



EFFICIENCY IN TURNKEY SOLUTIONS
TURNKEY CAPABILITY FROM A
SINGLE SOURCE - YOUR COMPETITIVE
EDGE POWERED BY OUR UNIQUE
KNOWLEDGE AND EXPERIENCE

YOUR CHALLENGE TO SUCCEED IN A GLOBAL MARKET WITH SMART INVESTMENTS

SEAMLESS PROCESS MANAGEMENT

Market conditions in the metallurgical industry require you to operate at maximum efficiency and flexibility. To be able to keep up with global requirements, you need to coordinate all processes when you invest in a plant. This ranges from planning to implementation. And whether you're working on a greenfield or brownfield project, the planning phase is the foundation for the successful implementation of the plant. That's why you need the right partner with many years of experience and expertise in building turnkey plants. Process cycles must be coordinated according to your specific conditions so that they're perfectly engineered, and the development of a competitive plant is ensured.

GLOBAL EXPERTISE

To keep pace with global competition, you need a partner with international experience - one who provides the necessary expertise for all structural measures. You also need a partner who can draw on a wealth of international experience to provide you with unique, valuable knowledge right from the start. This includes knowledge of both legal regulations that vary by region as well as local conditions for planning and integration of culture-specific requirements.

EFFICIENCY

Carrying out a project in the shortest possible time and rapidly starting up a plant are challenging. You need an experienced partner to ensure the profitability of your plant throughout the entire lifecycle.

RELIABILITY

You have to make large investments when developing a metallurgical business. Reliability and trust are important when accepting the investment risk of a new or modified plant. That's why it's so important to approach a construction project with a partner who will ensure the necessary planning reliability and optimum project management. It's the only way to improve the success of your investment.

The global metal industry continues to grow. According to current forecasts, demand for steel is set to grow by an additional 25% by the year 2015. Ensuring the long-term competitiveness of a metallurgical plant operator in these market conditions requires extensive expertise in construction of new plants and modification of existing ones.

YOU EXPECT ...

- To be able to succeed in a global market with expert turnkey solutions from a single source
- Expertise in plant building thanks to experience from throughout the world
- Efficient project management and implementation of turnkey projects combined with unique expertise in engineering and construction management
- Minimum costs and time for the project thanks to coordination of each stage of work
- Increased environmental protection and optimized processes for efficient production with well-designed solutions

OUR SOLUTION

CHANGE YOUR PERSPECTIVE WITH A RELIABLE PARTNER

EXPERIENCE THAT MATTERS

Primetals Technologies is your reliable partner for greenfield and brownfield projects. We have over 40 years of worldwide experience in the development and implementation of turnkey projects for the metallurgical industry. Close collaboration with all technological departments of Primetals Technologies ensures that plants can be developed and implemented exactly in line with individual requirements. Thus, optimization of interfaces is ensured in the process. Primetals Technologies offers plant operators the experience and expertise to succeed right from the start, as impressively proven in over 1,800 successful projects in more than 100 countries around the world.

SUSTAINABLE SOLUTIONS FOR THE ENTIRE PLANT

In our turnkey projects, Primetals Technologies focuses on creating sustainable economical and ecological solutions. Our range of products and services includes process technology, mechanical and electrical equipment, automation, as well as infrastructure and auxiliary plants, project management and commissioning – all from a single source. Primetals Technologies' broad wealth of experience makes it possible to offer solutions for the entire value-added chain, so that individual solutions can be optimally coordinated.

MINIMUM COST AND PROJECT RISK THROUGH TURNKEY SOLUTIONS EXPERTISE

These goals are achieved by the turnkey solutions competence center of Primetals Technologies, which offers customer-oriented support for the following areas: construction, steel structures, building technologies, fire protection, cranes and transport systems, corrosion protection and insulation, wastewater treatment and utilities, installation planning as well as complete construction site management.

Turnkey solutions from Primetals Technologies are highly efficient thanks to perfect coordination of the production process, which is incorporated early in the planning phase. To round off our single-source offer, turnkey solutions from Primetals Technologies manage the various legal conditions in individual countries as well as cooperation agreements. These agreements are with international engineering, construction and erection companies. Primetals Technologies' expertise in turnkey solutions forms a solid foundation for future success.

