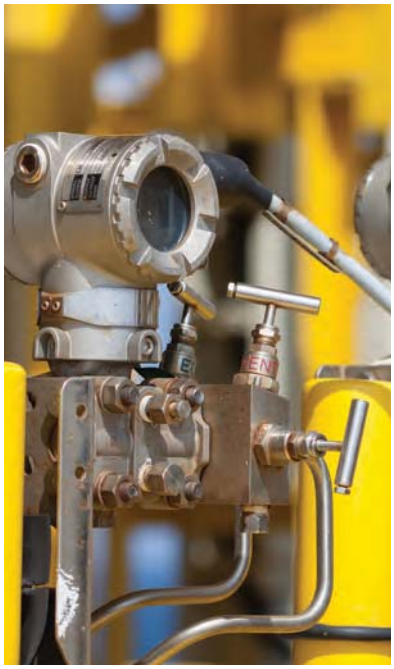
IPC

INDUSTRIAL PLANTS CONSULTANTS



GENERAL PRESENTATION

IPC is a company specialised in offering engineering services, products and solutions to the process industry (chemical, petrochemical, power generation).

www.ipc-eng.com

GENERAL PRESENTATION

IPC IS A COMPANY SPECIALISED IN ENGINEERING SERVICES FOR THE PROCESS INDUSTRY. (CHEMICAL, PETROCHEMICAL, POWER GENERATION).

IPC offers leading edge technical services and technology solutions for machinery, systems, plant devices such as turbo machinery (gas and steam turbines, compressors, pumps) and relevant monitoring, control and protection systems.

IPC solutions include:

- *centrifugal compressor control systems;*
- *compression stations control systems;*
- *centrifugal pumps control systems;*
- *pumping stations control systems;*
- *software for machinery performance analysis;*
- *CFD custom engineered centrifugal pumps;*
- *engineered control and ball valves.*

IPC services include:

- *plant unit engineering;*
- *operations supervision, maintenance, inspection, diagnosis and troubleshooting for plants, rotating machinery devices and auxiliaries;*
- *device selection and purchasing support;*
- *maintenance engineering and execution.*

The IPC staff has over 30 years experience

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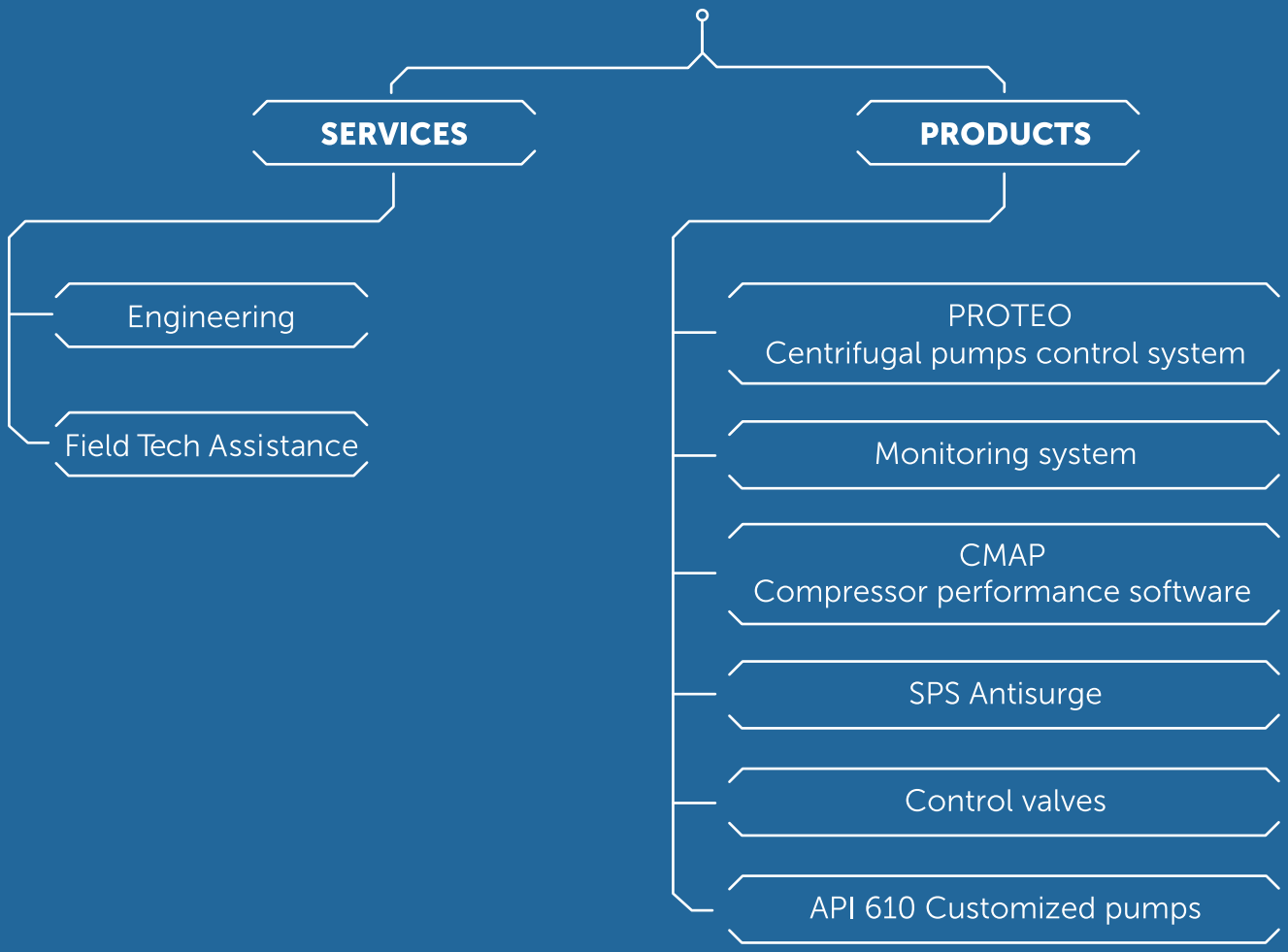

