were hired to improve recovery, not to chase data across five systems. Capture it as the shift runs, in a consistent structure, and their time goes back into the circuit.

OPERATIONS SUPERINTENDENT

Handover is where things get dropped. With the readings, the losses and the open actions travelling across the crew change, your incoming supervisor isn't starting from a whiteboard, and the pre-start isn't starting from scratch.

SHIFT AND CONTROL ROOM OPERATORS

Your crew enters the same information in three places. MPA pulls what it can straight from the plant and gives them one place for the rest. Less typing, more time on the plant.



ushing report - DS, NS, Day, MTD + Daily Target — Last updated: 11:15 AM

ribute Name	Units	DS	NS	Day	MTD	Daily target
01 Gyratory Crusher						
ushed tonnes (dmt)	tonne	17,320	16,980	34,300	131,850	35,000.00
g. crushing rate (t/h)	tonnes per hour	1,468	1,464			
n time (h)	hour	11.80	11.60			
02 Screening Plant						
ushed tonnes (dmt)	tonne	12,550	9,190			
g. crushing rate (t/h)	tonnes per hour	1,050	1,094			
n time (h)	hour	11.95	8.40			
03 Reclaim System						
claimed tonnes (dmt)	tonne	19,840	19,310			
g. reclaim rate (t/h)	tonnes per hour	1,667	1,643			
n time (h)	hour	11.90	11.75			
04 Overall Crusher Performance						
usher tonnes (dmt)	tonne	17,320	16,980			
erall crushing rate (t/h)	tonnes per hour	1,468	1,464			
n time (h)	hour	11.80	11.60			
05 Stockpile Levels & Balance						
G Mill tonnes (dmt)	tonne	19,420	18,960			
g. SAG Mill Feed (t/h)	tonnes per hour	1,618	1,580			
G 1 Stockpile Level	%	38	50			
G 2 Stockpile Level	%	54	49			

Built with industry feedback

Metallurgists and control systems engineers shaped what's in the product: the default logsheets, the loss classifications, the calculation logic, and what a shift report needs to say at 6am. It arrives already knowing how a processing plant runs, so your team isn't left to work it out in a configuration screen.



TCARD

Every task, every crew, on a board.

Task management built for 24/7 processing operations. A separate product that works alongside MPA.

TCARD OFTEN THE FIRST STEP

Today's missed task is tomorrow's problem

A missed check rarely hurts on the day. It turns up next week or next month as a failure nobody saw coming.

When tasks live on a whiteboard, a spreadsheet or in someone's head, there's no easy way to know what's done, what isn't, and whose job it was.

WHAT IT REPLACES

Whiteboards, paper task lists and Excel trackers. TCard can replace them or run alongside them, adding the workflow, traceability and accountability to manage work properly

WORKS WITH

Shift Handover. Open TCard actions travel with the handover, so the next crew sees what's still to do.

WHAT CHANGES

- **Shift-focused boards for every area**
  Shift-focused boards show what's outstanding across each plant area. Colour coding makes status obvious at a glance.
- **The same job, done the same way**.
  Each card carries the procedure, with tables, images and files. Operators flag an outdated procedure with a feedback request, so the procedure keeps up with the plant.
- **Problems raised from the field.**
  Operators update status, add photos, ask for help and leave comments while they're out on the plant, so complications are on the record.
- **Built around rosters and shutdowns.**
  Recurring tasks schedule themselves to suit your shifts and rosters. Shutdown tasks appear when the equipment comes down, including opportunistic work during unplanned downtime.
- **A daily summary in your inbox.**
  Work completed, issues raised and feedback requested, in one email.

Commercials

An annual site licence covers unlimited users and unlimited tasks. Rapid implementation, set up to match your current operation and existing tasks, is included in first-year pricing.

> *We've noticed the coordination between the Superintendents, supervisors and the operators has improved a lot. Now we are getting a lot of feedback from the operators. Because we have a TCard email that comes with all the comments, we tend to pick up very important feedback... I like TCard as a system, it's quite straightforward, it's simple and it's functional.*
>
> **Marvin Muller**
>
> previously General Manager Processing, Kamoto Copper Company S.A.



THE MPA SUITE

One place for what happened on the shift.

Applications that grow with your operation.
Start with one

MPA LOGSHEETS

Write it down once

Operators record the readings the instruments don't catch. Then someone retypes them into a spreadsheet, and someone else uploads them to the historian the next day.

Excel logsheets crash at the worst moment, versions drift, and only one person can use the file at a time.

WHAT IT REPLACES

Paper logsheets, Excel logsheets and the daily upload to the historian.

