



# OTTC Practical Diploma New German Pilot Program 2021



2<sup>nd</sup> educational year:

Course	Content	Own Dates
R1A	<ul style="list-style-type: none"> <li>foundations of thermodynamic and mechanic</li> <li>converting of formulas</li> </ul>	
R 1B	<ul style="list-style-type: none"> <li>physical basics of the refrigeration cycle</li> <li>foundations of off the log p, h diagram</li> <li>the single stage refrigeration cycle</li> <li>reading and connecting of service gauges</li> <li>practical measurements on refrigeration plants</li> </ul>	
ELC 1	<ul style="list-style-type: none"> <li>foundations of electrical</li> <li>direct current</li> <li>series and parallel connection</li> </ul>	
R 2A	<ul style="list-style-type: none"> <li>heat exchanger (evaporators and condensers): types, construction, function</li> <li>expansion devices: types, construction, function, interaction with the evaporator</li> </ul>	
R 2B	<ul style="list-style-type: none"> <li>compressors: types, construction, function, oil cycle, technical problems</li> </ul>	
ELC 2A	<ul style="list-style-type: none"> <li>single-phase alternating current</li> <li>basic electrical components (isolator switch, circuit breaker, contactor, relays, lights, switches, timer): types, construction, function</li> </ul>	
R 2C	<ul style="list-style-type: none"> <li>additional components: types, construction, function</li> <li>refrigerant, oil</li> <li>pressure test, evacuating</li> </ul>	
ELC 2B	<ul style="list-style-type: none"> <li>basics of electrical circuits (self-holding circuit, interlocking circuit)</li> <li>basics of electrical circuits for refrigeration systems (load and control circuit, safety chain)</li> </ul>	
AC-service	<ul style="list-style-type: none"> <li>dismantle and assemble AC equipment</li> <li>use and maintain service tools and instruments</li> <li>elementary air-flow measurements and calculations</li> <li>drawings and sketches</li> </ul>	
Mechanic	<ul style="list-style-type: none"> <li>Mechanical servicing of compressors, repair &amp; overhaul skills, fault identification. Belt drives, pulley alignment. Bearing service, Couplings, Key and Locking Devices</li> </ul>	
SH-R	<ul style="list-style-type: none"> <li>Authorized Practitioner training includes practical demonstration and hands on, using a reclaim unit and vacuum pump. All the Unit Standards to obtain the level 3 for Refrigeration SAQCC Gas. After successfully completion thereof they can apply for the SAQCC Gas Registration.</li> </ul>	



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Technical drawing 1	<ul style="list-style-type: none"><li>• drawing flowcharts and electrical schematics of refrigeration systems</li></ul>	
Plant building 2	<ul style="list-style-type: none"><li>• building and commissioning of a refrigeration plant with thermostatic control and defrost by cold room air</li><li>• fault finding on refrigeration plants</li></ul>	



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3<sup>rd</sup> educational year:

Course	Content	Dates
R 3	<ul style="list-style-type: none"> <li>defrost methods</li> <li>settings of the electronic controllers</li> <li>evaluation of controller diagrams</li> </ul>	
ELC 3	<ul style="list-style-type: none"> <li>circuits for refrigeration systems (defrost systems and electronic controllers)</li> <li>construction and function of electronic controllers</li> </ul>	
R 4	<ul style="list-style-type: none"> <li>methods of energy saving</li> <li>secondary controls</li> <li>heat recovery</li> <li>skipping calculation of refrigeration systems</li> </ul>	
ELC 4	<ul style="list-style-type: none"> <li>three-phase alternating current</li> <li>single and three-phase motors</li> <li>motor start-ups</li> <li>other electrical components (coil, transformer, capacity): types, construction, function</li> <li>electrical power station and electrical systems</li> </ul>	
Secondary cooling 1	<ul style="list-style-type: none"> <li>hydraulic systems: types, construction, function, technical problems</li> <li>hydraulic balance</li> </ul>	
Technical drawing 2	<ul style="list-style-type: none"> <li>drawing flowcharts and electrical schematics of refrigeration systems</li> </ul>	
Plant building 3	<ul style="list-style-type: none"> <li>building and commissioning of a refrigeration plant with electronic control, electrical and hot gas defrost</li> <li>fault finding on refrigeration plants</li> </ul>	



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4<sup>th</sup> educational year:

Course	Content	Dates
R 5	<ul style="list-style-type: none"> <li>• multiplex systems: types, construction, function, pipe installation</li> <li>• two stage cycles, cascade systems: types, construction, function</li> </ul>	
ELC 5	<ul style="list-style-type: none"> <li>• electronic motor management (soft starter, frequency converters): types, construction, function</li> <li>• faults in electrical systems</li> <li>• protection of electrical systems (earthing and earth leakages)</li> <li>• basic component and wiring sizing</li> </ul>	
CO <sub>2</sub> 1	<ul style="list-style-type: none"> <li>• subcritical and trans critical CO<sub>2</sub> plants: types, construction, function, pipe installation</li> </ul>	
Propane-/CO <sub>2</sub> -SH	<ul style="list-style-type: none"> <li>• health and safety in dealing with propane and CO<sub>2</sub></li> <li>• charging and discharging of propane and CO<sub>2</sub></li> <li>• leak detecting systems</li> </ul>	
Technical drawing 3	<ul style="list-style-type: none"> <li>• drawing flowcharts and electrical schematics of refrigeration systems</li> </ul>	
Plant building 4	<ul style="list-style-type: none"> <li>• writing of logbooks</li> <li>• building and commissioning of a refrigeration plant to prepare the practical diploma</li> <li>• fault finding on refrigeration plants</li> </ul>	
Practical Diploma	<ul style="list-style-type: none"> <li>• building and commissioning of a refrigeration plant including of a theoretical and a practical test</li> </ul>	
<p>Quoted prices includes: Work Sheets, Material, Lunch, Tea, Coffee.            Pass mark per course 60%, Pass mark for AC-Diploma test 75% theoretical and practical.            --Prerequisites: basic literacy + numeracy -- Courses are presented in English.</p>		



# OTTC Practical Diploma New German Pilot Program 2021

## OTTC Program Definition

### 1. OTTC Try a Trade

2 weeks free training for school-leavers to get motivated working as an artisan.

### 2. OTTC Refrigeration & Air-conditioning for Beginners

The program is designed for the first-year apprentice ship  
The outcome is a perfect assistance working efficiently with the Technician and is an asset to be employed.

### 3. OTTC Practical Diploma

Precondition:

OTTC Beginners Program for Refrigeration & AC or equivalent to prior learning.

For the perfect Technician for commercial refrigeration to do:

New installations on cold rooms and refrigeration plants

Servicing and maintenance, repair, fault-finding, improvements for energy savings.

Still working under supervision.

Including all requirements to do a trade test on international levels.

### 4. OTTC Technical Diploma

Preconditioning:

OTTC Practical Diploma, or equivalent.

For the supervisors, plant operators and plant designer.

Including commercial and industrial refrigeration, secondary cooling and CO2 plants for Supermarkets and Cold Stores non-Ammonia Plants.

### 5. OTTC Air-Conditioning Diploma

Specialized program for technician and supervisor and designer working in the Air-Conditioning Industry for heating and cooling on central Air-conditioning plants.