

TMK IPSCO Research & Development Center Commercial Testing Capabilities




A Wide Range of Testing

TMK IPSCO's 70,000 square foot Research & Development Center combines the most advanced virtual and physical testing equipment with some of the industry's leading engineers, scientists, and technologists. Our A2LA-accredited state-of-the-art facility now offers commercial testing services.

Our testing experts cover a variety of disciplines including metallurgy, heat treatment, corrosion, material analysis, mechanical testing, and material testing. Contact us today to learn more about TMK IPSCO's Research & Development Center testing capabilities.

For more information about our commercial testing services, call 281.949.1023 or 1.888.258.2000

American Association for Laboratory Accreditation



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005


TMK IPSCO RESEARCH & DEVELOPMENT CENTER
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MECHANICAL

Valid To: May 31, 2017 Certificate Number: 3425.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on casing and tubing connections:

Test	Test Methods
Testing Casing and Tubing Connections	API Recommended Practice 5C5; ISO 13679
Collapse	API TR 5C3, Annex I
NACE HIC	NACE TM0284; API 5L
NACE SSC (Method A)	NACE TM0177, MR0175
Rockwell Hardness (B and C)	ASTM E18; API 5CT
Vickers Hardness (500 g)	ASTM E384
Jominy	ASTM A255
Charpy Impact (-70° F to Room Temperature)	ASTM A370, E23; API 1104
Elevated Tensile (Up to 500° C)	ASTM E21
Tensile	ASTM A370, E8/E8M
Macro Etching	ASTM E340
Failure Analysis (SEM/EDX)	ASM Handbook, Volume 11; ASTM E1508
Grain Size	ASTM E112, E930, E1181
Microstructure	ASTM E3, E407, E1268, E562
Steel Cleanliness	ASTM E45 (Methods A and D)
Optical Emission Spectroscopy (OES) (Al, As, B, C, Ca, Cr, Cu, Mn, Mo, N, Nb, Ni, P, Pb, S, Sb, Si, Sn, Ti, V, W, Zn, Zr)	ASTM E415



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Mechanical Testing

Mechanical Testing is performed to evaluate material under conditions such as tension, compression and temperature. TMK IPSCO R&D Center is equipped to provide the full range of mechanical testing services with quick, reliable results and certified reports.

Test	Spec
1.1 Tensile Ambient Round Bar : 0.125" to 0.500" Strips : 1" to 8" gauge	ASTM A370, E8
1.2 Tensile Elevated Up to 500° C Round Bar : 0.125" to 0.500"	ASTM A370, E21
1.3 Charpy Impact Test room temperature to 32 °F Full Size 10x10mm	ASTM A370, E23, API 1104
1.4 Charpy Impact Test between 32 °F to -70 °F Full Size 10x10mm	ASTM A370, E23
1.5 Hardness Rockwell B,C, 15N Single quadrant (9 readings) Four quadrant (36 readings)	ASTM A370, E18, API 5CT
1.6 Micro Hardness Vickers 500 grams API 5L Pattern Profiles	ASTM E384



Metallurgical Services

Metallurgical evaluation of metallic materials can be a valuable source of information to any industry working with metals. TMK IPSCO R&D Center's metallurgical experts can examine samples to perform failure investigations, detect surface and internal flaws and determine the cause for such defects, perform microstructural evaluation, assess heat treatments and assure conformance to required specifications.

Test	Spec
2.1 Microstructure	ASTM E3, E407, E1268, E562
2.2 Cleanliness Method A, B or C Method D	ASTM E45
2.3 Grain Size Comparison Method Intercept method (5 Fields) McQuaid Ehn	ASTM E112, E930, E1181
2.4 SEM EDS EBSD	ASM Vol II ASTM E1508
2.7 Macro Etching	ASTM E340
2.8 Optical Emission Spectroscopy OES Low Alloy Steel	ASTM E415
2.9 Failure Analysis	