INTELLIGENT SOLUTIONS TO OPTIMIZE YOUR INVESTMENT COSTS

With their minimal time and cost risk, our complete solutions from a single source fully meet your economic requirements as the plant operator.

Success must be built on a solid foundation that meets the needs of modern metals production. That's why we from Primetals Technologies have made it our first priority to ensure the competitiveness of plants with our turnkey solutions for over 40 years. We achieve these goals with best possible engineering and project management, and with industry-specific, global state-of-the-art expert knowledge. As in the past, we will continue to focus on customers' specific requirements when optimizing investment costs.

GOOD REASONS FOR PRIMETALS TECHNOLOGIES' TURNKEY SOLUTION EXPERTISE:

- **Seamless process management** – backed with sustainable and innovative technology. Our process know-how leads to a design that thoroughly reflects the specific requirements of your production plant, while maximizing energy efficiency and minimizing financial costs.
- **International experience** – proven by metallurgical solutions implemented in more than 1800 projects worldwide. Our top health and safety standards are key priority in international business.
- **Optimized efficiency** – when it comes to project implementation and plant start-up. Our focus is on the profitability of your plant and optimally managed interfaces throughout the entire lifecycle.
- **Providing support** – a reliable partner helps when it comes to large investments in the metallurgical business. Our optimum project management ensures best planning and implementation reliability that leads to your successful investment at minimum time and cost risk.

ON TOP IN THE METALLURGICAL INDUSTRY WITH TURNKEY SOLUTIONS FROM PRIMETALS TECHNOLOGIES

Full-line expertise: Our experience and expertise in all aspects of the production chain in metallurgical production industries make Primetals Technologies your perfect partner worldwide for turnkey solutions. For over 40 years, global market leaders in a wide range of metallurgical industry segments have relied on reliability and efficiency. They have relied on turnkey solutions from Primetals Technologies.

Single-source solutions for the entire metallurgical process route - successfully implemented in more than 1,800 projects worldwide.



Mining



Blast furnaces



Reduction plants



Integrated steel plants



Mini mills



Continuous casting plants



Rolling mills



Strip processing



TURNKEY SOLUTIONS FROM PRIMETALS TECHNOLOGIES – SUCCESS FROM A SINGLE SOURCE

INSTEAD OF A COORDINATION EFFORT...

Normally when a project is assigned there are a large number of suppliers to coordinate with respect to timing, technology, logistics and financing. This complexity is a major factor that extends through the lifecycle of the plant and raises a number of questions: Who is responsible if the design capacity is not achieved at the planned time at budget costs? Who ensures that the system can be expanded in all its technical complexity?

PRIMETALS TECHNOLOGIES – YOUR LIFECYCLE PARTNER: OUR PROJECT FINANCE STRUCTURING EXPERTISE

Projects for mining, iron and steelmaking, and rolling and processing are complex and require proven project management to implement them efficiently.

Primetals Technologies has extensive experience and knowledge in developing and implementing financing structures for metals projects worldwide. We support our clients in designing and arranging short, medium and long-term financing structures, usually in conjunction with international financial institutions and commercial banks. This is just another part of our complete solution.

PROJECT MANAGEMENT FROM THE MARKET LEADER

Primetals Technologies offers you our experience from over 1,800 successfully completed projects around the world. Our project management is certified to ISO 9001: 2000. We have standardized tools available to handle all levels of project management with a transparent and organized approach.

Right from the preliminary project phase, the project is divided into various construction phases. Measures are defined and a detailed cost calculation is carried out for each of these phases. Primetals Technologies' comprehensive planning and coordination capabilities are the key to our turnkey expertise.

Core expertise of Primetals Technologies

- Monitoring costs and progress of the project
- Providing basic and detailed engineering
- Preparing specifications for equipment and building works
- Scheduling and site management
- Ensuring technical quality and accuracy

The result is optimal coordination between all interfaces.



CUSTOMIZED TURNKEY MODELS ALWAYS ON YOUR SIDE

Primetals Technologies provides a wide range of turnkey execution models to meet your specific needs, always with the goal of optimizing your investment budget.