WORKS WITH

Production Reporting and Shift Handover. What's captured in Logsheets flows into the daily report and the handover without being retyped.

WHAT CHANGES

- **Captured once, available everywhere.** Operator readings and observations go straight into your PI historian alongside instrumented data. Nobody retypes them.
- **Fewer bad numbers.** Logsheets provide feedback when a value falls outside the normal operating range or is entered against the wrong shift.
- **Visual cues for operators.** Colour-coded highlighting helps operators quickly spot unusual readings and entries recorded against the wrong time period.
- **Instrument drift shows up early.** Manual checks sit beside instrument readings, so you can see when the two start to part ways.
- **One version, many users.** Several people can work on the same logsheet at once, always on the current version.
- **Look back in seconds.** Earlier shifts' readings and operator comments are a click away.

Proof at Pogo, Alaska

At Northern Star's Pogo operation in Alaska, seven digital logsheets replaced Excel workbooks used to record unmetered streams across more than 10 plant areas. The metallurgy team now spends no time maintaining the logsheet system and extends it themselves when they need to.

> *I tried to calculate the benefit based on percent improvement in time savings, but it is not possible to divide by zero! With Logsheets, we no longer spend ANY time maintaining our Logsheet system.*

James Sweeney

Project Metallurgist, Northern Star Resources, Pogo Operations, Alaska

MPA PRODUCTION REPORTING

Walk into the morning meeting with the numbers already there

Your daily report pulls from the control system, the historian, the lab and a stack of spreadsheets, and someone rebuilds it every morning.

Shift Handover: the handover writes itself

The handover report is generated from what the crew recorded during the shift: readings, losses and open actions. The incoming supervisor reads what actually happened, not whatever someone remembered at the end of the night.

WHAT IT REPLACES

The morning spreadsheet rebuild.

WORKS WITH

Logsheets and Production Monitor feed the report.

Proof at Newmont Merian

"Working with Mipac was a real pleasure. We worked as a team and were able to achieve great results for our daily production reporting. We saw significant benefits with our reporting, data visualisation and data security. I would recommend Mipac to anyone.

Yuanbin Qin

Senior Metallurgist,
Newmont Merian

WHY BUILD IT ON MPA

Every plant reports differently, so your production reports are built around your circuit, your KPIs and your reporting rhythm. What matters is where that build starts. A general-purpose reporting or BI tool starts from a tag list and a blank page, and your team works out the rest. Production Reporting starts from templates and calculation logic shaped by metallurgists and control systems engineers who know what a processing plant's production report has to say.

- **Calculations that already understand a processing plant.** Mass balance, recovery, loss attribution and reconciliation against the lab start from logic built for mineral processing. You get a number your metallurgists will put their name to, not just a trend.
- **Manual and instrumented data in one report.** Historian data, lab results and the readings your crew enters in Logsheets feed the report directly. Nothing gets copied across in the hour before the production meeting.
- **Built on PI AF templates.** On sites running AVEVA PI, report structures and calculations live in your PI system beside your plant data, so every report draws on the same numbers.
- **Made for the supervisor and the metallurgist.** The same record answers the shift supervisor checking the last 12 hours and the metallurgist reconciling the month.
- **Budget versus actual at any timeframe.** Track production KPIs against plan by shift, day, week or month.
- **Yours to extend.** After handover, your team adds and adjusts reports from the same templates as the plant changes.



FROM RECORD TO ACTION

Once it’s written down, it starts working for you.

Production Monitor, Digital TARP and Golden State build on the shift record to show where tonnes go, what to do about it, and why it keeps happening.

MPA PRODUCTION MONITOR

Every lost tonne, with the reason it was lost

Downtime gets classified from memory at the end of shift. Short stops and slowdowns often aren't recorded at all.

By the time the numbers reach the production meeting, the cause is up for debate and so is the total.