Heat Treatment

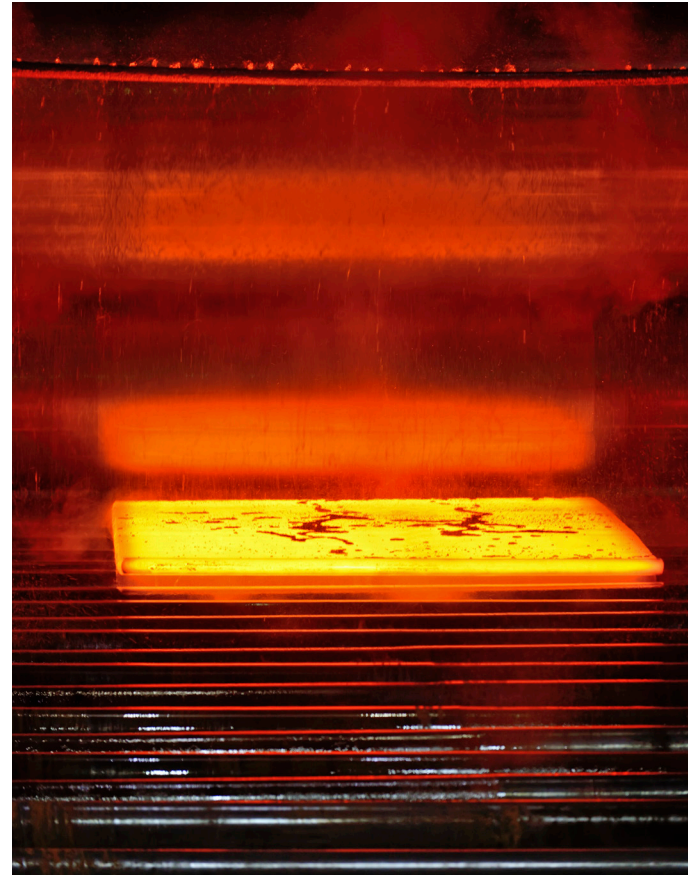
Heat treating processes, such as annealing, normalizing, hardening, and tempering are used to alter the microstructure and control the mechanical properties of materials so they can function effectively under specific operating conditions. TMK IPSCO R&D center is capable of performing heat treatments on test samples and provide all testing services for verification to customer specifications.

Test	Spec
3.1 Normalizing	Per customer requirements
3.2 Tempering	
3.3 Austenizing	
3.4 Jominy	ASTM A255

Non-Destructive Testing

Nondestructive Testing or Evaluation (NDT or NDE) can detect surface and sub-surface defects or imperfections without affecting the structural integrity or operating performance of materials and components. TMK IPSCO R&D center offers a wide array of NDT testing services for customers with different types of materials and parts. NDT techniques and methods for inspection of metal tubing, pipes, bars, plates, castings and other metal products are available.

Test	Spec
4.1 Ultrasonic Testing	ASTM & API
4.2 Magnetic Particle	ASTM & API
4.3 Dye Penetrant	ASTM & API



Metrology

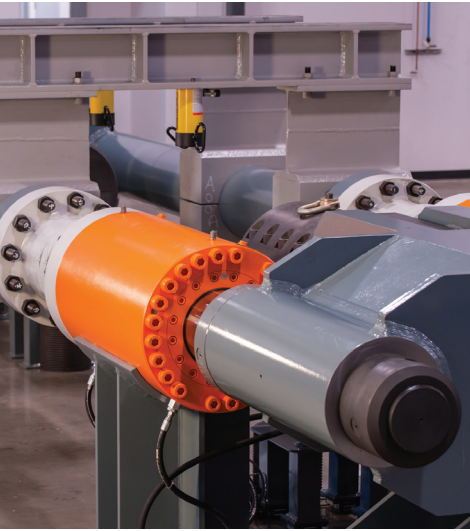
TMK IPSCO R&D Center's metrology services laboratory provides fast and affordable dimensional inspection and verification services. The team of technicians have an extensive experience in gauge setup, gauging and dimensional inspection, including that of threaded products.