Two factors come to the fore here:

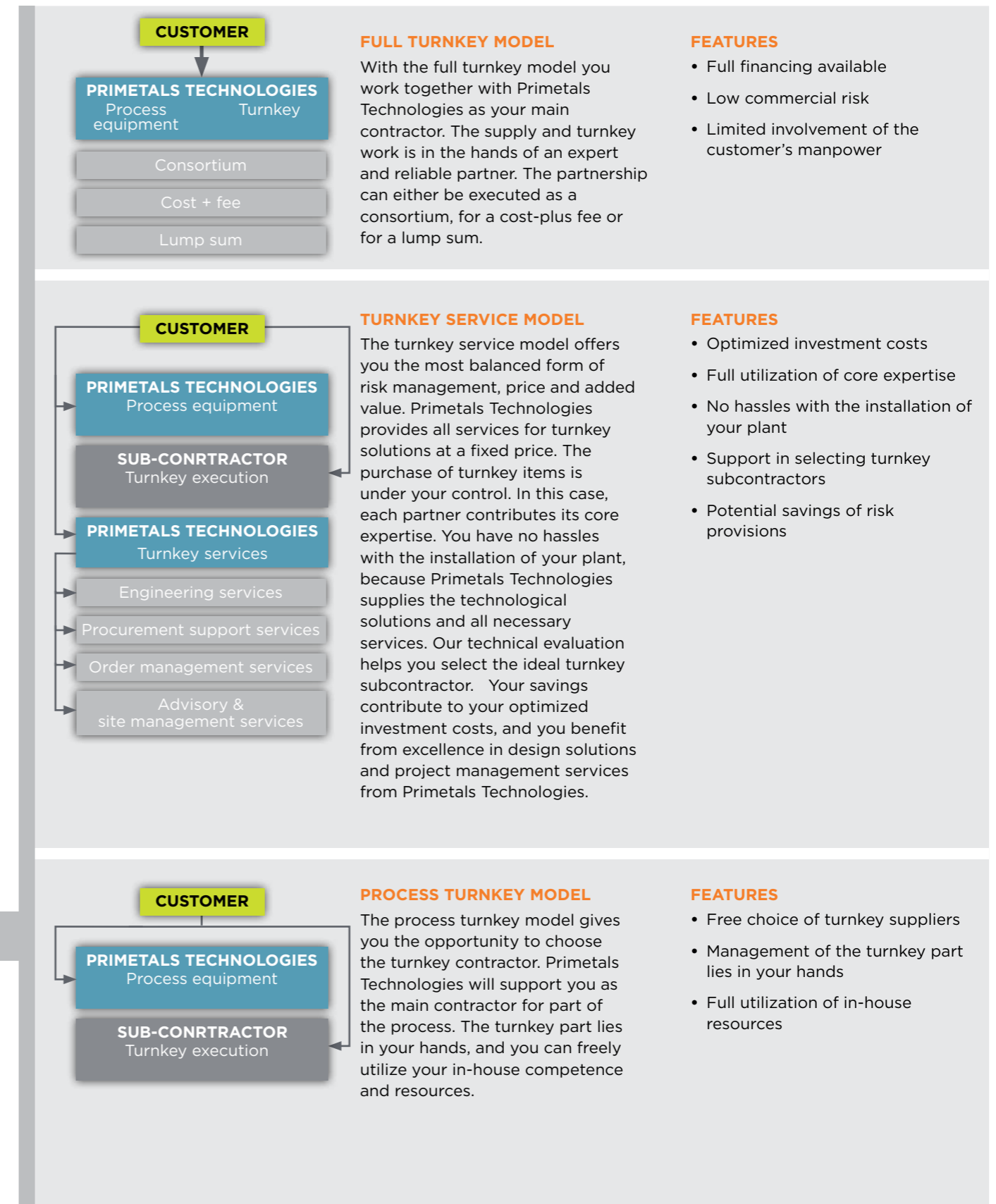
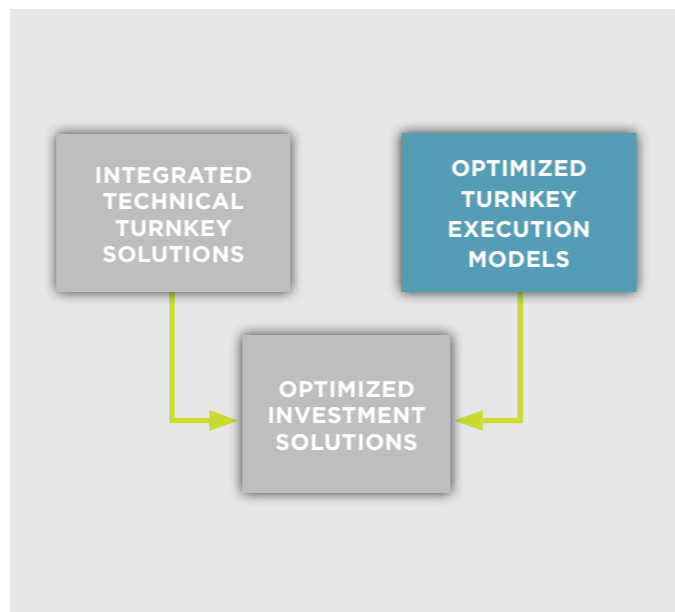
- **Integrated technical turnkey solutions** are optimally integrated with metallurgical technology to provide a solid foundation for optimized investment costs.
- **Optimized turnkey execution models** focus on risk management as well as manpower and project control.