WHAT IT REPLACES

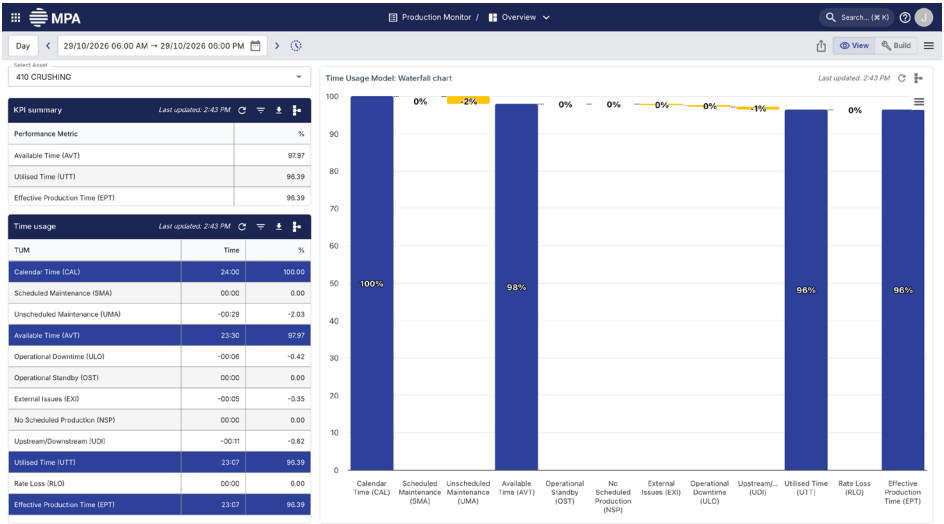
End-of-shift downtime spreadsheets and delay logs written from memory.

WORKS WITH

Shift Handover and Production Reporting. Losses and their causes carry straight into the handover and the daily report.

WHAT CHANGES

- **Losses captured when they happen.** Downtime and slowdowns are picked up from your plant data and logged at the time, not reconstructed later.
- **The reason stays with the record.** The crew classifies each event while they still know why it happened, so attribution holds up when someone questions it.
- **The losses nobody escalates.** Short stops and running below rate add up quietly. They show up alongside the big events, where you can do something about them.
- **Repeat events stand out.** Weak links and recurring losses become visible across shifts, so you can put mitigations in place.
- **Simple for operators.** Screens designed for quick adoption on the control room floor.



MPA DIGITAL TARP

The same response, every shift

Your Trigger Action Response Plans (TARPs) were written by experienced people for good reasons.

On night shift, with a newer crew, the folder on the shelf doesn't get opened, so the response depends on who's on. Once the event is over, there's little record of what was actually done.

WHAT IT REPLACES

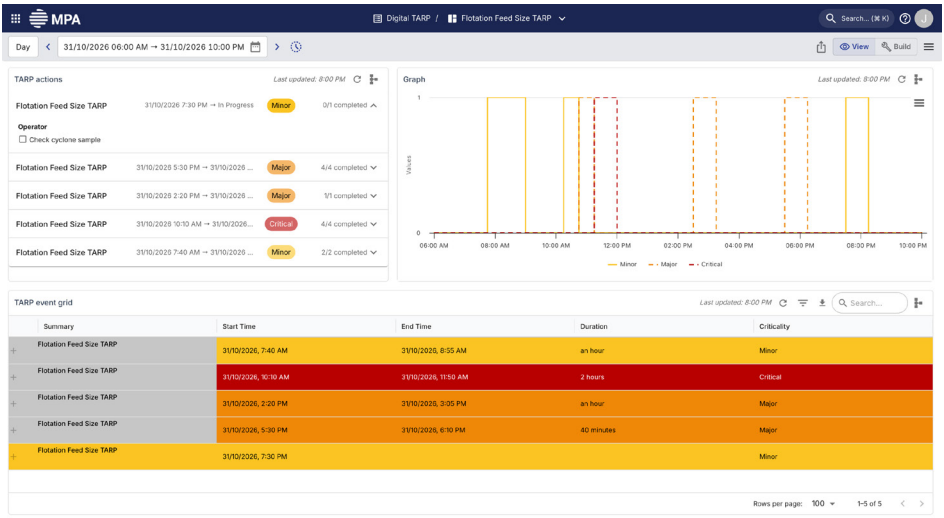
TARPs in a folder, and escalation by phone call.

WHEN TO ADD IT

Once your shift record is running and trusted. Digital TARP works off that record, so it earns its place after the first applications are live.

WHAT CHANGES

- **Triggers watched for you**. TARPs activate and escalate against criteria you set, and notify the right people by email.
- **The agreed response, in front of the crew.** Each trigger shows the approved actions for that event, so the response doesn't depend on experience.
- **Everything on the record**. Comments, extra actions and outcomes build a full audit trail of every event.
- **Know when a trigger goes unanswered.** Management hears about breached triggers and open escalations, instead of reading every handover.
- **Better plans over time.** Compare past events to see which responses worked, then refine the TARP. Your team builds and edits TARPs themselves after the initial setup.



MPA GOLDEN STATE

See what's really driving performance

Recovery dips, throughput drops and the morning meeting debates why.

Drivers compete with each other, lab results arrive hours later, and every shift has its own theory.