IPC Services

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INDUSTRIAL PLANTS CONSULTANTS

SERVICES

IPC

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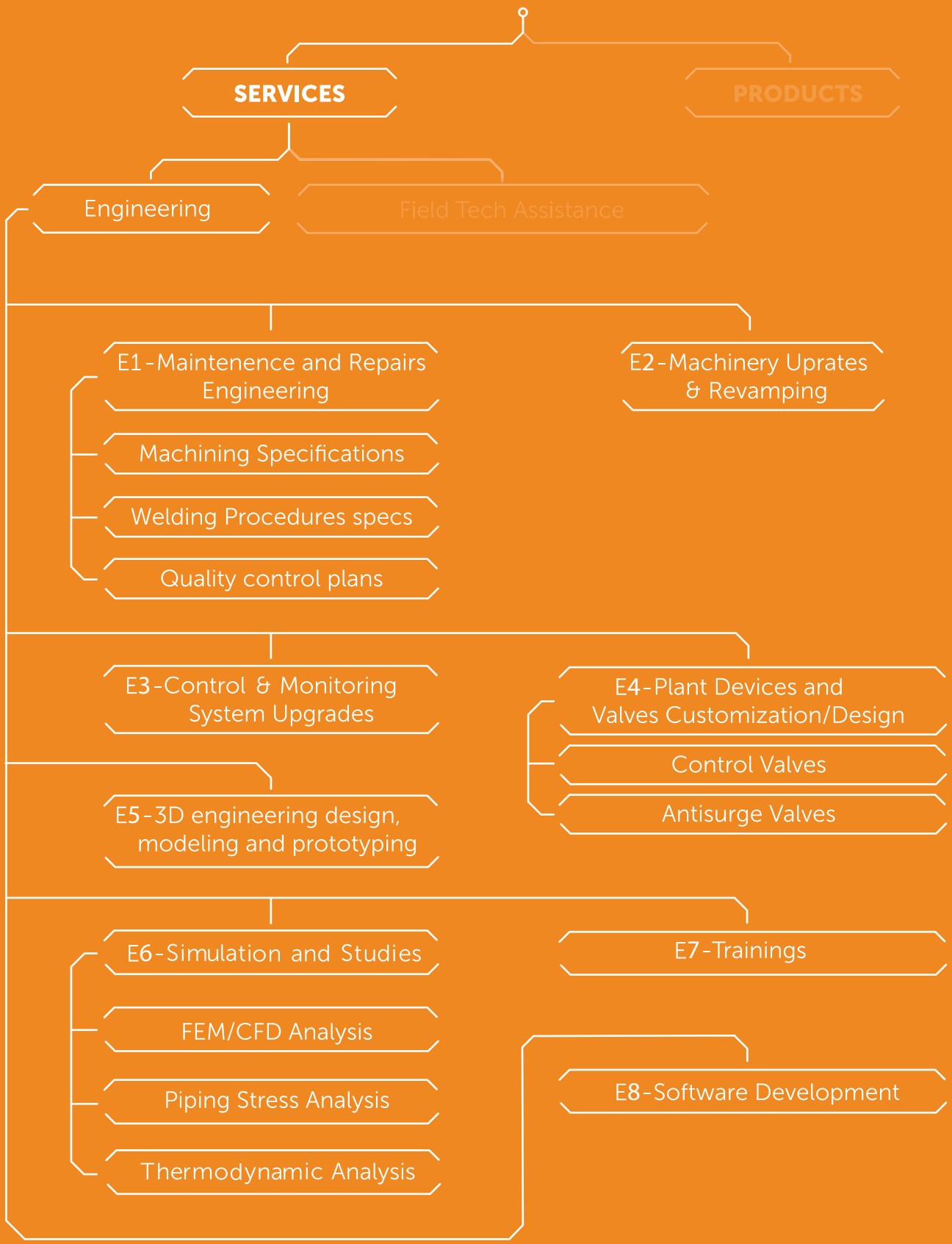
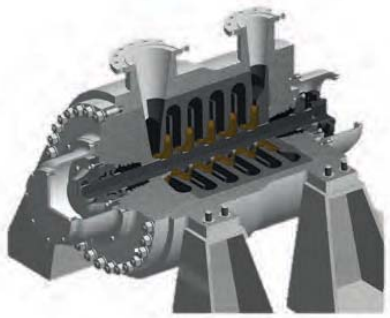


E1 - Maintenance and repairs engineering

- Machinery repair engineering
- Machinery selection, specification, maintenance, parts planning and purchasing support
- Rotor-dynamic and vibration analysis
- Stress FEM analysis
- Performance assessment
- Servicing
- Design and manufacturing of specific workshop tools and equipment



E2 - Machinery uprates and revamping

Full Capability for:

- Machinery performaces evaluation for maintenance decision support
- Mechanical/Instrumentation/Control modifications, repairs and overhauls
- Minors spare parts procurement or design and manufactoring
- Commissioning and start up supervision
- Auxiliaries modification
- Spare parts supply and reverse engineering

E3 - Control & Monitoring systems upgrades

- Control and protection systems engineering, customization, modification and extension.
- Plant and machinery monitoring system design, selection application
- Diagnostic system projecting, selection and application.