When combined, these two factors help keep investment costs to a minimum. No matter which solution fits your needs, Primetals Technologies is your experienced and reliable partner. We focus on innovation and state-of-the-art solutions to optimize your investment costs.



MAIN BENEFITS

- Few technical interfaces since all components are well integrated in the overall concept
- Overall quality is guaranteed by partnership with qualified subcontractors
- Well-planned project management ensures on-schedule completion and smooth start-ups for short payback periods



CIVIL WORKS COUNT ON IN-DEPTH KNOWLEDGE

Backed by our international experience, civil works professionally covers the areas of building construction and concrete construction. Offered services include design, construction engineering as well as construction management.

Primetals Technologies turnkey solutions accompany all construction work in the area of metallurgical plants, from the start of the project planning phase to acceptance by the customer. Primetals Technologies' expertise in constructing plants in various geographical regions ensures that the plant designs are adapted to the local climatic conditions.

In the area of reinforced concrete construction, our services range from pile foundations to architectural building construction solutions. Primetals Technologies is also accustomed to working in large dimensions. We have the competence to handle construction sites with over 100,000 cubic meters of reinforced concrete cubature to the complete satisfaction of our customers.



Phase 1 & 2 - brownfield



Phase 3 - brownfield

SCOPE OF SERVICES

- Project management of engineering companies and construction companies
- Design of buildings
- Functional and static design of civil works
- Formwork and reinforcement drawings
- Preparation of tender documents and evaluation of bids
- Quantity survey for invoicing purposes
- Execution of civil works for foundations and buildings
- Supervision of construction on site
- Design studies for economical solutions



Continuous casting line



Converter foundation - emergency pit

MAIN BENEFITS

- All construction services are perfectly adapted to the industrial plant
- Various regional requirements for the plant are considered right from the planning phase
- Coordination of interfaces between construction and installation work is secured
- Permanent monitoring by experienced experts from Primetals Technologies is provided from the beginning of the planning phase up to the finished project

STEEL STRUCTURE

A SOLID BASIS FOR ALL PRODUCTION REQUIREMENTS ROLLING MILL BAY STEEL

Primetals Technologies develops and builds customized steel structure solutions adapted to the specific requirements of metallurgical production plants. Our experience from well over 100 completed plants ensures that your projects will be perfectly executed.

STEEL STRUCTURE SOLUTIONS

Primetals Technologies handles all types of industrial buildings, their platforms and bins, as well as the associated surrounding facilities.

In particular, tower-like steel structures (blast furnace, COREX®, FINEX®, MIDREX®) for iron production are subject to very individual requirements, which we meet by working in close cooperation with technology planners. We handle steel structure weights of up to 50,000 t per project, industrial towers with heights over 100 m and weights of up to 10,000 t.