WHAT IT REPLACES

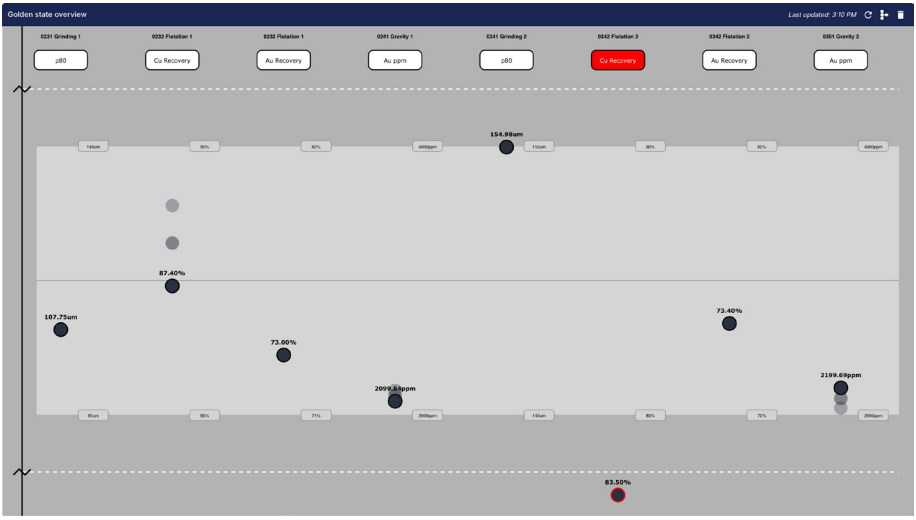
Competing shift theories and control limits nobody has revisited.

WHEN TO ADD IT

Once the shift record has been running long enough to show patterns. Golden State is most useful when there's history to learn from.

WHAT CHANGES

- **Define your golden state.** Set target ranges for the outcomes that matter, and for the process drivers behind them.
- **Drill down to the driver**. See which unit operations are outside limits, and which drivers are responsible.
- **Include what the control system can't see.** Plant data sits alongside manual samples and lab results.
- **Find the bad actors.** Repeat offenders become visible over time, so improvement effort goes where it counts.
- **Keep what your best people know.** Add work instructions and process knowledge to the displays. Newer operators learn how each driver affects the outcome.
- **Limits that flex.** Adjust target ranges as conditions change.



PROOF

From sites already running it

NORTHERN STAR RESOURCES (AU)

MPA

6 sites

Shift logs and handover KPIs rolled out corporate-wide across six sites.

NEWMONT MERIAN

MPA

Hundreds of hours

Production reporting and logsheets on AVEVA PI, saving the site hundreds of hours.

NORTHERN STAR POGO

MPA

7 logsheets

Seven digital logsheets replaced Excel workbooks across more than 10 plant areas.

"The benefits from MPA were realised immediately."

Mark Pliska
Processing Manager
Northern Star Resources
Pogo Operations, Alaska

GLENCORE MOUNT ISA MINES

TCARD

"Sharing the load, standardising the approach and giving our Operators continuous input into the tasks continue to be the key to the success we've achieved."

Mark Peterson
Manager Maintenance
Glencore MIM

GETTING STARTED

What it takes to get started

1. Pick your starting point	Usually TCard, Logsheets or Shift Handover, whichever matches the problem you feel most.
2. Set up around your plant	Mipac engineers map your plant data and configure the application from templates built for processing operations.
3. Live in weeks	Most sites are live in two to four weeks.
4. Your team takes it from there	After handover, your people add logsheets, edit TARPs and extend the applications themselves.