E4 - Plant devices and valves customization/design

Repair and replacement engineering and field diagnostics for control valves and plant devices

The IPC Engineering Team is specialized in the development of new equipment, maintenance and repairs, as well as engineering plans for safety and control valves:

- Valve design and configuration
- Customized auxiliaries and actuators
- Anti-surge valves
- Valve repair and spare parts reverse engineering
- New control valve selection and supply
- Field surveys, diagnostic, troubleshooting
- ASME B16.34
- ASME BPVC, Div. 1&2
- UOP/EXXON/NACE

E5 - 3D engineering design, modeling and prototyping

- Machine 3D modeling and prototyping
- 3D printing for rapid prototyping services
- Machine components reverse engineering

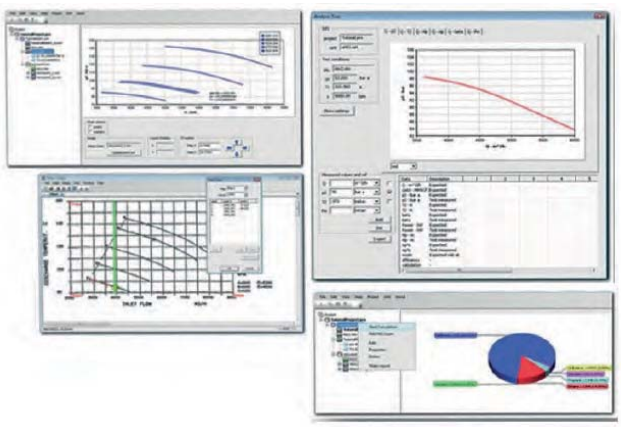
E6 - Simulations and studies

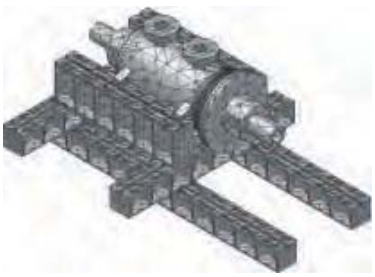
- Piping stress analysis

- Piping modifications
- Structural calculations
- Piping support and auxiliary components

- FEM/CFD Analysis

IPC develops software solutions for different platforms: PC/Windows platforms and PLC platforms. Softwares solutions include integrations and communication between hardwares trought industrial/Process control and automation standard communication protocols (OPC, Ethernet/IP...)





E7- Trainings

Training Sessions and didactical simulators for instrumentation and vibrations

Technical training customized contents development

More than thirty years of experience both in engineering and commissioning as well as operational stages are available from IPC consultants including dedicated training sessions.

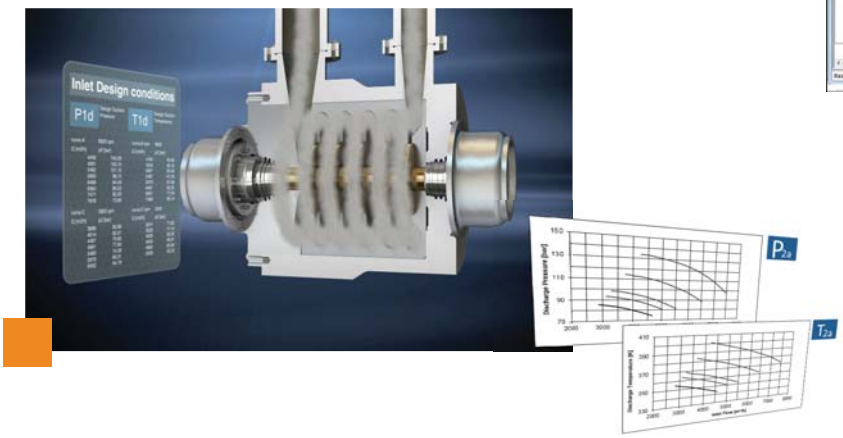
IPC is available to organize training , to develop customer tailored didactic material in the following technical areas:

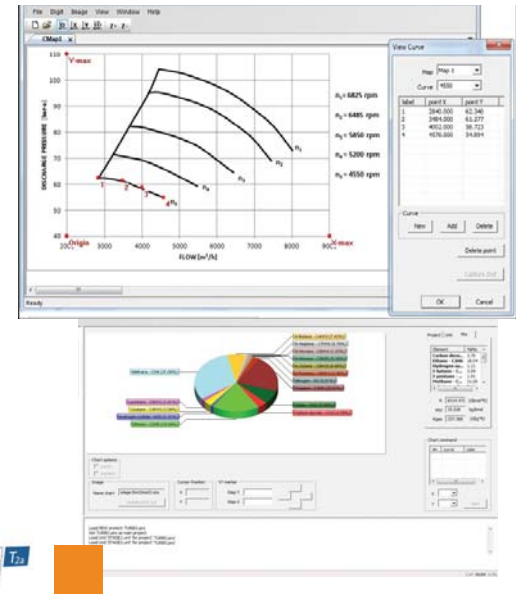
Training Sessions

- Theory and operation for gas turbine / steam turbines
- Theory, operation and controls of centrifugal compressors / reciprocating compressors
- Theory and operation for centrifugal pumps
- Theory and operation for control and safety valves
- Industrial instrumentation
- Machinery vibration, diagnostic and control systems
- Process industry instrumentation
- Process industry machine control systems
- Rotating machinery vibration
- Customized traning contents may be developed on request