Direct reduction tower



Bay steel structure, rolling mill

SCOPE OF SERVICES

- Project management of engineering companies and fabrication shops
- Structural design engineering incl. static and dynamic calculations
- Shop drawings
- Preparation of tender documents and evaluation of bids
- Quantity survey for invoicing purposes
- Fabrication of steel structure
- Supervision of fabrication
- Design studies for economical solutions



Rolling mill

MAIN BENEFITS

- Optimized solutions tailored to your needs thanks to our extensive experience in construction
- A design adapted to local conditions as well as to project-specific requirements
- Efficient project execution ensured by our worldwide procurement together with stringent monitoring
- Coordination of interfaces between equipment and steel structure
- Expert supervision from the start of the project up to the completion of the plant

CRANES, ELEVATORS AND VEHICLES PERFECTLY ORGANIZED MOBILITY

Mobile components such as cranes play a crucial role in the efficiency of modern metallurgical production.

THE RIGHT EQUIPMENT

Based on the needs of your production chain, Primetals Technologies provides the suitable cranes and mobile equipment. We provide a wide range of cranes with capacities from 1 to 550 t such as charging cranes, teeming cranes, slab/billet handling cranes, scrap handling cranes, rolling mill EOT cranes, coil/bundle handling cranes and maintenance cranes. Cranes are provided with special lifting attachments for safe load pickup and transport such as spreader beams with laminated hooks, magnets, mechanical or hydraulic slab tongs, and coil tongs.

Primetals Technologies is a specialist for road transport vehicles such as scrap bucket carriers, slag pot carriers, slab carriers and coil transporters - all specially designed for the metallurgical industry. A variety of special elevators rounds off our offer for perfectly organized mobility.



Ladle handling



Teeming crane, stainless steel meltshop

SCOPE OF SERVICES

- Establishing main data of cranes, such as:
 - capacity,
 - main dimensions and crane outlines,
 - hook approaches,
 - operating speeds,
 - classification,
 - estimation of wheel loads,
 - electrical and control systems
- Coordination of all engineering fields
- Preparation of tender documents and evaluation of bids
- Supervision of detail engineering, manufacturing, erection and commissioning
- Project control and scheduling



Scrap charging



Slab handling crane, suited for hot slabs up to 850° C

MAIN BENEFITS

- Interfaces between production equipment and cranes are handled by experienced experts
- The resulting crane solutions are thus ideally tailored to the needs of metallurgical production
- Continuous supervision ensures that all requirements are met
- Our experts accompany you from startup to commissioning and training

BUILDING SERVICES

OPTIMUM AND FIRE-PROOF WORKING ENVIRONMENT

Climatic conditions determine the working atmosphere inside the plant. Primetals Technologies building services lay the foundation for optimum productivity of the plant, and create the basis for an optimized working environment. Furthermore, our specialists place great importance on the protection of human life and the safeguarding of equipment.

HEATING, VENTILATION, AIR CONDITIONING

Building services are adapted to the specific conditions and future applications right from the early stage of plant design. We provide heating systems with heating capacities of up to 2 MW; air conditioning systems with air flows of up to 200,000 m³/h; chiller systems with cooling capacities of up to 2 MW.

FIRE PROTECTION

We ensure that safety concepts are adapted to specific conditions in industrial plants. Customized fire alarm, extinguishing or smoke ventilation systems ensure that fires are detected and extinguished at the earliest possible point in time. Our fire detection and alarm networks operate with up to 10,000 addresses.



Air-cooled condensers



Roof ventilator for natural ventilation

SCOPE OF SERVICES

- Heating, ventilation and air conditioning systems
- Sanitary installations
- Fire detection and alarm systems
- Stationary fire extinguishing systems (water, gas, foam or special extinguishing agents)
- Fire extinguishing water network
- Smoke and heat removal systems
- Concepts for escape and rescue routing
- Safety concepts and fire load calculations



Fire fighting pump station



Chiller units for air conditioning

MAIN BENEFITS

- Tailored systems are provided for a wide range of metallurgical plants with regard to regional and plant-specific requirements
- From basic design to commissioning, all building service systems are from a single source
- Local and global sourcing of components is at your disposal

WATER MANAGEMENT, UTILITIES & PIPING

UNIQUE EXPERTISE IN WATER

In the modern metallurgical industry, efficient water management is not only a means to an end, but a guarantee for economical and ecological process flows. Perfect integration into the entire system is vital to ensure competitiveness in the future. The implementation is always adapted to local legal requirements, environmental protection conditions and customer standards.