Test	Spec
5.1 Thread Gauging	API RP 5B
API 5B1	
Premium Connection	
Semi Premium	
5.2 Dimensional Gauging	API RP 5B
5.3 Optical Comparator	API RP 5B
5.4 Coating Thickness	API RP 5B
5.5 Gauge Rental	



Connection Testing Lab

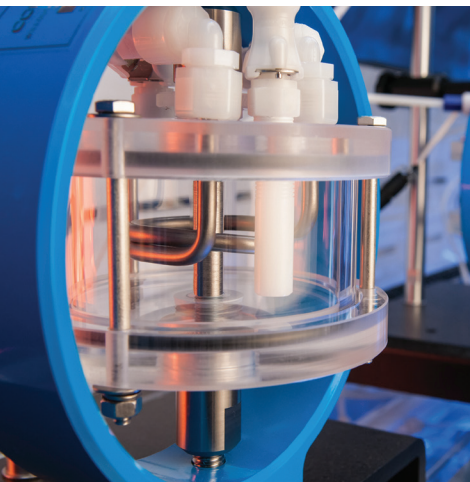
Connection testing is performed to assess a premium connection's sealability and galling resistance. TMK IPSCO R&D Center's connections experts can test connections per ISO 13679:2011/API 5C5:2014 and ISO PAS 12835 (for thermal wells).



Test		Spec
7.1	Testing Casing & Tubing Connections	ISO 13679
	CAL I	API 5C5
	CAL II	
	CAL III	
	CAL IV A. Ext Press	
	B. Bending	
	C. Thermal Cycles	
7.2	SAGD Testing	ISO 12835/TWCCEP
	Application Severity level	
7.3	Make & break	
	Horizontal only up to 17.9"	ISO 13679, API 5C5
7.4	Collapse	API TR 5C3
7.5	Machining	

Corrosion Testing

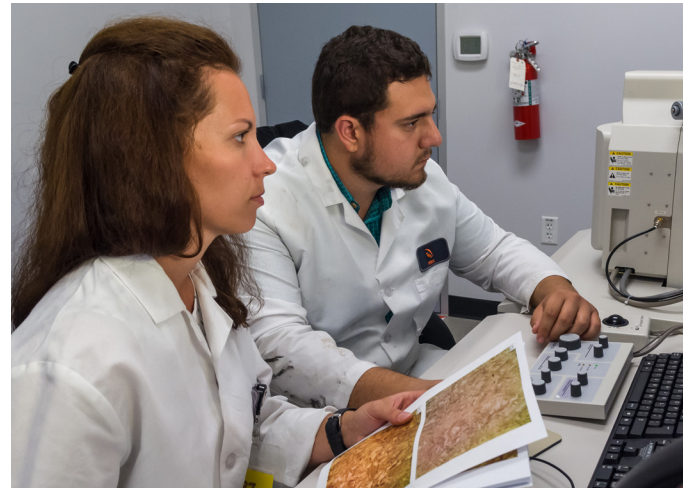
Corrosion testing helps determine the susceptibility of materials to corrosion under certain environmental conditions. TMK IPSCO R&D center offers a range of corrosion testing and analysis for OCTG goods operating in Hydrogen Sulphide rich environmental conditions. Our capabilities include corrosion testing of pipe body (NACE TM0177 – Method A) and seam weld (NACE TM0177 – Method C) for tubular products, in addition to determining hydrogen induced cracking susceptibility (NACE TM0284 – HIC testing) of carbon steel products.



Test		Spec
6.1	Sulfide Stress Cracking (SSC)	NACE TM0177, MRO175
	Method A - Tensile	
	Solution A B C	
	Method C - Cring	
6.2	HIC	
	Testing and evaluation	NACE TM0284, API 5L

Engineering/Technical Personnel

TMK IPSCO R&D Center employs a team of capable and qualified personnel who maintain a strict quality system with tight control of all aspects of testing and inspection from sample tracking and data management to equipment calibration and test methodologies. Our team consists of well-trained technicians proficient in operating and various sophisticated equipment, to subject matter experts accomplished at understanding material performance and behavior under various operating conditions.



Consulting Services

- 8.1 Tech
- 8.2 Engineer
- 8.3 Senior Engineer
- 8.4 Manager

Hourly rate supplied to match and meet customer requirements.