E8-Software development

- Development of technical and engineering software





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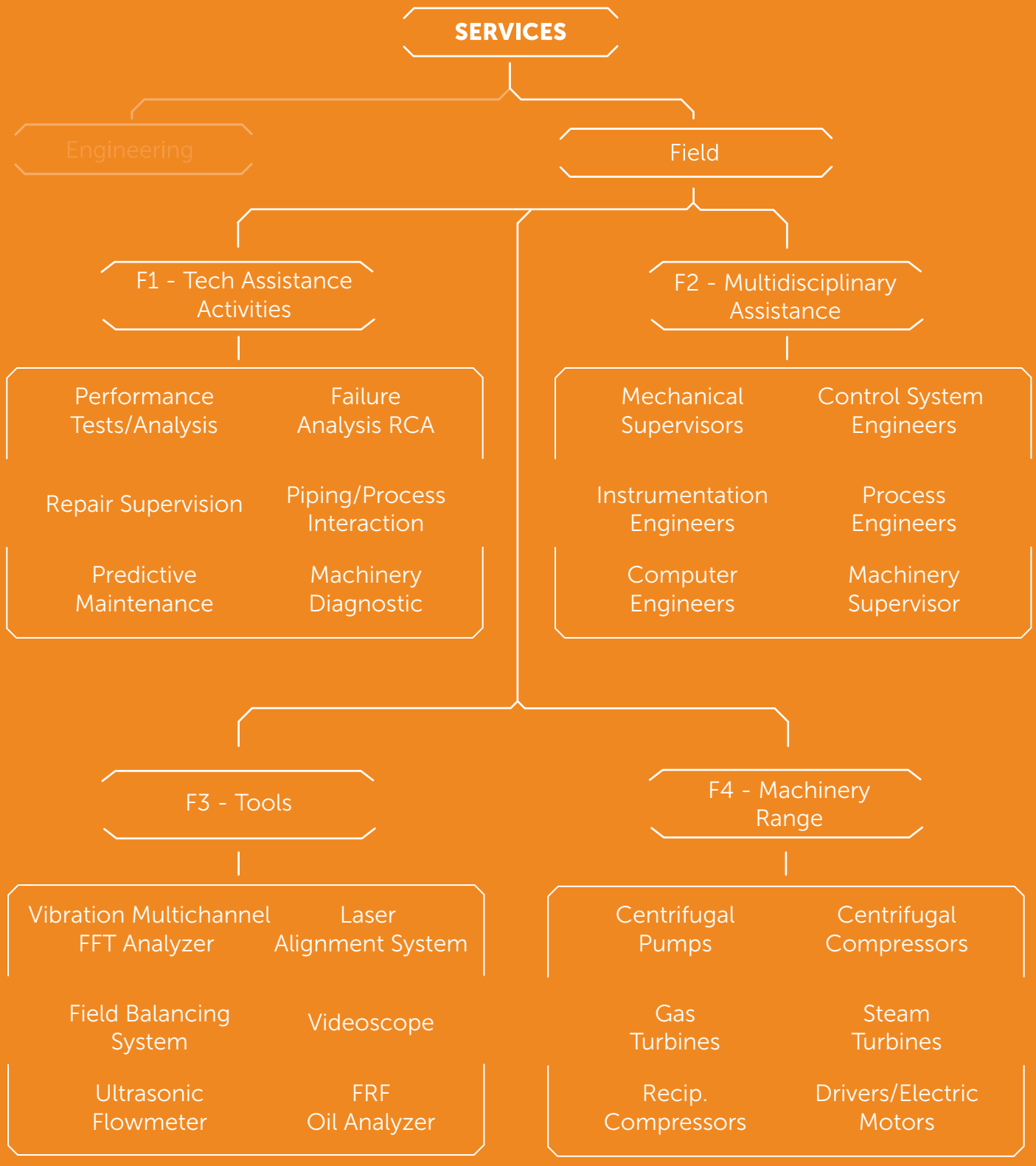
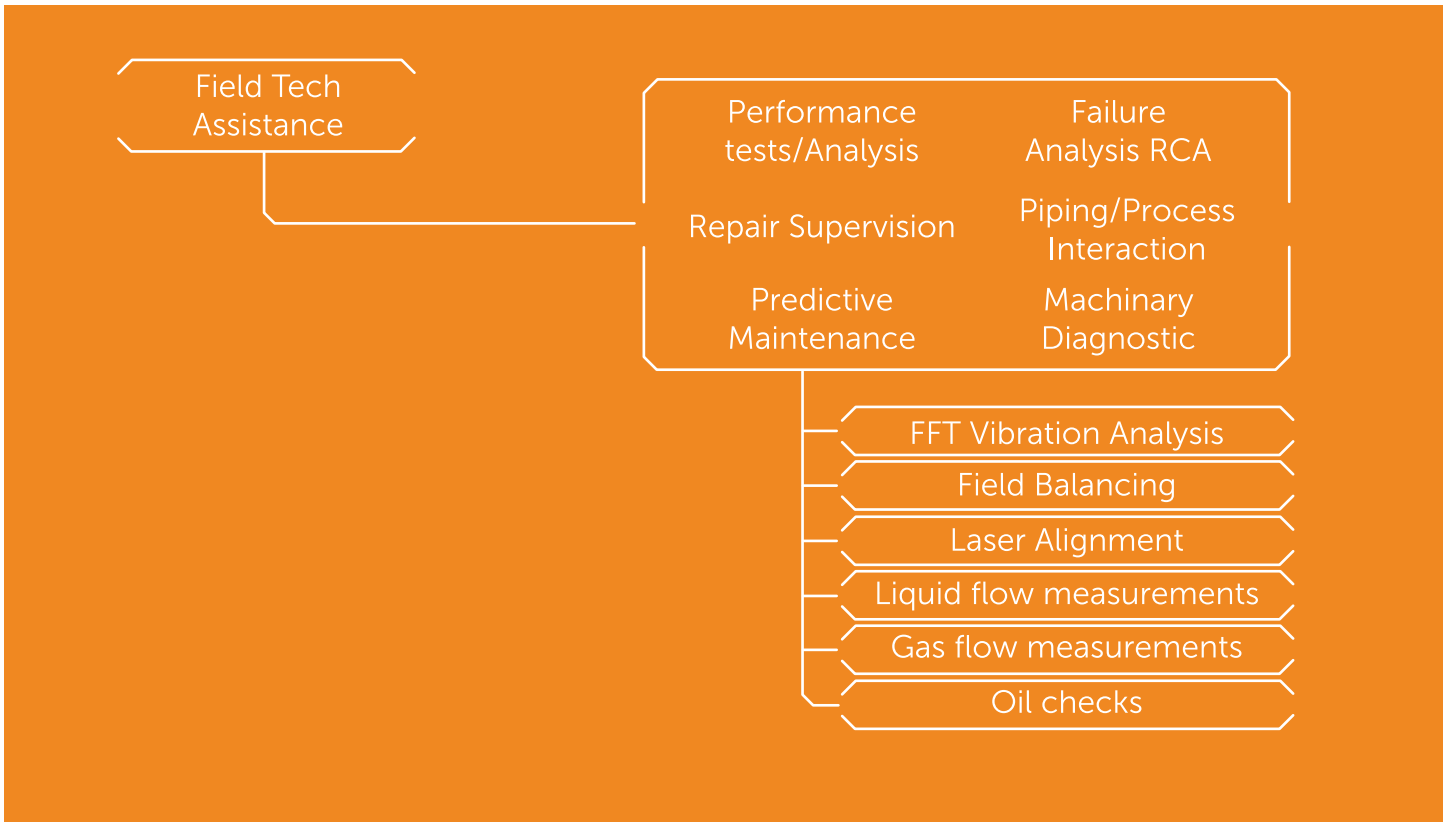