Modern water management is mainly affected by three factors: quality of the make-up water, climatic conditions and legal requirements. These are partially determined by varying regional conditions. Thanks to our many years of experience in the various regions of the world and our comprehensive process knowledge in plant construction, we're able to professionally incorporate these localized, varying factors into the plant design. Only perfectly optimized plants can provide a platform for successful project management, and ultimately lead to the best possible result for our customers.



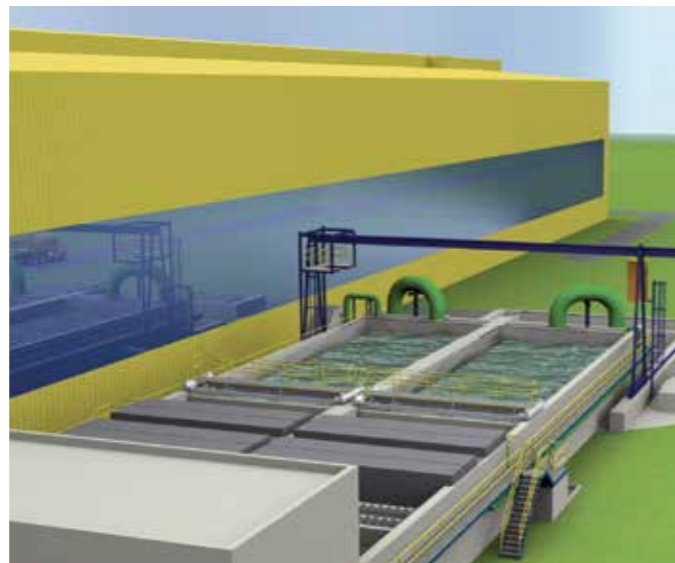
High-pressure pump



Water treatment for Converter steel plant, Cosipa, Cubatao, Brazil

SCOPE OF SERVICES

- Utilities and storage systems
- Water supply and treatment plants
- Scale water and muddy water treatment plants
- Project planning, feasibility studies and project management
- Monitoring activities for installation as well as commissioning and plant operation
- Engineering and project management for piping systems



Water treatment plant for hot-strip mill (model)



Water treatment plant for hot-strip mill (executed)

MAIN BENEFITS

- All systems are optimally integrated into the production plants
- Single-source responsibility is ensured for the entire metallurgical process
- Compliance with all environmentrelevant requirements is guaranteed
- A total solution provider as well as a supplier of individual products and components meets all of your requirements

INSTALLATION PLANNING AND SITE MANAGEMENT

SPECIFIC EXECUTION AND SUPPORT ON SITE

For installation planning, site management and site monitoring, our professional handling of the site ensures the quality of the plant and guarantees adherence to both the budget and the schedule.

In addition, our experts have experience in dealing and working together with people from different cultural groups. With their social sensitivity, motivation and leadership ability, they ensure a perfectly functioning site.

EXECUTION OF INSTALLATION

Installation is executed by sub-contractors who are selected based on best choice. This includes erection of steel structure, mechanical equipment, piping and electrical equipment.

ON-SITE HEALTH AND SAFETY

Our staff is well trained with regard to health and safety issues. Compliance with international, local, customer and company regulations is mandatory, and is assessed on a regular basis.



Lifting of crane bridge



Installation of steel structure

SCOPE OF SERVICES

Installation planning & site management

- Cost estimation for site management and execution of installation
- Preparation of time schedules for greenfield and brownfield projects
- Preparation of site organization, site regulations and safety rules
- Preparation of tender documents for the execution of installation
- Final accounting of subcontractors
- Change management
- Enforcing safety rules and site regulations

- Follow-up of progress and budget
- Assuring quality requirements
- Providing facilities & accommodation
- Regular coordination with customer

Supervision of erection

- Checking the completeness of supplies together with the installation contractors
- Instructions for storage, erection, surveying and testing
- Securing the timely, proper and professional execution of installation



Installation of rolling mill

MAIN BENEFITS

- Experienced engineers, site managers and supervisors with a well-founded and wide range of state-of-the-art experience, as well as cultural awareness are available
- Selection of erection contractors is optimized in accordance with the scope of work, local conditions and their experience
- Single point coordination of the entire site activities including time scheduling for an optimized erection time, and budget planning, ensures the lowest possible costs and best possible quality

ECOLOGY AND SAFETY

OUR EXPERTISE IS YOUR ADDED VALUE



A reliable and perfectly functioning sequence of processes is based on individualized solutions. Ultra-modern technologies from Primetals Technologies not only lay the foundation for optimized productivity, but also guarantee the highest possible level of process safety and ecology. Maximum environmental protection and the use of next generation technologies ensure successful production.