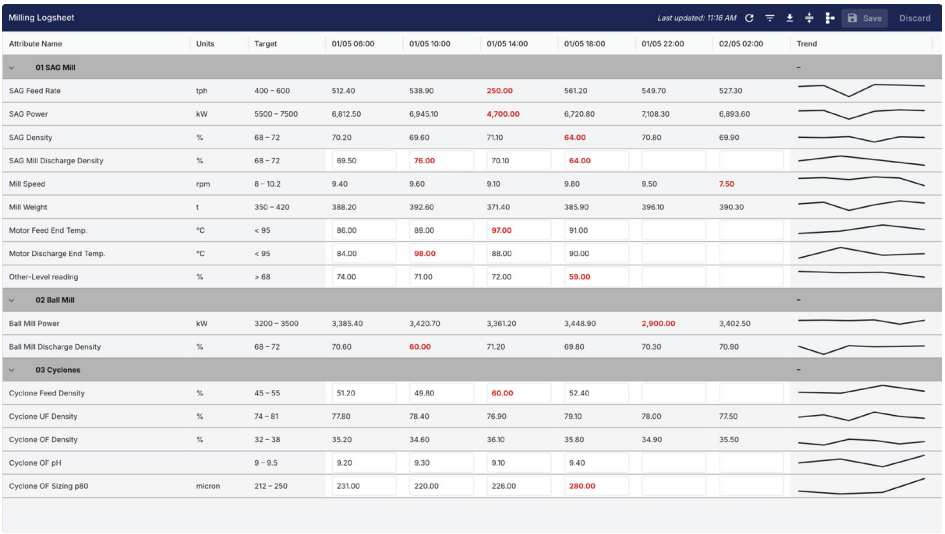
What you'll need on site for MPA

- AVEVA PI historian with PI Asset Framework (PI AF). If AF isn't set up yet, Mipac can help.
- A PI System Access (PSA) licence. Mipac can help you obtain it, or you can go through your AVEVA account manager.
- A server. Virtual or physical, ideally Windows Server 2019 or later, with administrator access to install and configure MPA.
- A service account. Arranged with your IT team, to access the PI Data Archive and PI AF server.

MPA runs on-premises in your OT network, and your data stays in your historian.

Support

- **Standard support.**
  Help with software issues such as bugs and incidents, during business hours.
- **Premium support.**
  For complex application or infrastructure issues, with response times set to suit your site and access to application specialists for minor additions.



Attribute Name	Units	Target	01/05 08:00	01/05 10:00	01/05 14:00	01/05 18:00	01/05 22:00	02/05 02:00	Trend
01 SAG Mill									–
SAG Feed Rate	tph	400 – 600	512.40	538.90	**250.00**	561.20	549.70	527.30	
SAG Power	kW	5500 – 7500	6,812.50	6,945.10	**4,700.00**	6,720.80	7,108.30	6,893.60	
SAG Density	%	68 – 72	70.20	69.60	71.10	**64.00**	70.80	69.90	
SAG Mill Discharge Density	%	68 – 72	69.50	**76.00**	70.10	**64.00**			
Mill Speed	rpm	8 – 10.2	9.40	9.60	9.10	9.80	9.50	**7.50**	
Mill Weight	t	350 – 420	388.20	392.60	371.40	385.90	396.10	390.30	
Motor Feed End Temp.	°C	< 95	86.00	88.00	**97.00**	91.00			
Motor Discharge End Temp.	°C	< 95	84.00	**98.00**	88.00	90.00			
Other-Level reading	%	> 68	74.00	71.00	72.00	**59.00**			
02 Ball Mill									–
Ball Mill Power	kW	3200 – 3500	3,385.40	3,420.70	3,361.20	3,448.90	**2,900.00**	3,402.50	
Ball Mill Discharge Density	%	68 – 72	70.60	**60.00**	71.20	69.80	70.30	70.90	
03 Cyclones									–
Cyclone Feed Density	%	45 – 55	51.20	49.80	**60.00**	52.40			
Cyclone UF Density	%	74 – 81	77.80	78.40	76.90	79.10	78.00	77.50	
Cyclone OF Density	%	32 – 38	35.20	34.60	36.10	35.80	34.90	35.50	
Cyclone OF pH		9 – 9.5	9.20	9.30	9.10	9.40			
Cyclone OF Sizing p80	micron	212 – 250	231.00	220.00	226.00	**280.00**			

Questions we get asked

Do I have to buy the whole suite?

No. Start with one application that fixes a problem you have now. Add the next when the operation is ready for it.

Do I need AVEVA PI?

Not necessarily, but you'll be up and running sooner if you have it. With PI in place, MPA reads from and writes back to your historian through PI AF, so everything your crew captures sits alongside your plant data from day one.

How do MPA and TCard relate?

TCard holds the tasks and actions. MPA holds the shift record. The shift handover is where they meet: what's open in TCard travels with what was recorded in MPA.

Can my team change things after go-live?

Yes. Your team can add logsheets, build and edit TARPs, and extend the applications as the plant changes. Mipac gets you started and stays available through support.

What about AI?

Any AI tool needs a captured, structured record of what happened and why. Most sites don't have one yet. MPA builds it.

How do operators use MPA?

Operators continue to monitor and control the plant through the control system. MPA helps capture what happened during the shift, record actions and decisions, investigate events, and support shift handover. Many sites use MPA throughout the shift to maintain an operational record and coordinate activities across crews.

Let’s talk

On most sites, Mipac is in the plant doing control systems and engineering work long before software comes up. MPA and TCard come from the same people, built for the way a processing plant actually runs.

30+ yrs
servicing the mining industry

110+
site operations

730+
projects delivered

55+
countries around the world

mipac
beyond the solution

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