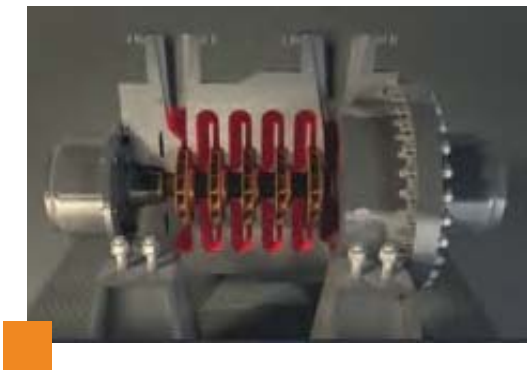
F1 - Field tech assistance



IPC provides machinery and plant devices maintenance plans, surveys, inspections and field measurement, troubleshootings, investigations and machinery field tests

Root cause analysis, engineering and repair plans, maintenance plannings
Preventive and proactive maintenance schedule and procedures for pumps, compressors, steam and gas turbines

Availability of latest technology and instrumentation (ultrasonic flow meters, multichannel FFT vibration analyzers etc) for non invasive measurements and field performance tests



F2 - Multidisciplinary field specialty services

• Commissioning start-ups for pump compressors, steam turbines, gas turbine
• Commissioning start-ups for process control and protection systems, diagnostic an monitoring systems
• Field diagnosis, performance measurements, troubleshooting, check-ups
• Rotating machinery and laser alignments
• Video-scope and thermo-graphic inspections,
• Vibration analysis multichannel FFT spectrum analysis
• Structural analysis FRF responce
• Oil analysis

The IPC Field Service Team is specialized in the execution of special analysis and investigation, troubleshooting, inspection, diagnostic analysis, performance evaluation, maintenance engineering and operations on the following machinery and devices:

• API auxiliaries • Control valves • Safety valves

Control systems, instrumentation and monitoring field services

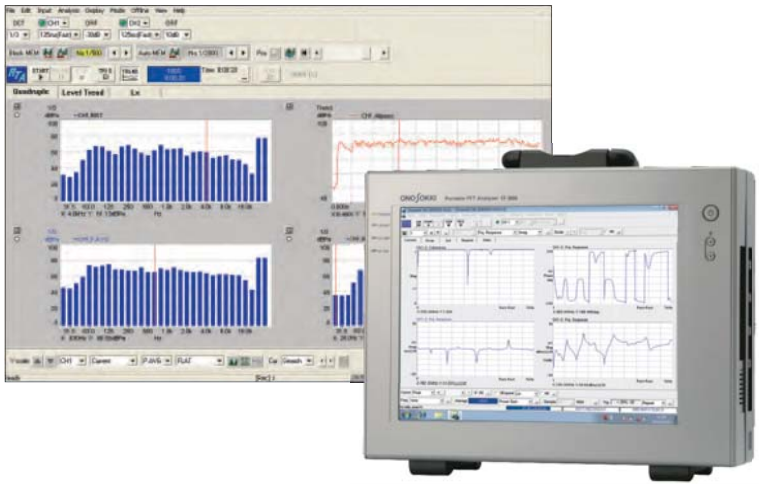
• Commissioning start-ups for process control and protection systems

• Site surveys for Plant and Machinery control and protection system inspection and analysis

• Diagnostic and monitoring system installation and commissioning

F3 - Field diagnoststics dor machinery auxiliaries and plant devices

• The IPC Field Service Team is equipped with the latest technological tools for diagnosis, maintenance, inspection of rotating machinery and plant components



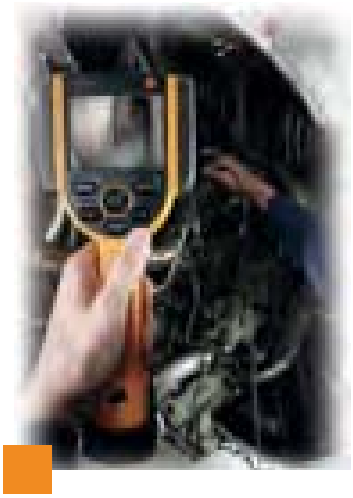
Vibration Analyzer ONO SOKKI multichannel FFT, model CF3600 Accelerometer, Keyphasor Laser Ailignment System Go Fixture

Laser Ailignment System Go Fixture

Field tech assistance tools

IPC Team provide tech services using the latest technology for field-portable instrumentation

Vibration Analyzer SKF portable FFT, mod MX, Accelerometer Keyphasor



Videoscope system GE-Everest mod XLGo to process internal inspection (machinery, piping, scrubbers, vessels etc.)

Rotating Machinery Field Balancing System

Ultrasonic Flow measurement system Parametric PT878G for gaseous fluids

Ultrasonic Flow measurement System
Pnametrics,
mod PT878 for Liquids
Laser Ailignment System Go Fixture

Oil analyzer SKF mod RDI Oilcheck

Other tools:

Hammer kit for FRF structural response
resonance test

Field balancing kit

Laser Thermometers, Digital Multimeters, Signal
simulators, Electronic lab tools etc.
Process controller Moore mod 353

Process controller Moore mod 353
Hart communicator
Laser Ailignment System Go Fixture

AM-107

IPC Products

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PRODUCTS

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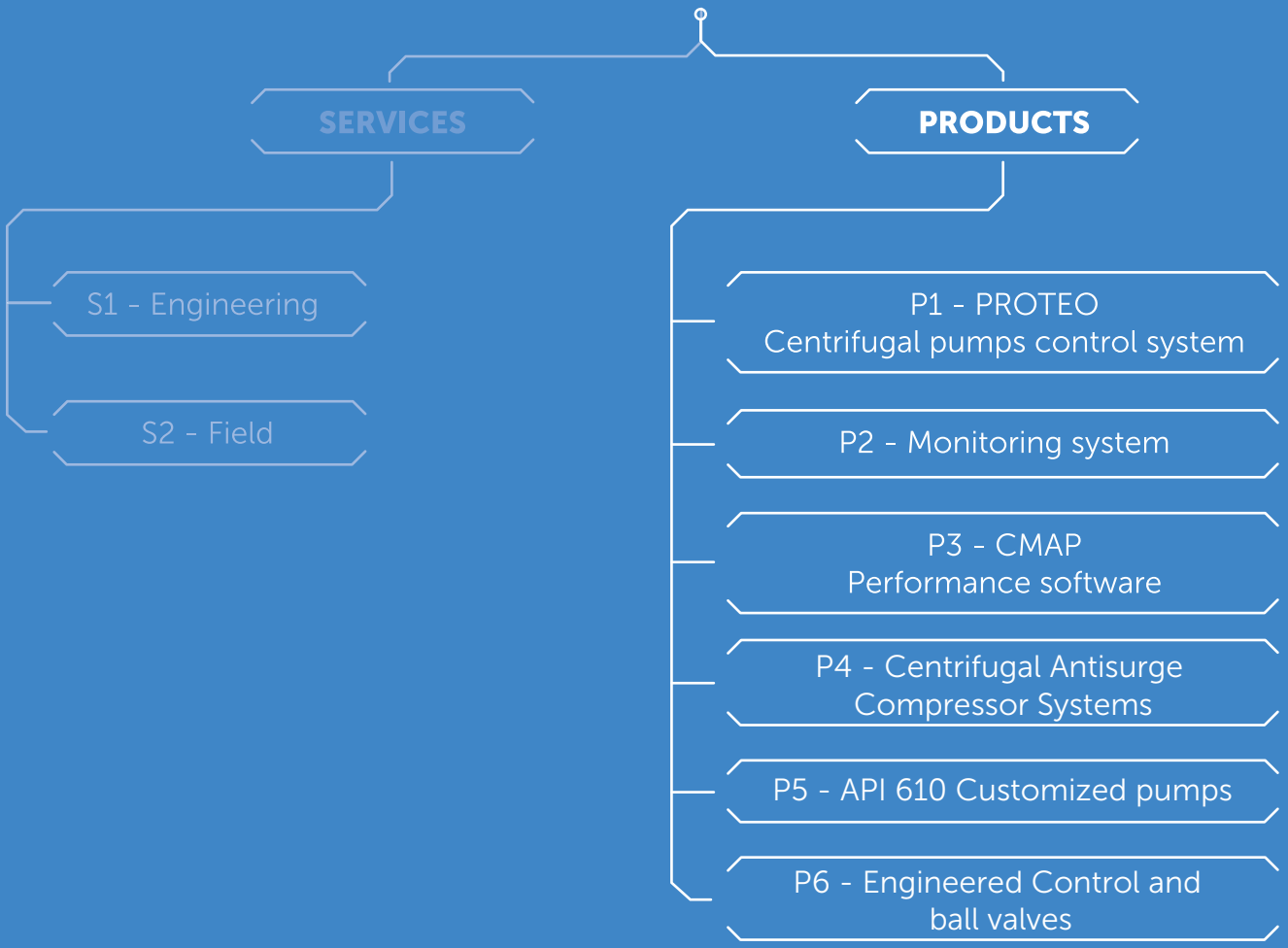
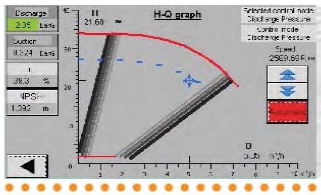