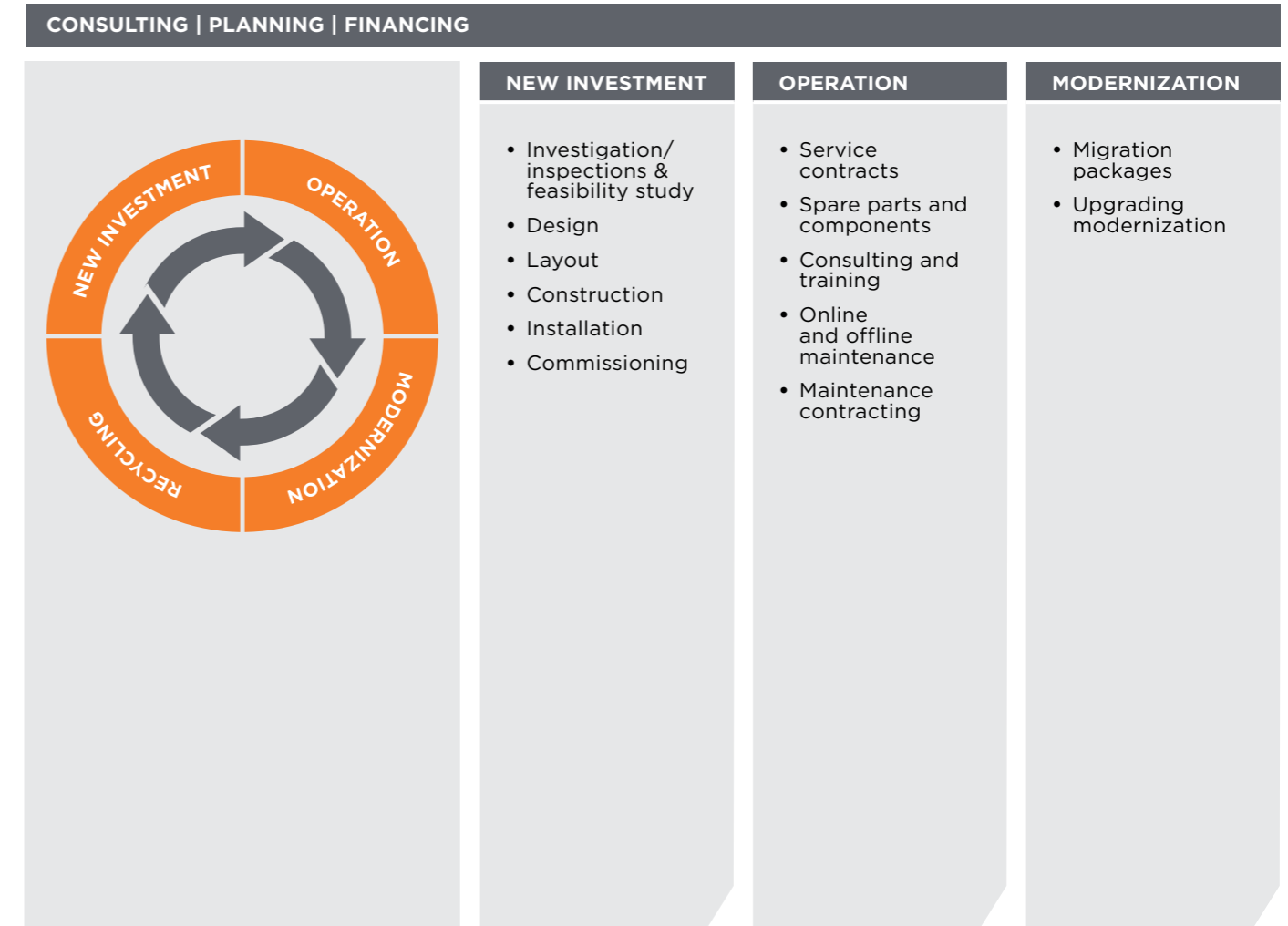
Strict safety standards ensure optimum conditions for future workflows. Geographical conditions play just as big a role as legal requirements. But safety aspects – such as fire protection – are important not only during construction itself, but also in the work place.

MAIN BENEFITS

- The highest possible level of process safety is guaranteed
- Next generation technologies are our leverage to protect our environment
- The safeguarding of equipment and the protection of human life are our key priorities

LIFECYCLE MANAGEMENT

PARTNERSHIP NEVER ENDS



PRIMETALS TECHNOLOGIES LIFECYCLE SERVICES

As a plant operator, you have conflicting needs. On the one hand, your performance is measured each quarter against short-term profitability expectations. On the other hand, you have to think on a totally different time scale compared with the capital market. Depending on the lifetime of your plant, you have to take 15 years or more into account. At the very least, that's 60 full quarters.

But thanks to our comprehensive expertise and integrated approach to solutions, you benefit both short-term and long-term from our lifecycle services.

In the short term: Backed by our extensive experience with many reference plants, we provide you with the certainty of fast, dependable production start-up and shorter amortization periods. In the long term: Our master plan guarantees competitive performance for your plant in every phase of its lifecycle. Whether we're providing 24/7 technical support, optimizing maintenance, or making permanent plant improvements, we're always working to ensure the costeffective operation of your plant.

EXCELLENCE FROM EXPERIENCE

SELECTED SUCCESS STORIES WITH TURNKEY SOLUTION KNOW-HOW



Customer. NMDC, India
Type of Plant. Sinter plant
Our solution. Full turnkey greenfield
Start-up. Planned 2017
Technical data. 460 m² sinter area



Customer. PT Krakatau Steel, Indonesia
Type of Plant. EAF Meltshop
Our solution. Brownfield turnkey modernization of 3 electric arc furnaces, 2 slab casters, dedusting and water treatment plant.
Start-up. 2013
Technical data. 3 x 130 t EAF



Customer. Nishnij Tagil, Russia
Type of plant. Meltshop modernization
Our solution. Brownfield turnkey revamp of 4 LD converters
Start-up. 2007-2008 during full production and extremely reduced standstill times for each converter
Technical data. 4 x 160 t converter



Customer. Mittal Steel, Poland
Type of plant. Hot-strip mill
Our solution. Brownfield turnkey project with an extremely short project duration
Start-up. 2007
Technical data. 2.4 mio t/y



Customer. ArcelorMittal Tubarão, Brazil
Type of plant. Blast furnace plant
Our solution. Full turnkey greenfield
Start-up. July 2007
Technical data. 2.8 mtpy, productivity 2.5 t/m³ (working volume)



OPTIMIZED PRODUCTION WITH 6-HIGH TECHNOLOGY

Customer. Hadeed, Saudi Arabia
Type of plant. MIDREX® - direct reduction, steel plant, continuous casting plant
Our solution. Full turnkey project, capacity increase through the expansion of the production plant
Start-up. 2007
Technical data. DRI, 150 t EAF, LF, slab caster, rolling mill extensions



Customer. Carinox (Arcelor Mittal Group), Belgium
Type of plant. Stainless steel meltshop and slab caster
Our solution. Greenfield, Turnkey
Start-up. 2005
Technical data. 180 t EAF, LF and AOD converter, slab caster



Customer. voestalpine Stahl Linz, Austria
Type of plant. Continuous galvanizing line
Our solution. Turnkey project management
Start-up. 2003
Technical data. 320,000 t/y



Customer. Cosipa, Cubatao, Brazil
Type of plant. BOF converter, continuous casting plant
Our solution. Full turnkey project
Start-up. 2002
Technical data. BOF converter 160 t, slab caster



Customer. voestalpine Stahl Donawitz, Austria
Type of plant. Meltshop modernization, hot rolling mill, caster
Our solution. Brownfield revamp of the existing steel plant (2 LD converters) and modernization of CC, HRM and dedusting - full turnkey project
Start-up. 2000
Technical data. 2 x 67 t converters, 5-strand caster

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A joint venture of Mitsubishi Heavy Industries and partners

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Brochure No.: T10-O-N033-L9-P-V2-EN

Printed in Austria

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