P1 - PROTEO Centrifugal Pumps Control Systems

MULTIVARIABLE CONTROL ARCHITECTURE

Process oriented control modes

- DischargePressure
- Suction Pressure
- Flow
- Speed



VFD TECHNIQUE

Energy saving and enviromental impact reduction

TOTAL PUMP PROTECTION

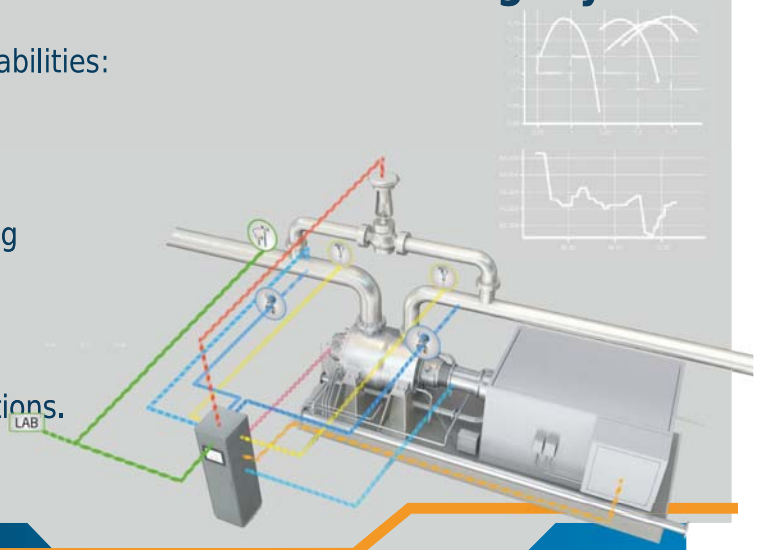
Advanced protection and auto-diagnostic
for maximum machinery availability and efficiency

Proteo embeds several innovative and advanced features aimed to provide process oriented performance control and overall machine diagnostic and protection. The system is designed for a completely automated machine management, and to give to the operator the full control of pump/process operative conditions.

P2 - Monitoring Systems

CENTRIFUGAL COMPRESSOR On-line Monitoring System

IPC Monitoring Systems embed all Cmap capabilities:
- Variable gas mix and EOS based thermodynamics
- Advanced compressor modeling
- Operative parameters continuous monitoring
- Expected performance in Real time
- Auto-diagnostic: calculation of actual performance and efficiency comparison with design values adjusted to actual conditions.



IPC develops industrial systems for the monitoring and control . Monitoring systems help decrease unscheduled outages and optimize machine performance while reducing maintenance and repair costs. IPC hardware and software solutions are deployed around the globe in industrial applications.

IPC is specialized in design, implementation and commissioning of complex compression systems such as boosting stations or re-injection stations.

P3 - Cmap Software

CENTRIFUGAL COMPRESSOR Performance Software

- Advanced gas and compression thermodynamic based on EOS
- Advanced centrifugal compressor aero-mechanical modeling
- Performance predictions under variable gas mixture and variable process conditions
- Off design performance calculations
- Compressor performance analysis

www.compressormap.com

Cmap is a software tool, designed to perform centrifugal compressors performance evaluations, easily and quickly

Cmap has been designed to give the centrifugal compressor analyst or industrial user, a powerful and simple tool to predict the machine performance outside specification conditions.

P4 - SPS Antisurge

Innovative antisurge system for centrifugal compressor
Surge protection for variable gas and variable process conditions
Advanced thermodynamic and compressor aeromechanical model
Autodiagnostic based on performance and efficiency calculations
SPS: the total antisurge protection

www.ipc-compressorcontrol.com

Centrifugal compressors need protection to avoid surge destructive effects.

Many of the present systems provide limited protection through simplified algorithms.

SPS is a new advanced control and protection system for centrifugal compressors.

The SPS system provides full surge protection also in cases of variability of suction conditions (pressure, temperature and gas mix composition).

P5 - API 610 Customized pumps for high efficiency

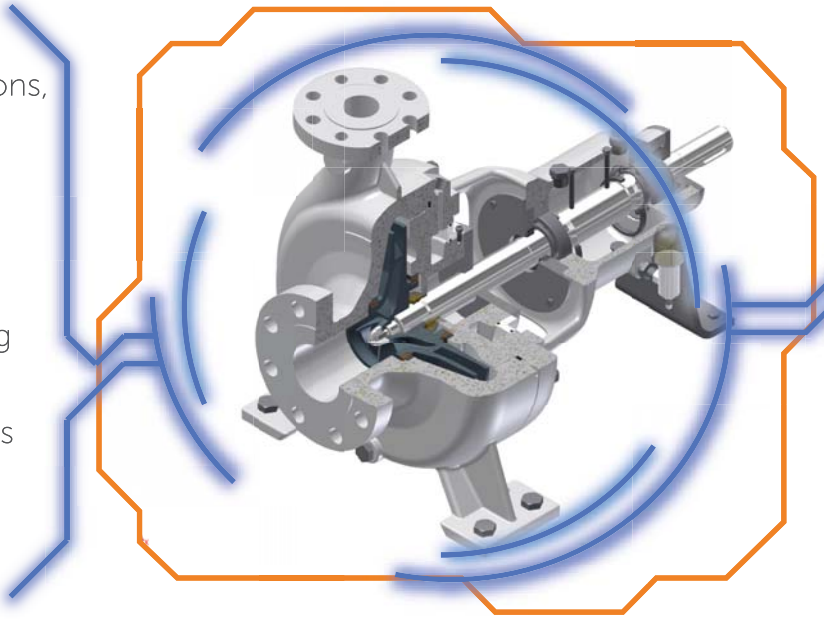
IPC Centrifugal pump has been designed for high performances and high efficiency using latest technology engineering tools, following and integrated design process. IPC pumps hydraulic design is developed using CFD techniques and integrated with advanced structural FEM analysis. Designed and manufactured process according to API 610 specifications.

Process Hydrocarbons, Petroleum refining, Profuction and Distribution

Petrolchemical and chemical processing

Gas industry services

High-temperature applications



Boiler circulation Water/Condensate extraction

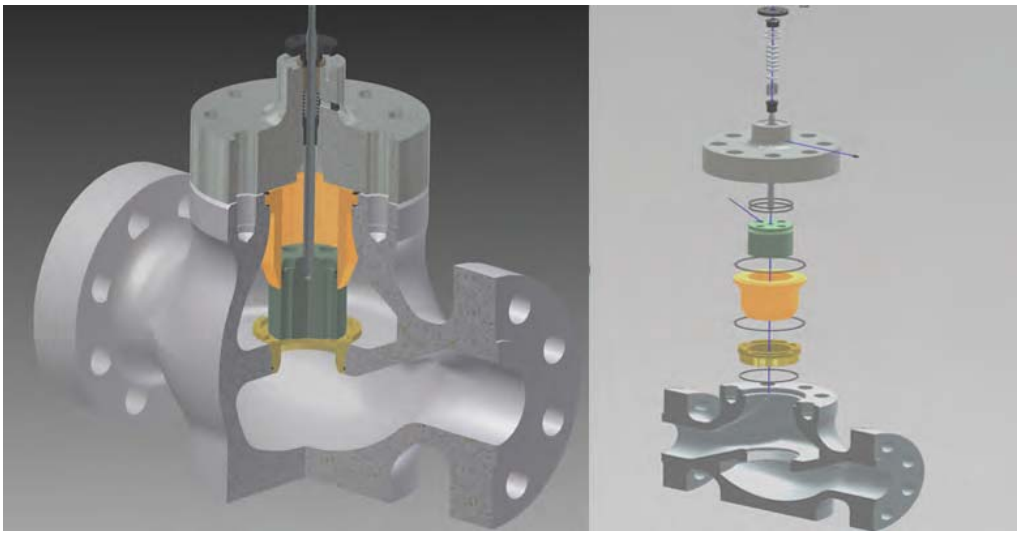
Biofuels

Solar

Foul water

General industrial

P6 - Valve Engineering



IPC provides engineering services specialized on control valves for the process industry delivering highly customized products manufactured in European precision machining shops. IPC plant devices engineering division gains over 30 years of multidisciplinary experience and is capable to provide full coverage from preliminary survey for evaluation of customer needs to solutions engineering, manufacturing, delivery and start up.

NOTES

IPC

INDUSTRIAL PLANTS CONSULTANTS

IPC delivers engineering services, products and solutions
to some of the most important Companies in the O&G industry

Our main Offices and Laboratories
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